9 Maintenance

This chapter describes the maintenance of the Multisampler

Introduction to Maintenance

Figure 45 on page 192 shows the main user accessible assemblies of the multisampler. These parts can be accessed from the front (simple repairs) and don't require to remove the multisampler from the system stack.

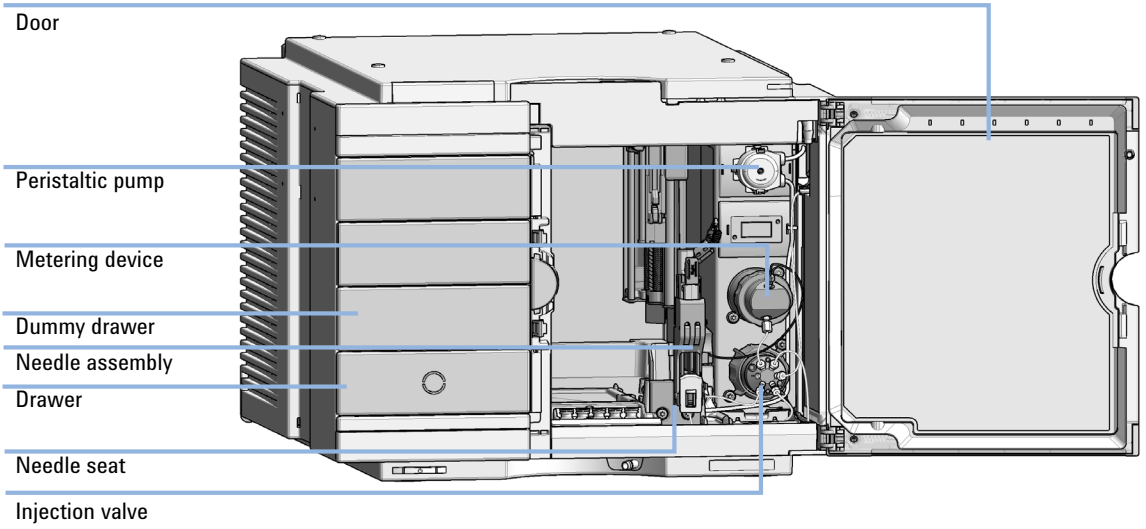


Figure 45 Main user accessible assemblies (standard)

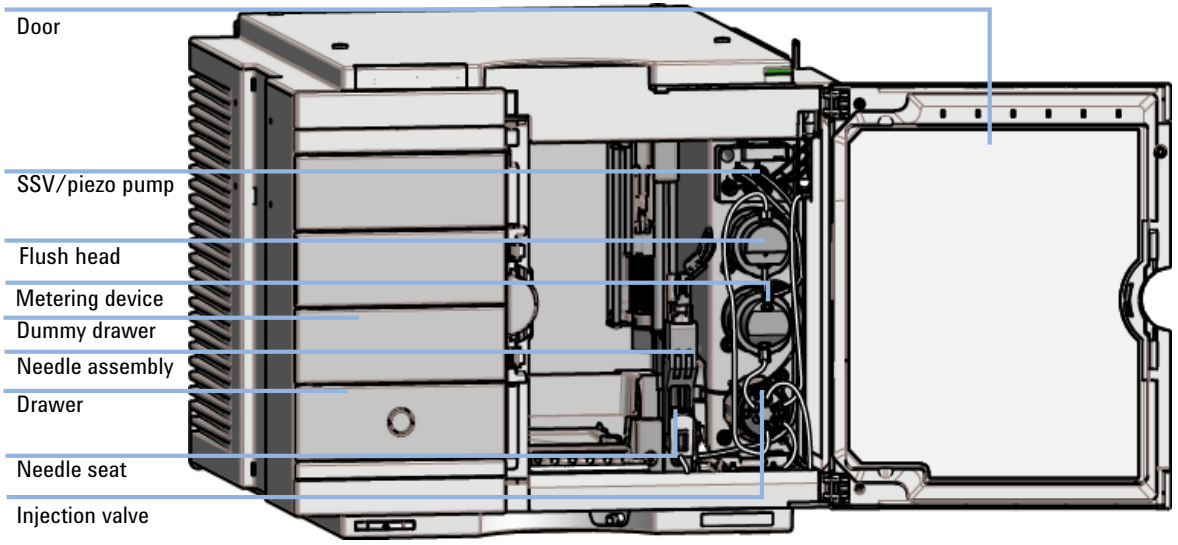


Figure 46 Main user accessible assemblies (multiwash)

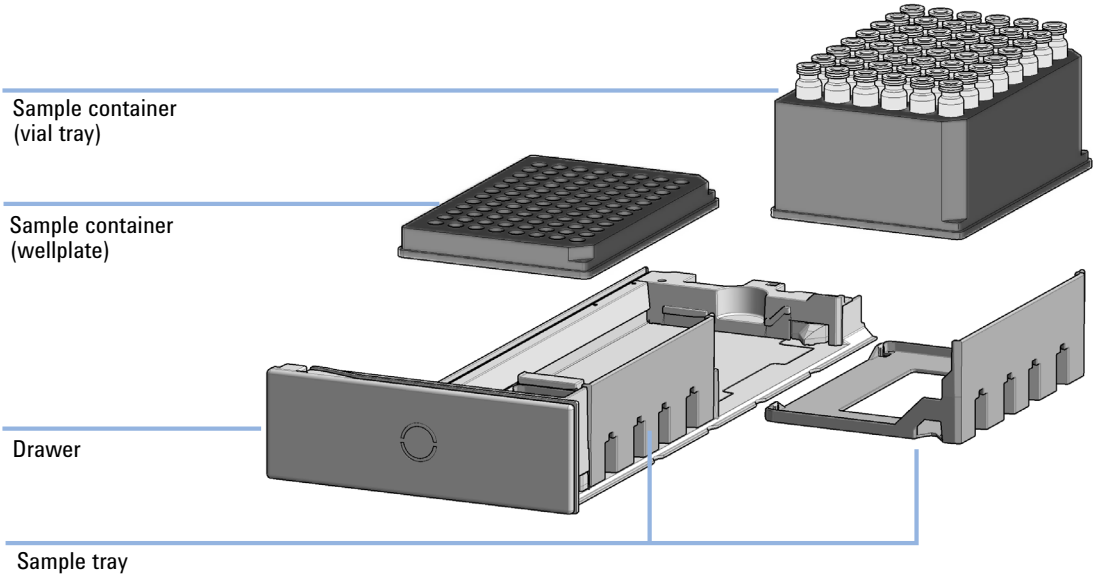


Figure 47 Overview of drawer, sample tray and sample container

Warnings and Cautions

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.

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

Sharp metal edges

Sharp-edged parts of the equipment may cause injuries.

➔ To prevent personal injury, be careful when getting in contact with sharp metal areas.

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

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.

CAUTION

Sample degradation and contamination of the instrument

Metal parts in the flow path can interact with the bio-molecules in the sample leading to sample degradation and contamination.

- ➔ For bio-inert applications, always use dedicated bio-inert parts, which can be identified by the bio-inert symbol or other markers described in this manual.
- ➔ Do not mix bio-inert and non-inert modules or parts in a bio-inert system.

Overview of Maintenance

It is necessary to perform periodic inspection of this instrument to ensure its safe use. It is possible to have these periodic inspections performed by Agilent service representatives on a contractual basis. For information regarding the maintenance inspection contract, contact your Agilent representative.

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

Table 22 Overview of maintenance

Procedure	Typical interval (minimum)	Notes
Change needle/needle seat	60000 needle into seat	
Change peristaltic pump cartridge	3000 min on time	
Change rotor seal	30000 injections	

Clean 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 connections in the flow path.

Removal and Installation of the Front Door

When	If the front door is defective or the hinge are damaged.		
Tools required	**Description**		
	Flat screwdriver		
Parts required	**#**	**p/n**	**Description**
	1	5067-5415	Door Assy
OR	1	G7167-68718	Light Protection Kit
Preparations	Finish any pending acquisition job and return any plate on the workspace back to the hotel.		

NOTE For detailed information on position of the magnets, refer to "Magnets" on page 58

CAUTION

Magnetic fields

Magnets produce a far-reaching, strong magnetic field.

You can damage for example televisions, laptops, computer harddisks, credit cards, magnetic cards may be damaged as well.

➔ Keep magnets at least 25 mm away from devices and objects that could be damaged by strong magnetic fields.

WARNING

Heart pacemakers

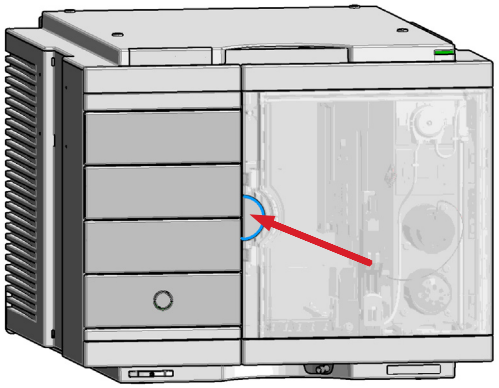
Magnets could affect the functioning of pacemakers and implanted heart defibrillators.

A pacemaker could switch into test mode and cause illness.

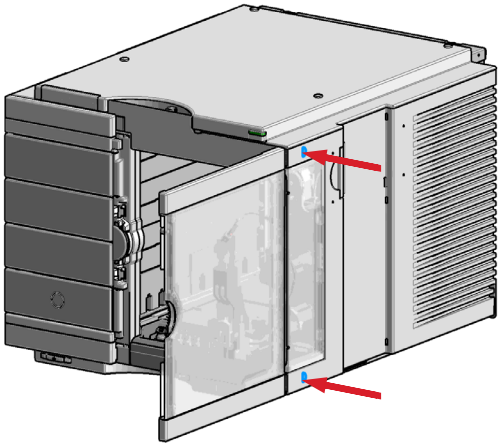
A heart defibrillator may stop working.

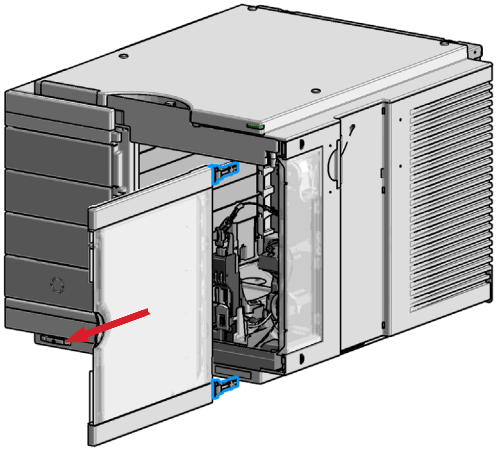
➔ Bearers of heart pacemakers or implanted defibrillators must stay off at least 55 mm from the magnets.

1 Open the front door.

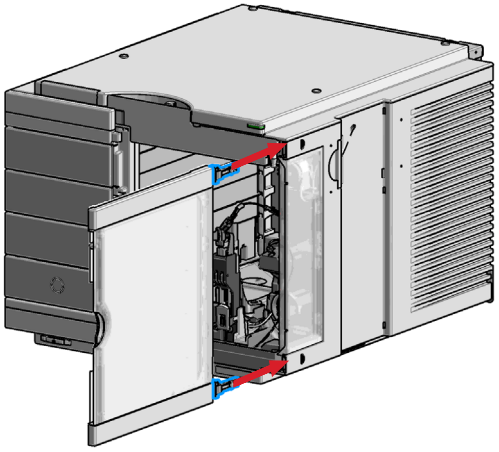


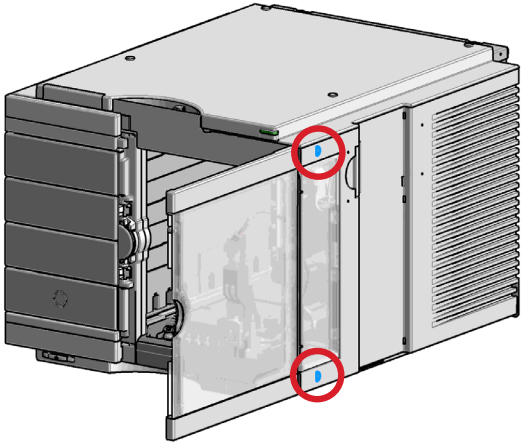
2 Press the release buttons and pull the front door out.





3 For the Installation of the front door. Insert the hinges into their guides and move the door in until the release buttons click into their final position.





Remove the Needle Assembly

For bio-inert modules use bio-inert parts only!

When

When the limit in the needle into seat counter in the EMF is exceeded or when needle shows indications of damage, blockage or leaks.

Tools required

p/n	Description
8710-0510	Wrench open 1/4 — 5/16 inch

Parts required

	#	p/n	Description
	1	G4267-87201	Needle Assembly
OR	1	G4267-87210	Needle Assembly (slotted) for high injection volumes
	1	G5668-87200	Needle Bio-Sampler (for G5668A)

Preparations

In order to avoid leaks, stop the pump running and remove the tubings from the solvent bottles. If available close the shutoff valves.

WARNING

Risk of injury by uncovered needle

An uncovered needle is a risk of harm to the operator.

➔ Do not open the safety lock of the needle assembly

➔ Be careful working at the z-robot.

➔ Wear safety goggles, when removing the needle assembly.

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.

NOTE

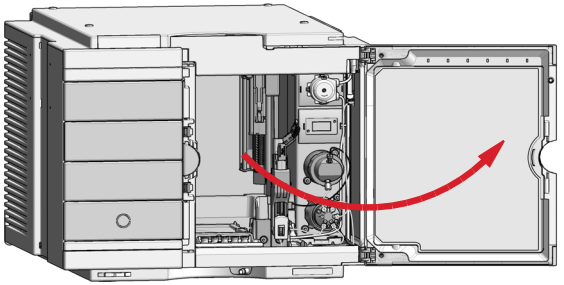
It is recommended to always exchange the needle assembly and the needle seat at the same time to prevent premature leakage.

1 In the Local Controller start the maintenance mode and select **Change needle/seat** function.

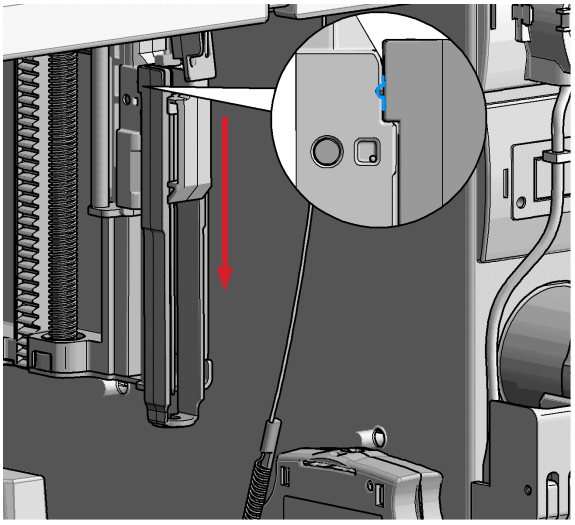
OR

In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen (**Tools**) **Maintenance Positions > Change Needle/Loop**, click **Start** and wait until the needle assembly is in maintenance position.

2 Open the front door.



3 Lock the needle in the safety position.



NOTE

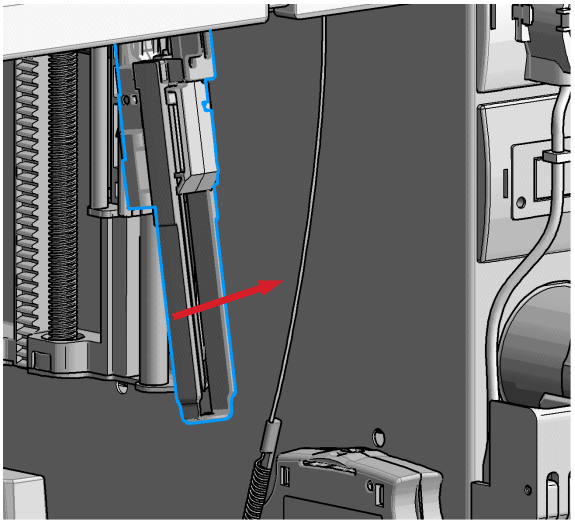
During normal operation of the Multisampler the needle assembly has to be unlocked.

WARNING

Sharp needle
Uncovered needles may cause injuries

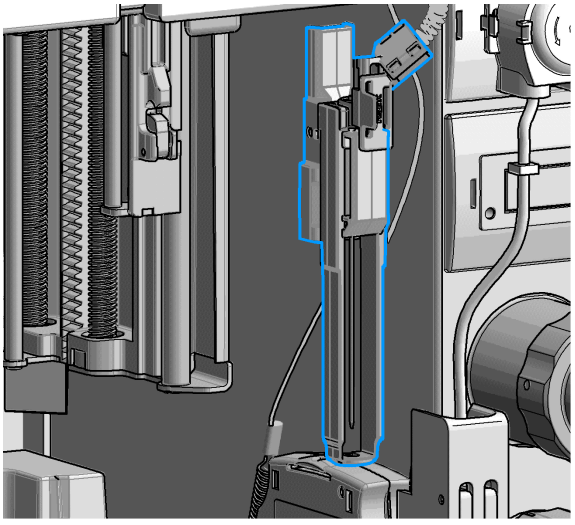
➔ **Make sure the needle is in the safety lock position.**

4 Remove the needle assembly by slightly pulling the needle cartridge.



5

Z-Robot (Z-arm coupler) without the needle assembly.



CAUTION

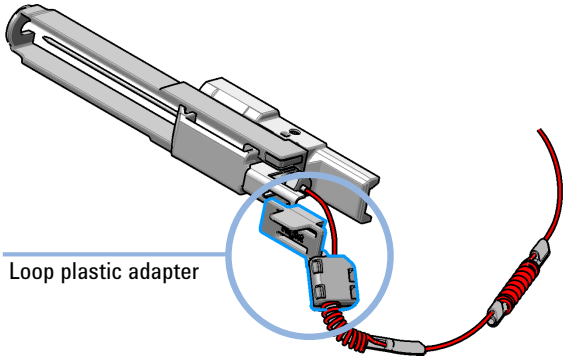
Damage of the loop

The loop shape may be damaged if the loop is stretched or bent too far.

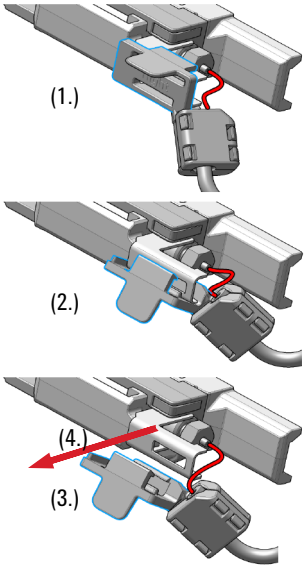
➔ **Avoid to change the loop shape.**

➔ **Do not pull or bend the loop too far.**

6 The needle assembly is still connected to the loop capillary.



7 Remove the loop plastic adapter.



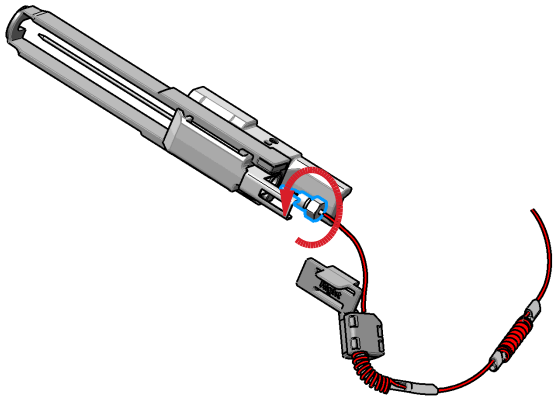
NOTE

Do not open the rear plastic clamp.

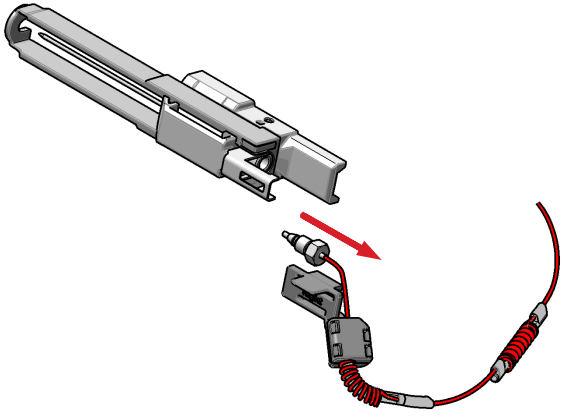
NOTE

If the plastic adapter is damaged the sample loop has to be replaced.

8 Use a 1/4 inch wrench to loosen the fitting of the loop capillary.



9 Remove the needle assembly.



Install the Needle Assembly

For bio-inert modules use bio-inert parts only!

When

When the limit in the needle into seat counter in the EMF is exceeded or when needle shows indications of damage, blockage or leaks.

Tools required

p/n	Description
8710-0510	Wrench open 1/4 — 5/16 inch

Parts required

	#	p/n	Description
	1	G4267-87201	Needle Assembly
OR	1	G4267-87210	Needle Assembly (slotted) for high injection volumes
	1	G5668-87200	Needle Bio-Sampler (for G5668A)

Preparations

In order to avoid leaks, stop the pump running and remove the tubings from the solvent bottles. If available close the shutoff valves.

WARNING

Risk of injury by uncovered needle

An uncovered needle is a risk of harm to the operator.

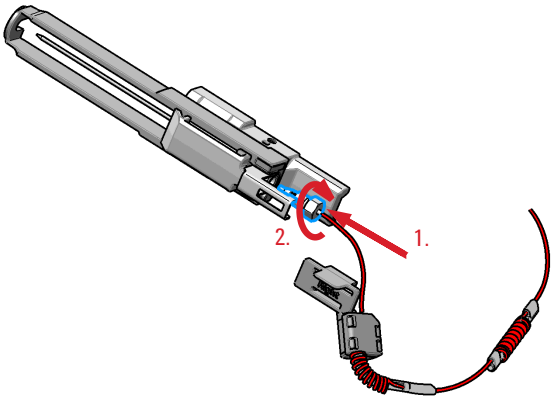
➔ Do not open the safety lock of the needle assembly

➔ Be careful working at the z-robot.

➔ Wear safety goggles, when removing the needle assembly.

NOTE It is recommended to always exchange the needle assembly and the needle seat at the same time to prevent premature leakage.

1 Install the loop capillary on top of the needle cartridge (1.) and tighten the fitting hand tight (2.).



NOTE

If the sample loop is changed, we recommend changing the needle as well.

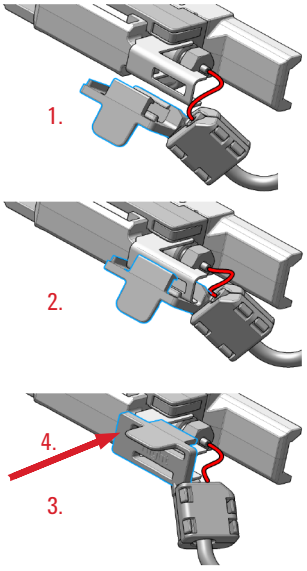
CAUTION

Blockages inside of the needle assembly union

→ **Do not overtighten the fitting. A quarter turn should be sufficient.**

2 Use a 1/4 inch wrench to tighten the fitting of the loop capillary.

3 Install loop plastic adapter.



NOTE

Verify the sample loop info on the plastic adapter. A left or a right sample loop must be installed in the correct slot of the needle parkstation. For single needle, the default position is on the right.

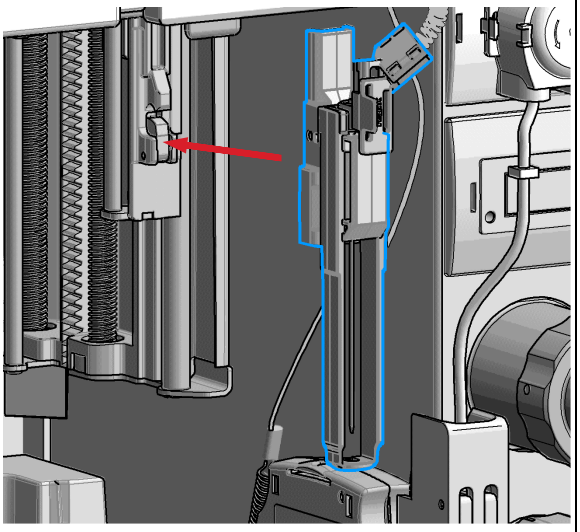
NOTE

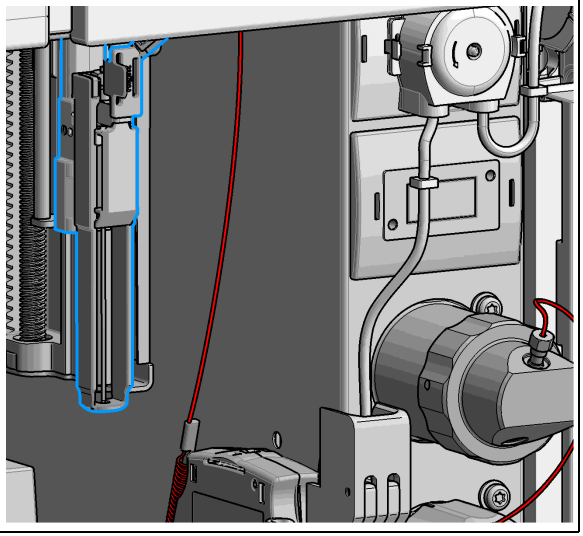
If the plastic adapter is damaged the sample loop has to be replaced.

4 Pinch and reinsert the needle assembly and the connected loop capillary into the z-arm coupler.

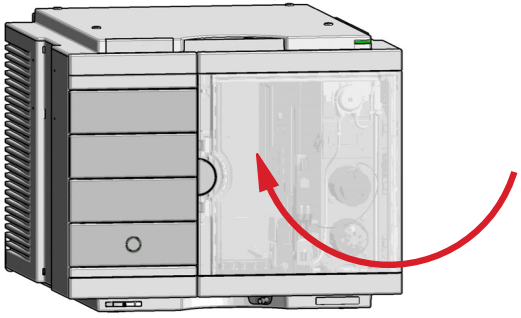
NOTE

Check the tension of the loop capillary. This must be forced and guided to the hydraulic box to prevent it from being caught by the Z-drive.





5 Close the front door.



Next Steps:

6 In the Local Controller close **Change needle /seat**.

OR

In the Agilent Lab Advisor software **Change needle/loop > End**, click **End** and wait until the needle assembly is in the needle park station.

7 Perform a pressure test.

Exchange the Needle Seat

For bio-inert modules use bio-inert parts only!

When When seat is visibly damaged, blocked or leaks.

Tools required

p/n	Description
8710-0510	Wrench open 1/4 — 5/16 inch
	Flat head screwdriver

Parts required

	#	p/n	Description
	1	G4267-87012	High Pressure Needle Seat, 0.12 mm (PEEK)
OR	1	G4267-87020	High Pressure Seat Assembly 0.075 mm (PEEK)
OR	1	G5668-87017	Bio Seat ID 0.17 (for G5668A)

Preparations In order to avoid leaks, stop the pump running and remove the tubings from the solvent bottles. If available close the shutoff valves.

WARNING

Risk of injury by uncovered needle

An uncovered needle is a risk of harm to the operator.

➔ Do not open the safety lock of the needle assembly

➔ Be careful working at the z-robot.

➔ Wear safety goggles, when removing the needle assembly.

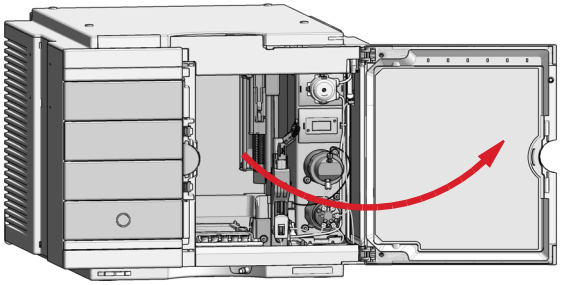
NOTE Refer the Agilent 1290 Infinity II Ultra Low Dispersion Kit Technical Note (p/n 01200-90105) for further details.

1 In the Local Controller start the maintenance mode and select **Change needle/seat** function.

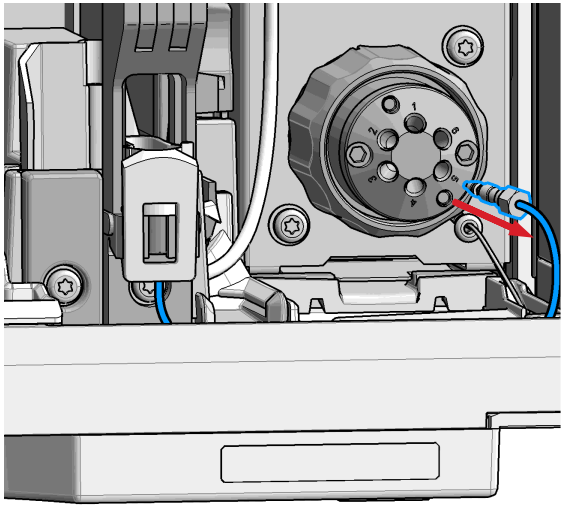
OR

In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen **Maintenance Positions > Change Needle**, click **Start** and wait until the needle assembly is in maintenance position.

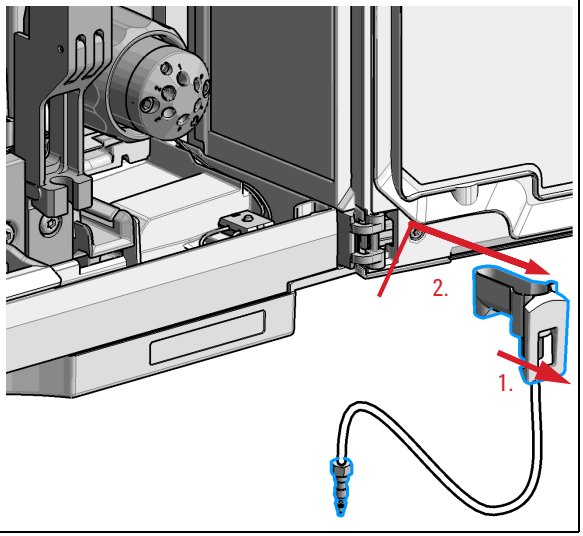
2 Open the front door.



3 Disconnect the seat capillary from the Injection valve.



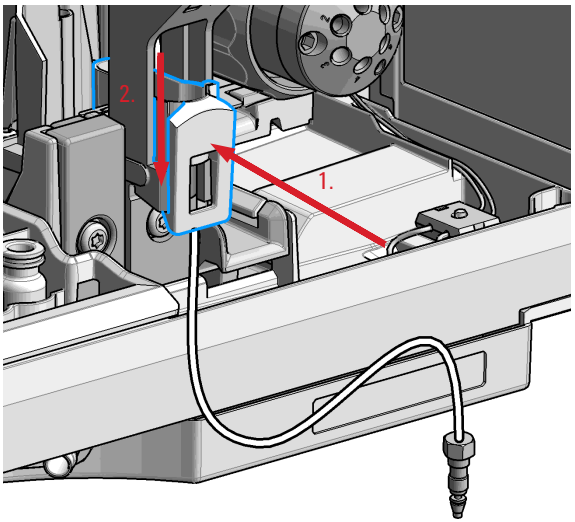
4 Slightly pull (1.) the front clip which holds the needle seat in position. Then carefully lift up (2.) the complete leak tube needle assembly from the holder.



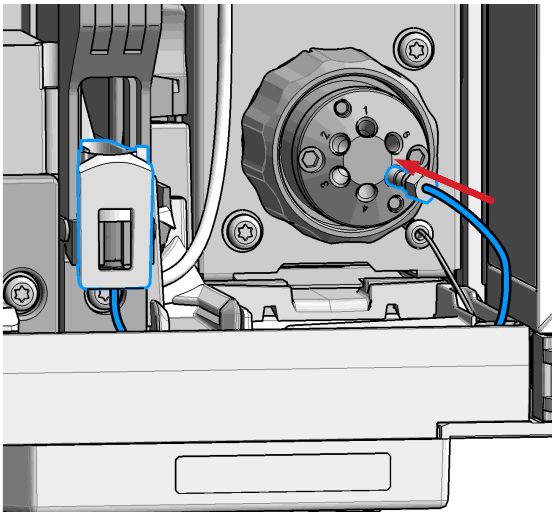
5 Insert the new Needle seat (1.). Press it firmly in position (2.).

NOTE

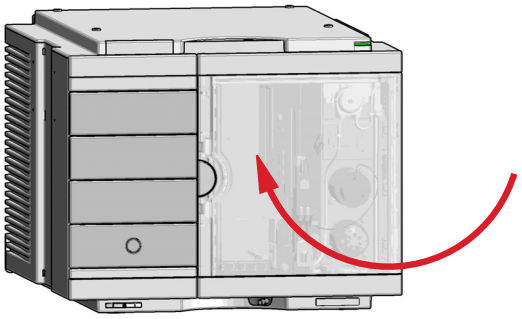
Verify that the needle seat clip is locked in the needle park station.



6 Reconnect the seat capillary to the injection valve.



7 Close the front door.



Next Steps:

8 In the Local Controller close **Change needle /seat**.

OR

In the Agilent Lab Advisor software **Change needle** click **End** and wait until the needle assembly is in the needle park position.

9 Perform a pressure test.

Replace the Rotor Seal

For bio-inert modules use bio-inert parts only!

When When poor injection volume reproducibility or when injection valve is leaking.

Tools required

p/n	Description
8710-0510	Wrench open 1/4 — 5/16 inch
8710-2394	Hex key 9/64 inch 15 cm long T-handle
	Cleaning tissue and appropriate solvent like isopropanol or methanol

Parts required

#	p/n	Description
1	5068-0198	Rotor Seal 1300 bar (PEEK) for 1290 Infinity II Injection Valve
1	5068-0209	Rotor Seal (PEEK)
1	5068-0229	Rotor Seal (PEEK) for 3Pos/6Port Peripheral Valve Dual Needle
1	5068-0232	Rotor Seal (PEEK) for 2Pos/8Port Injection Valve Dual Needle
1	0100-1851	Stator face, ceramic for the bio-inert injection valve
1	5068-0099	Rotor Seal (PEEK) for the bio-inert injection valve

CAUTION

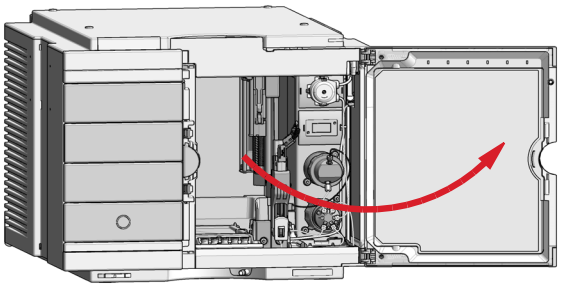
Reduced life time of the injection valve

Component cleanliness is crucial for the life time of the injection valve.

➔ Replace the rotor seal in a clean environment.

NOTE Please bear in mind that depending on which valve you have installed the images may slightly differ from the actual item.

1 Open the front door.

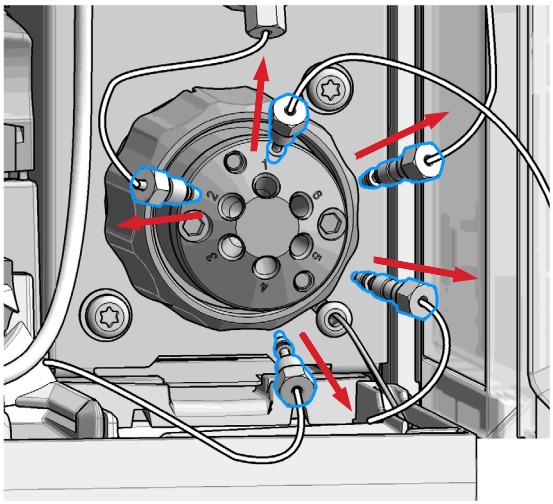


2 Remove all capillaries from the injection valve with a 1/4 inch wrench.

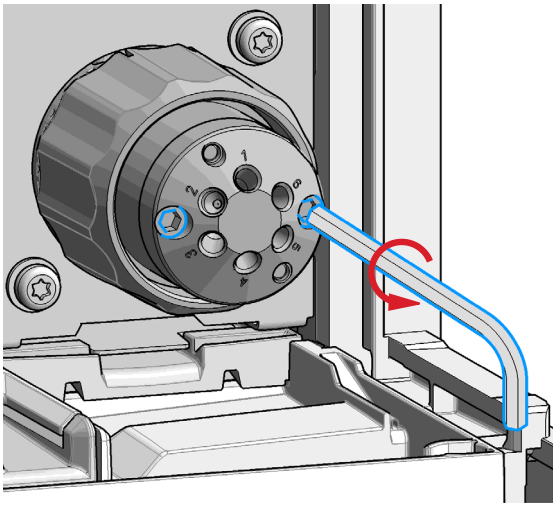
NOTE

Remember the correct plumbing.

Check the drawing on the side cover of the hydraulic box for correct plumbing.



3 Use a 9/64 inch hex driver to unscrew the two socket screws which hold the stator head in place.



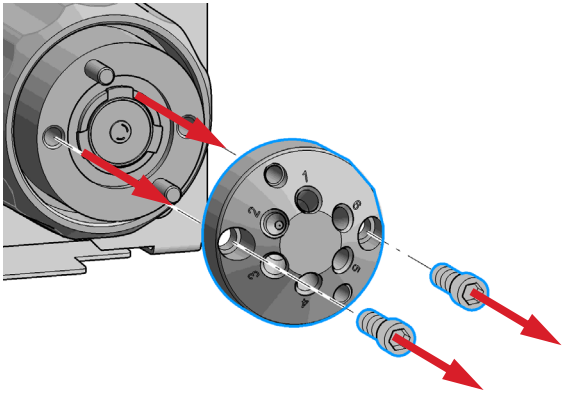
CAUTION

Damage to the stator head
The polished sealing surface of the stator head contains six ports that access handling can easily damage.

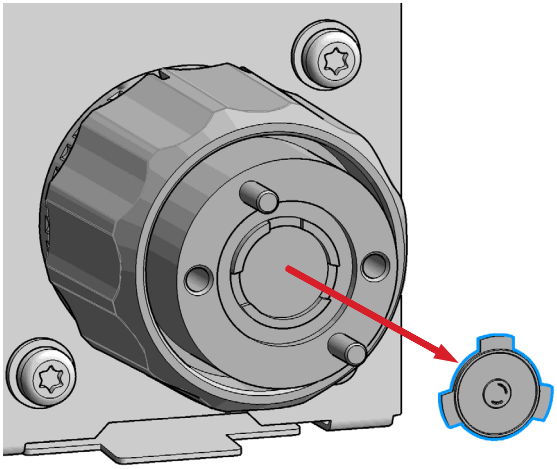
➔ Avoid touching the polished surface of the stator head.

➔ Never place the polished surface on a hard surface.

4 Carefully remove the stator head. To ensure that the sealing surface of the stator head is not damaged, place it on its outer face.



5 Remove the rotor seal.



NOTE

Remove the rotor seal with a small tool, gently pry the rotor seal away from the drive.

Examine the rotor sealing surface for scratches and nicks.

- If scratches are visible the rotor seal must be replaced.
- If no scratches are visible clean all the parts with an appropriate solvent, taking care that no surfaces get scratched.

CAUTION

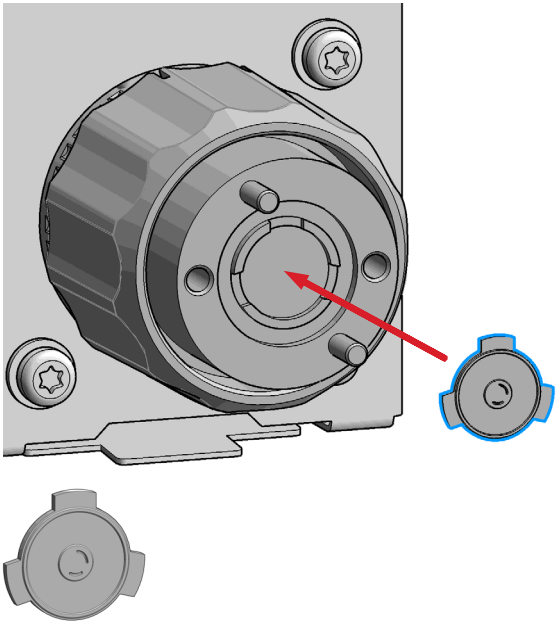
Damage to the rotor seal and cross-port leaks

→ Before you replace the rotor seal, clean the stator.

→ Inspect the stator head and swab it with the appropriate solvent. If more stringent cleaning is required, use a sonicator. Inspect the remaining valve components for contamination. Clean them as necessary.

→ If the stator head is scratched, replace the valve.

6 Install new rotor seal.



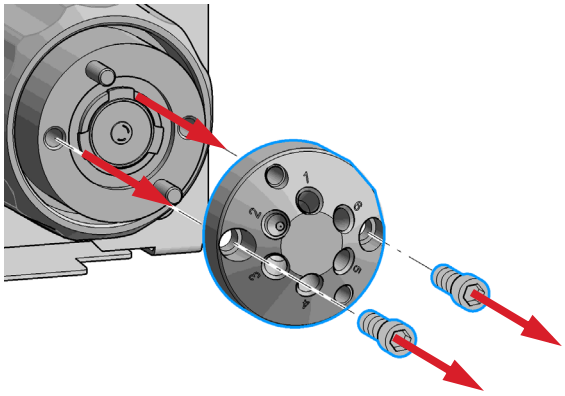
NOTE

Make sure that the rotor sealing surface with its engraved flow passages is facing out. The pattern is asymmetrical to prevent improper placement.

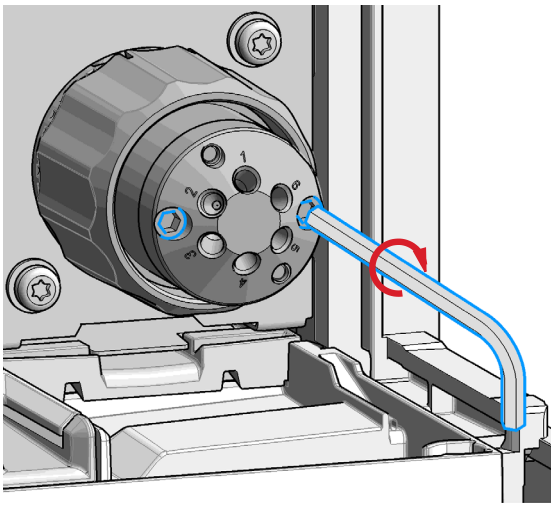
NOTE

The Bio-inert injection valve additionally has a stator face installed.

7 Reinstall the stator head. The index pins on the drive and the stator head must engage in the corresponding holes. Insert the two socket head screws.



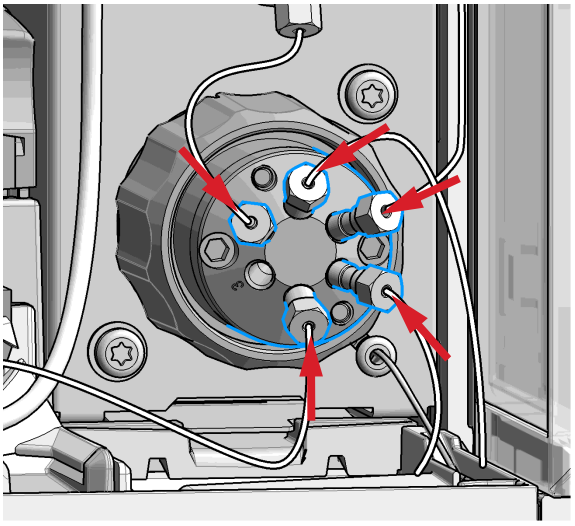
8 Using a 9/64 in. L-Hex wrench, tighten each screw gently until you feel resistance (approximately fingertight). Tighten each screw by 1/8 turn, and then tighten each screw again, until the stator is secured to the driver.



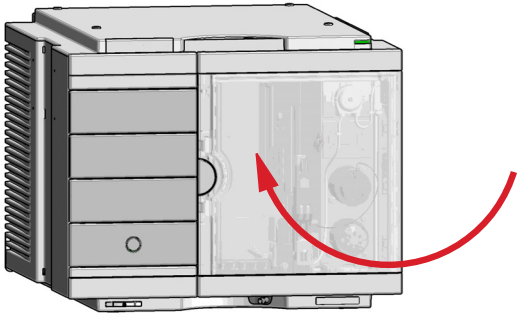
NOTE

Do not over-tighten the screws. The screws hold the assembly together and do not affect the sealing force. The sealing force is automatically set as the screws close the stator head against the valve body.

9 Reconnect all capillaries to the proper injection valve ports with a 1/4 inch wrench



10 Close the front door.



11 Perform a pressure test.

Replace the Injection Valve

For bio-inert modules use bio-inert parts only!

When Add new injection valve or replace defective injection valve.

Tools required

Description
Wrench 9/64

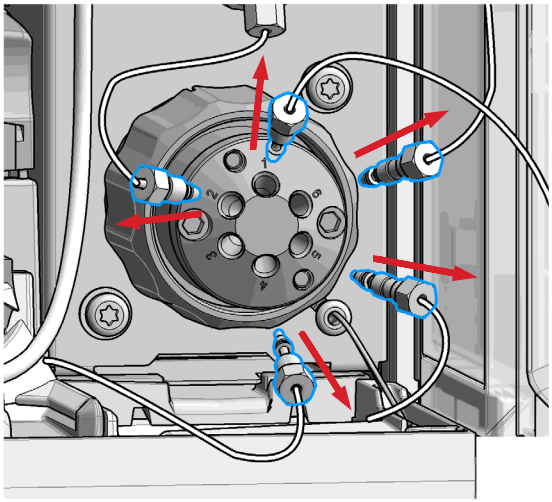
Parts required

#	p/n	Description
1	5067-4232	2pos/6port Injection Valve (VICI) 1300 bar 1300 bar (G7167B)
1	5067-6698	2ps-6pt RC Injection Valve 800 bar (G7167A)
1	5067-4260	2pos/8port Injection Valve Dual Needle 1300 bar
1	5067-4263	2pos/6port Injection Valve Bio-inert 600 bar for bio inert solution

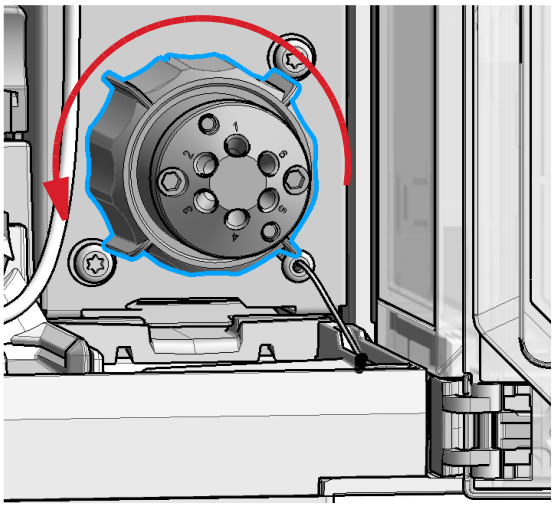
Preparations Switch off the power of the Multisampler

NOTE Please bear in mind that depending on which valve you have installed the images may slightly differ from the actual item.

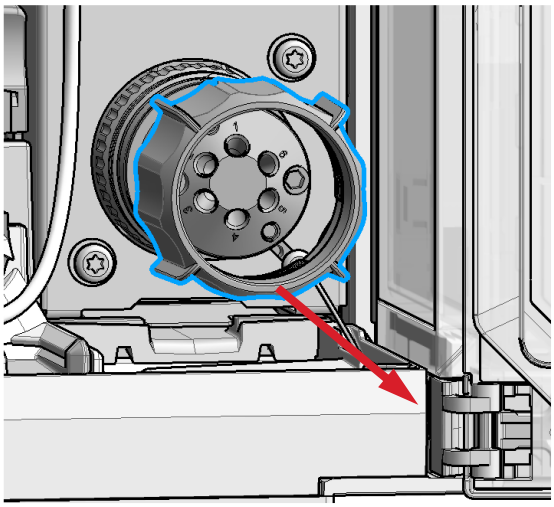
1 Disconnect the capillaries.



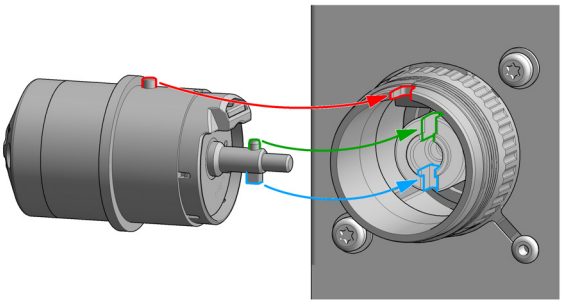
2 Turn the spanner nut counter clockwise until the injection valve head detaches from the hydraulic box (Do not use wrenches on the spanner nut).



3 Remove the spanner nut from the injection valve head.

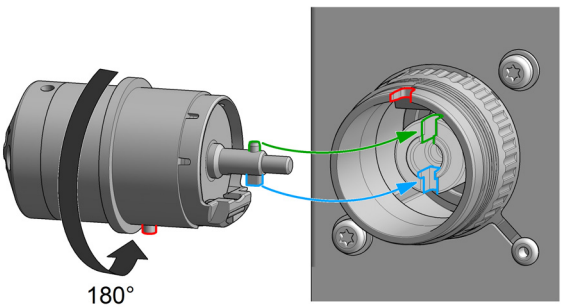


4 Take the replacment injection valve head and insert it into the open actuator slot of the hydraulic box. Rotate until the unions at the base of the replacement injection valve head and the valve actuator engage



OR

If the outside pin does not fit into the outside groove, you have to turn the valve head until you feel that the two pins snap into the grooves. Now you should feel additional resistance from the valve drive while continue turning the valve head until the pin fits into the groove.

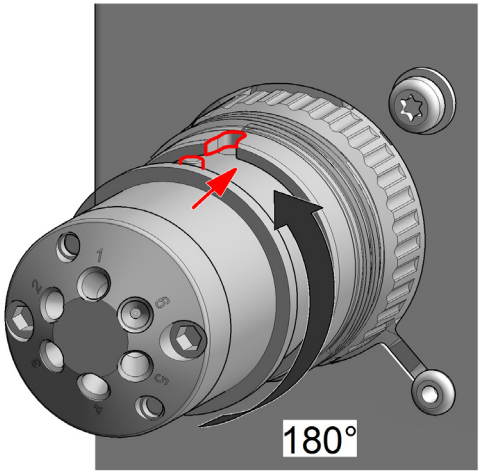


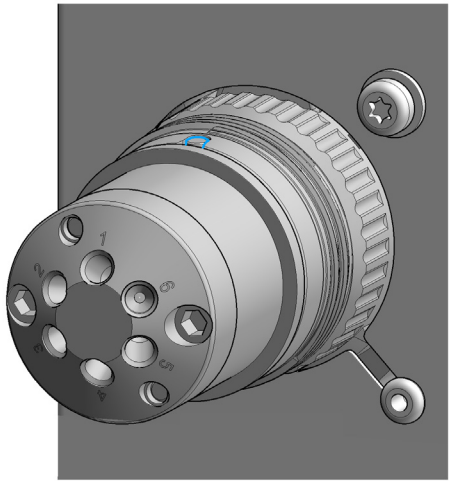
NOTE

Check the orientation of the rear side.

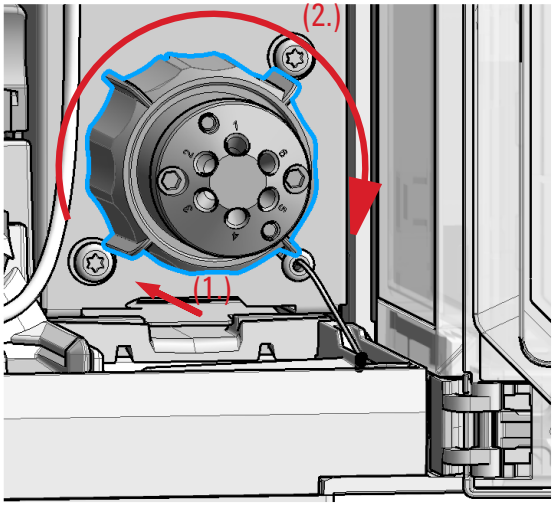
Verify the correct position of the Valve TAG.

5 Continue to rotate until the clocking pin in the injection valve head align with the notch in the housing and press the replacement injection valve head into the actuator.

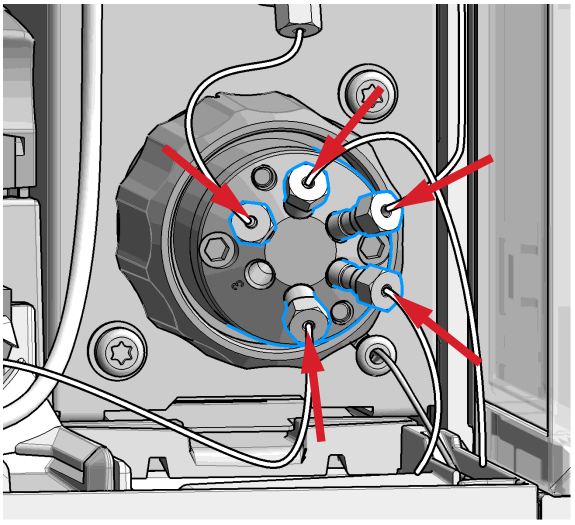




6 Replace the spanner nut (1.) and tighten clockwise (2.) (Hand tighten only, do not use wrenches on the spanner nut).



7 Reconnect the capillaries



Replace Analytical Heads/Metering Device

For bio-inert modules use bio-inert parts only!

Tools required	p/n	Description
	8710-0510	Wrench open 1/4 — 5/16 inch

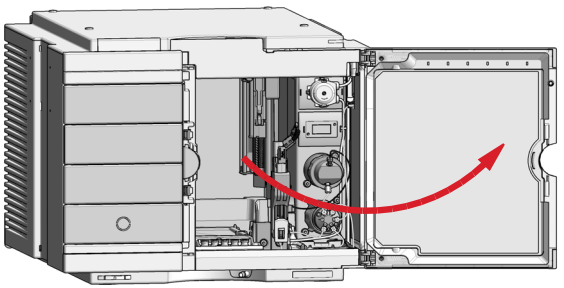
Parts required	#	p/n	Description
	1	G4267-60042	Analytical Head, 40 µL
OR	1	G4267-60043	Analytical Head, 100 µL
OR	1	G4267-60046	Analytical head, 900 µL, 400 bar
OR	1	G4267-60049	Flush head, 500 µL
OR	1	G5668-60043	Bio Analytical Head 100 µL for bio inert solution
OR	1	G5668-60049	Flush Head Bio 500 µL for bio inert solution

1 In the Local Controller start the maintenance mode and select **Change Metering Device** function.

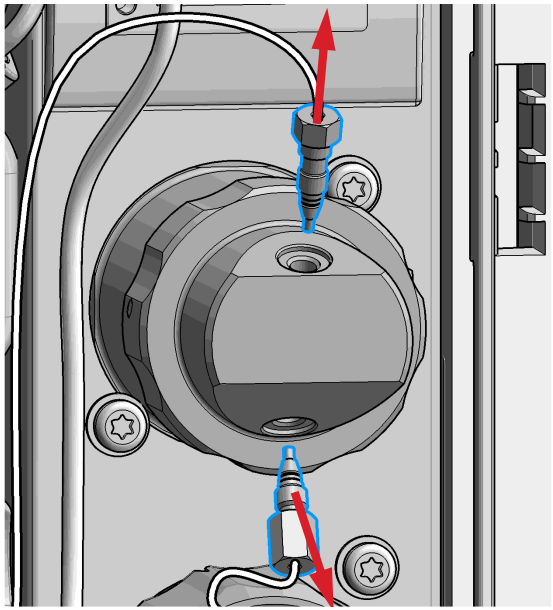
OR

In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen **(Tools) > Maintenance Positions > Change Metering Device**, click **Start** and wait until the metering device is in maintenance position.

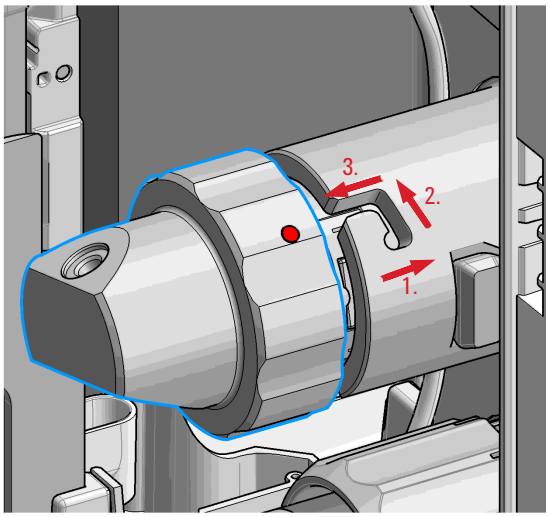
2 Open the front door.



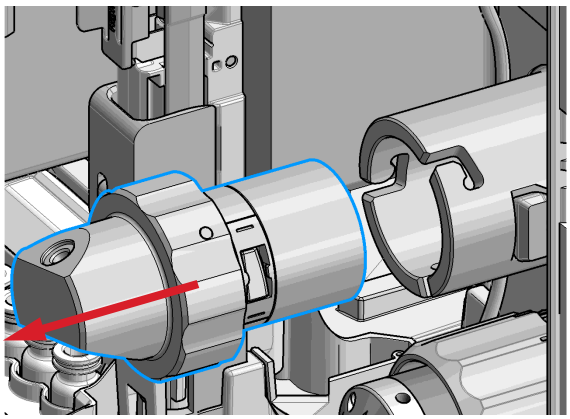
3 Disconnect all capillaries from the metering device.



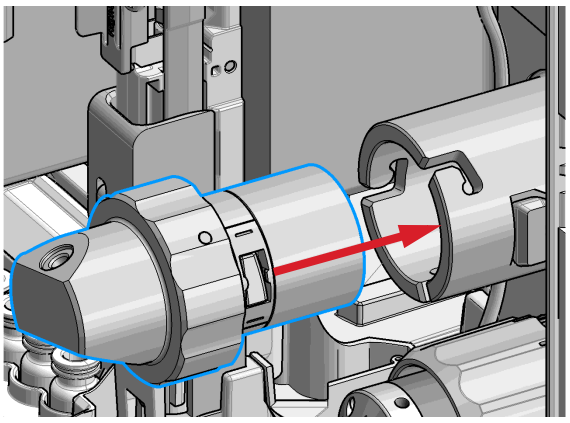
4 To release the bayonet lock, push (1.) and rotate (2.) the analytical head a quarter left. Then you can pull and detach the analytical head assembly from the actuator (3.).



5 Remove the metering device.



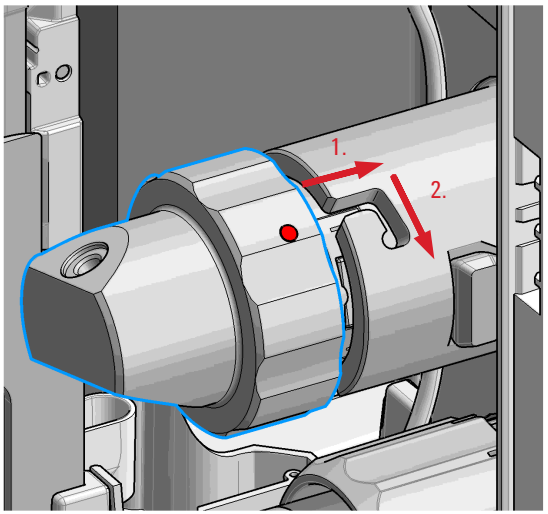
6 Reinstall the complete analytical head with the actuator housing

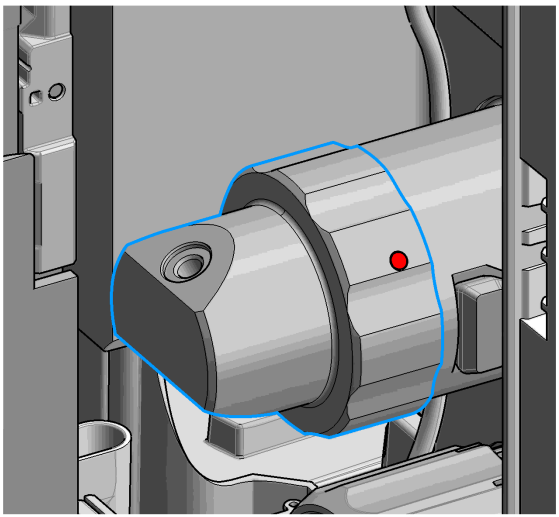


NOTE

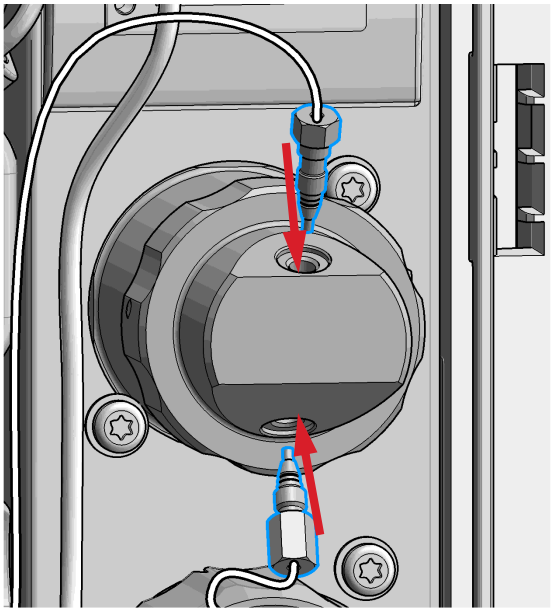
For proper installation, check the correct position of the tag.

7 Fix the analytical head by pushing (1.) and rotating (2.) via twist and lock bayonet mechanism.

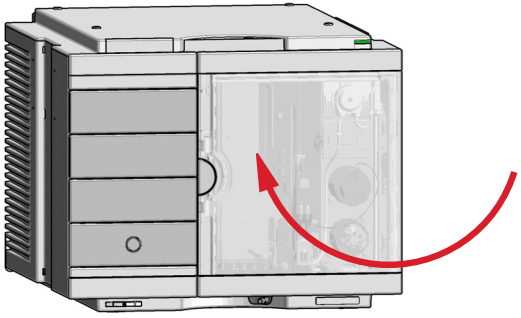




8 Reconnect the capillaries.



9 Close the front door.



Next Steps:

10 In the Local Controller exit the maintenance mode and select **Change metering device** function.

OR

In Agilent Lab Advisor software system screen exit **Service & Diagnostics (Tools) > Maintenance Positions > Change Metering Device** click **End** and wait until the metering device is in **Home** position.

11 Perform a pressure test.

Remove the Metering Seal

For bio-inert modules use bio-inert parts only!

When When poor injection volume reproducibility or when metering device / analytical head is leaking.

Tools required	**p/n**	**Description**
	8710-0510	Wrench open 1/4 — 5/16 inch
	8710-2392	4 mm Hex key
	01018-23702	Insert tool
OR	G4226-43800	Seal insert tool for 100 µL or 40 µL

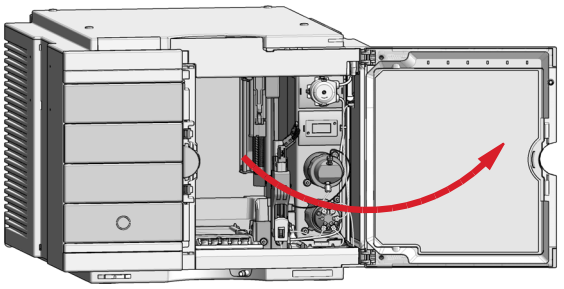
Parts required	**#**	**p/n**	**Description**
	1	0905-1717	Metering seal 40 µL for 40 µL analytical head
	1	0905-1719	PE Seal for 100 µL analytical head
	1	5067-5620	Piston ceramic 40 µL If previous piston is scratched
	1	5067-5678	Piston ceramic 100 µL If previous piston is scratched
OR	1	G5611-21503	Piston Seal PTFE (Bio-inert) for bio inert solution

1 In the Local Controller start the maintenance mode and select **Change metering device** function.

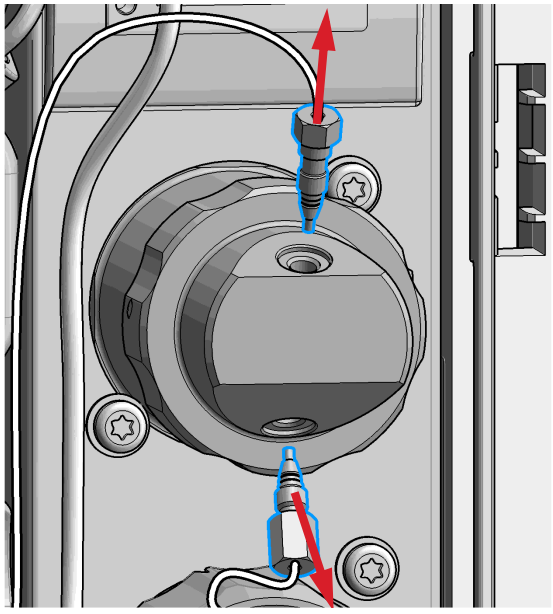
OR

In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen **(Tools) > Maintenance Positions > Change Metering Device**, click start and wait until the metering device is in maintenance position.

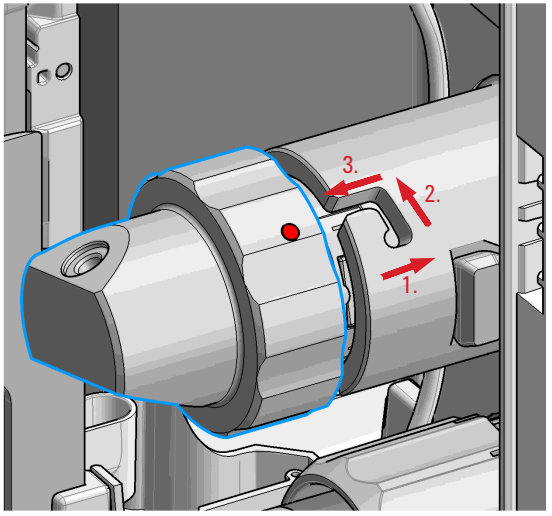
2 Open the front door.



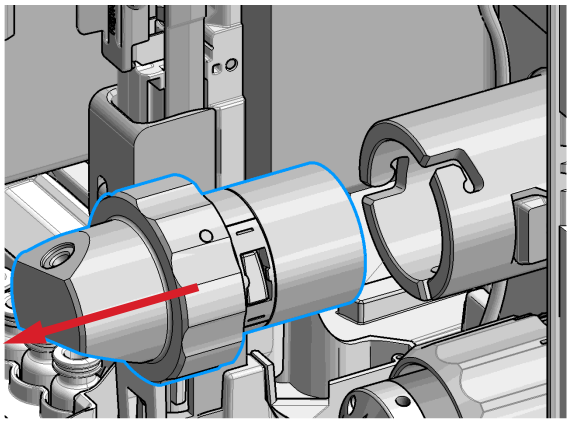
3 Disconnect all capillaries from the metering device.



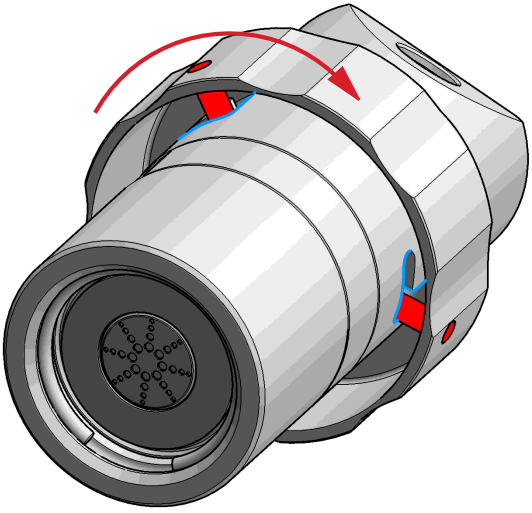
4 To release the bayonet lock, push (1.) and rotate (2.) the analytical head a quarter left. Then you can pull and detach the analytical head assembly from the actuator (3.).



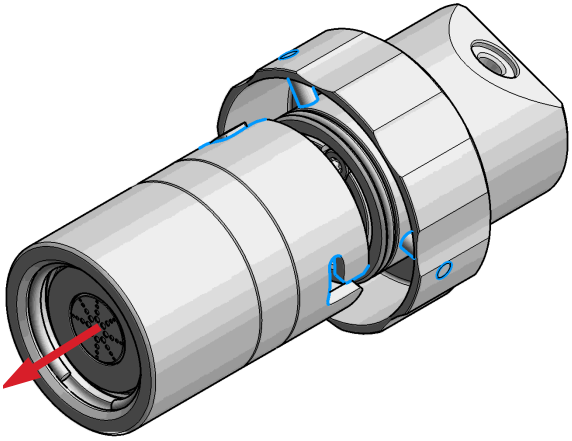
5 Remove the metering device.



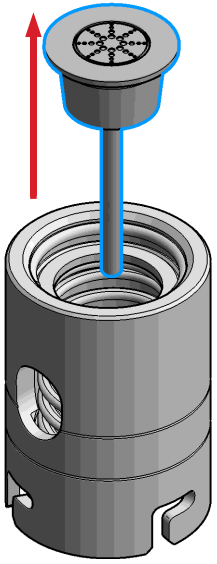
6 Take the metering device. Push against the rear side of the metering device and rotate a quarter left to release the bayonet lock.



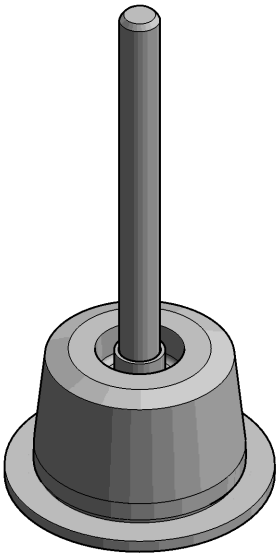
7 Now you can separate the analytical head and head body.



8 Remove the piston out of the head body.



9 Inspect the piston for cleanliness and scratches.

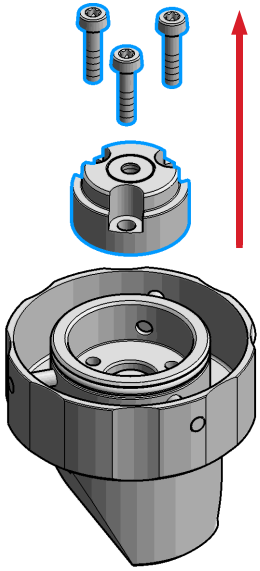


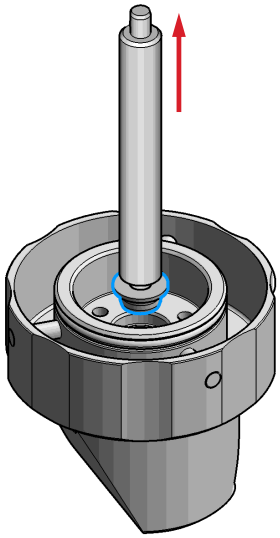
- If dirty:

  Clean the piston with an appropriate solvent.
- If scratched:

  Replace the piston by a new one.

10 Take the analytical head and remove the three screws on the rear side, which holds the support ring in place. Check the support ring for any damages.



11 Carefully remove the metering seal using the steel side of the insert tool. Clean the chamber with an appropriate solvent and ensure that all particulate matter is removed. 	

Install the Metering Seal

For bio-inert modules use bio-inert parts only!

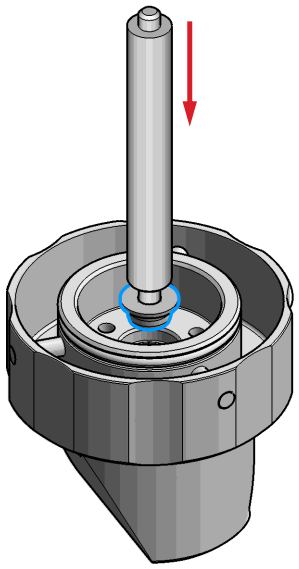
When After removing the metering seal.

Tools required	**p/n**	**Description**
	8710-0510	Wrench open 1/4 — 5/16 inch
	8710-2392	4 mm Hex key
	01018-23702	Insert tool
OR	G4226-43800	Seal insert tool for 100 µL or 40 µL
		Cleaning tissue and appropriate solvent like isopropanol or methanol

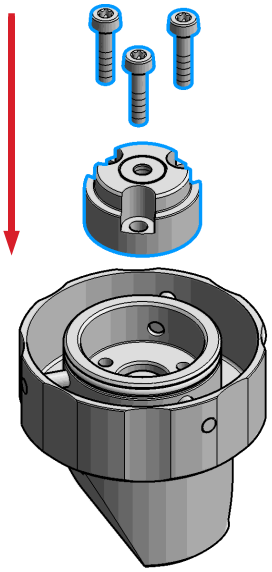
Parts required	**#**	**p/n**	**Description**
	1	0905-1717	Metering seal 40 µL for 40 µL analytical head
	1	0905-1719	PE Seal for 100 µL analytical head
	1	5067-5620	Piston ceramic 40 µL If previous piston is scratched
	1	5067-5678	Piston ceramic 100 µL If previous piston is scratched
OR	1	G5611-21503	Piston Seal PTFE (Bio-inert) for bio inert solution

Preparations Removing the metering seal, see "Remove the Metering Seal" on page 228

1 Install the new metering seal using the plastic side of the insert tool. Press it firmly into position. Avoid any offset angle as it might deform the seal.



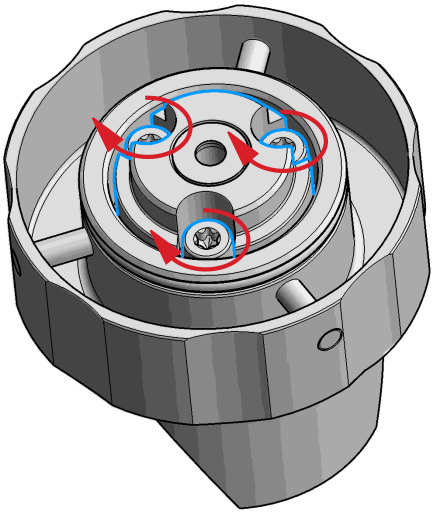
2 Reassemble the support ring.



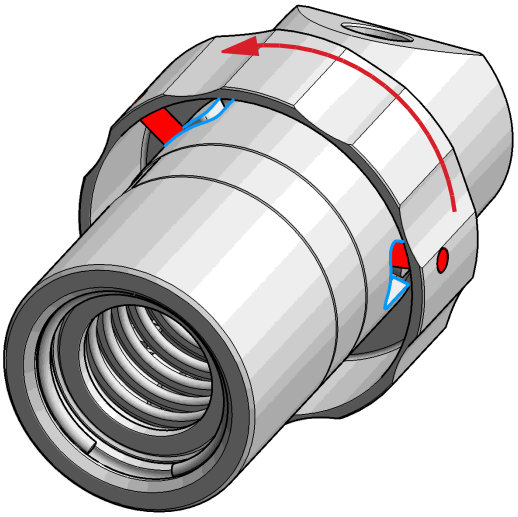
3 Make sure to comply to the following order of actions:

a Tighten the three screws fingerthight, then

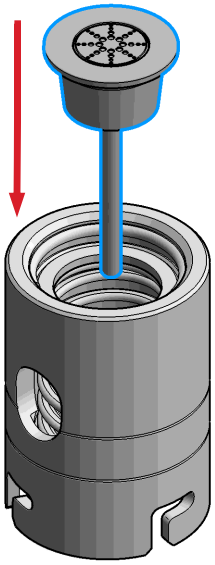
b Tighten the screws a little at a time to keep the support ring surface *parallel* (important!) to the surface of the analytical head.



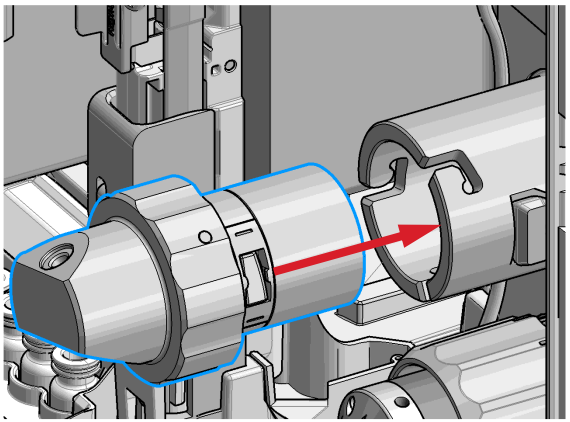
4 Use the twist and lock bayonet mechanims to reassemble the analytical head assembly. Push the two parts together to couple the head body with the analytical head. Once the pin reaches the bottom of the slot, one or both parts are rotated so that the pin slides along the horizontal arm of the L until it reaches the *serif*. The spring then pushes the male connector up into the *serif* to keep the pin locked into place.



5 Press the piston carefully into the housing of the head body and the seal.



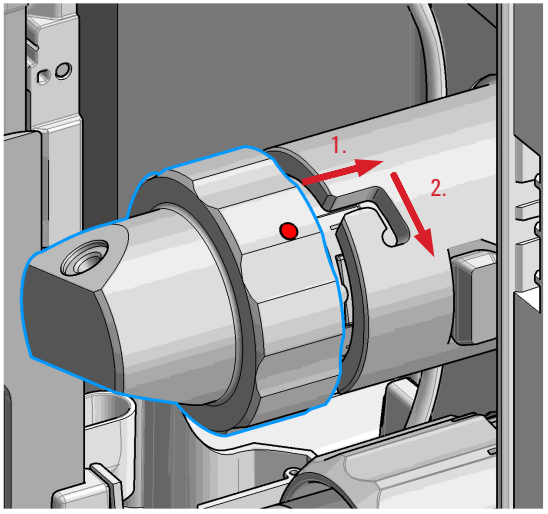
6 Reinstall the complete analytical head with the actuator housing

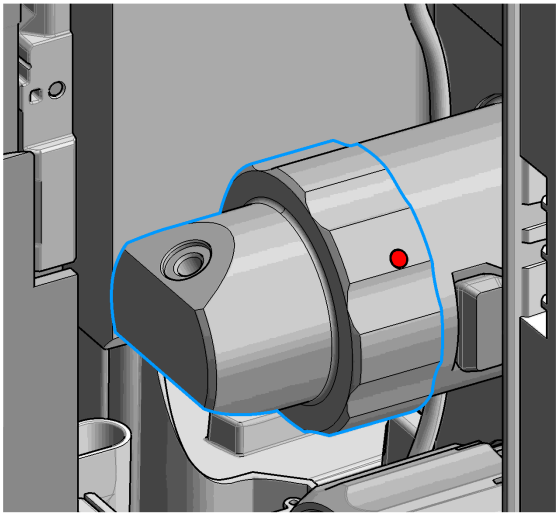


NOTE

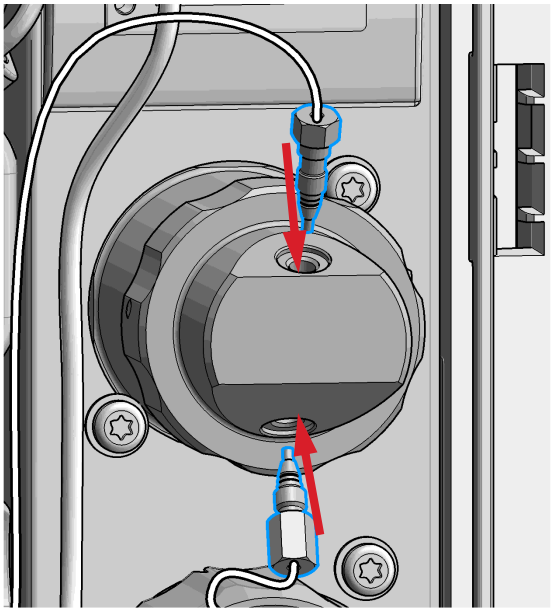
For proper installation, check the correct position of the tag.

7 Fix the analytical head by pushing (1.) and rotating (2.) via twist and lock bayonet mechanism.

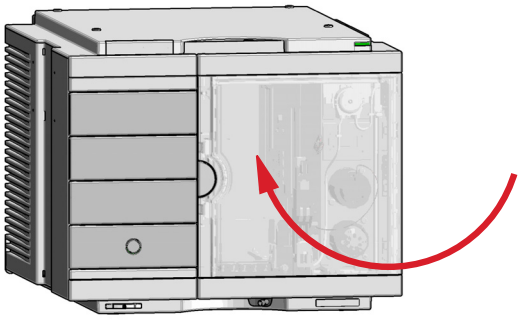




8 Reconnect the capillaries.



9 Close the front door.



Next Steps:

10 In the Local Controller exit the maintenance mode and select **Change metering device** function.

OR

In Agilent Lab Advisor software system screen exit **Service & Diagnostics (Tools) > Maintenance Positions > Change Metering Device** click **End** and wait until the metering device is in **Home** position.

11 Perform a pressure test.

Replace the Peristaltic Pump Cartridge

When	Tubing blocked or broken		
Parts required	**#**	**p/n**	**Description**
	1	5065-4445	Peristaltic pump with Pharmed tubing (default)
OR	1	5042-8507	Peristaltic pump cartridge, silicone tubing
OR	1	5042-9952	Peristaltic pump with Chemsure tubing

Preparations Remove the inlet filter of the solvent bottle which guides the solvent to the peristaltic pump to avoid syphoning effects.

WARNING

When opening capillary or tube fittings solvents may leak out.

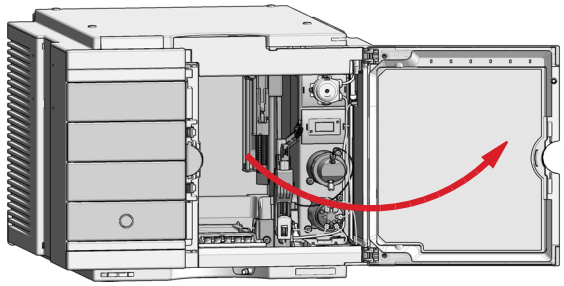
The handling of toxic and hazardous solvents and reagents can hold health risks.

➔ 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.

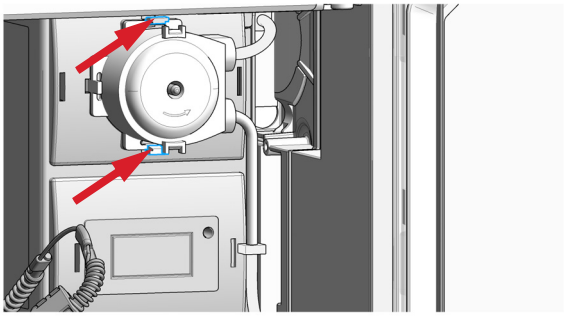
NOTE

The peristaltic pump cartridge is a replaceable unit. The tubing inside the pump is not replaceable.

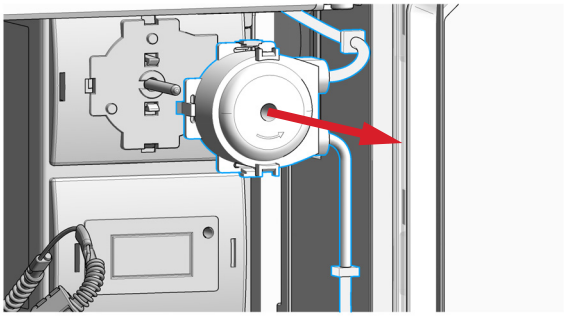
1 Open the front door.



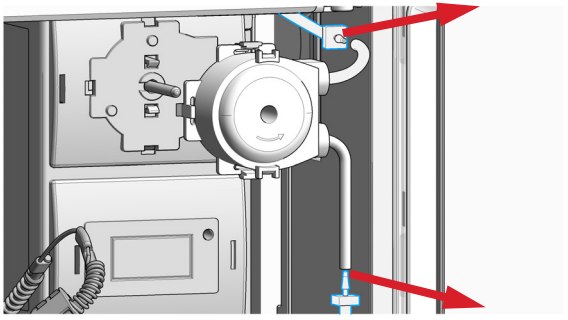
2 Press the two clips on the front of the peristaltic pump cartridge.



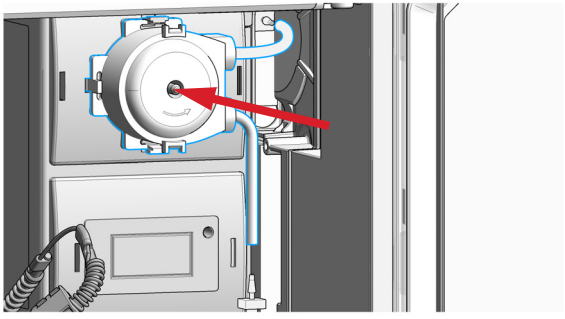
3 Pull the cartridge forward off the motor shaft.



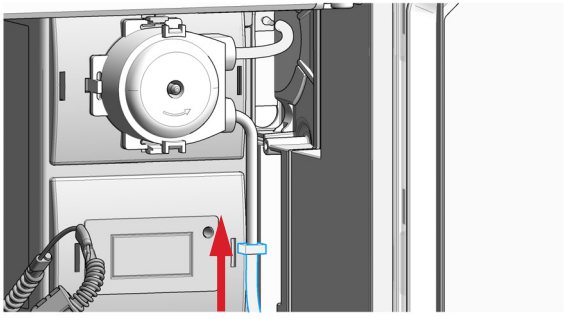
4 Disconnect the tubing coupler leading to the wash port and the tubing coupler coming from the solvent bottle.



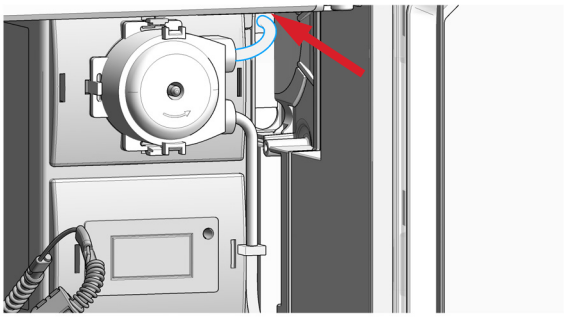
5 Push the new cartridge onto the motor shaft until the clips click into place.



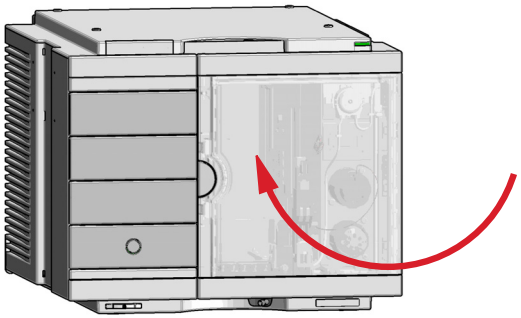
6 Connect the wash port tubing to the upper tubing of the new cartridge (use sand paper to get a good grip on the tubing).



7 Connect the inlet filter of the solvent bottle again. Use the syringe to draw enough solvent for completely filling of the peristaltic pump tubing before continuing to prime the peristaltic pump.



8 Close the front door.



Replace the Flushhead Seal

For bio-inert modules use bio-inert parts only!

When Flush head is leaking

Tools required

p/n	Description
8710-0510	Wrench open 1/4 — 5/16 inch
8710-2392	Hex key 4 mm15 cm long T-handle

Parts required

p/n	Description
5067-5918	Seal 500 µL
G5668-60494	Seal 500 µL Bio for bio inert solution

Preparations

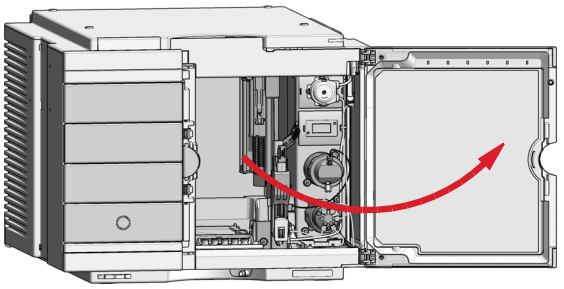
- Cleaning tissue
- Appropriate solvent like isopropanol or methanol

1 In the Local Controller start the maintenance mode and select **Change metering device** function.

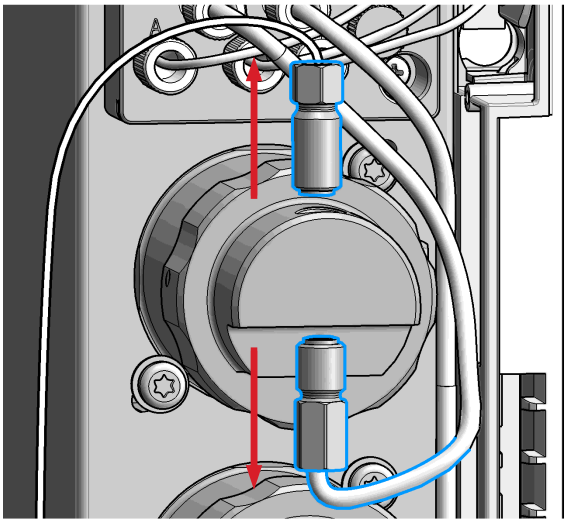
OR

In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen **(Tools) > Maintenance Positions > Change Metering Device**, click start and wait until the metering device is in maintenance position.

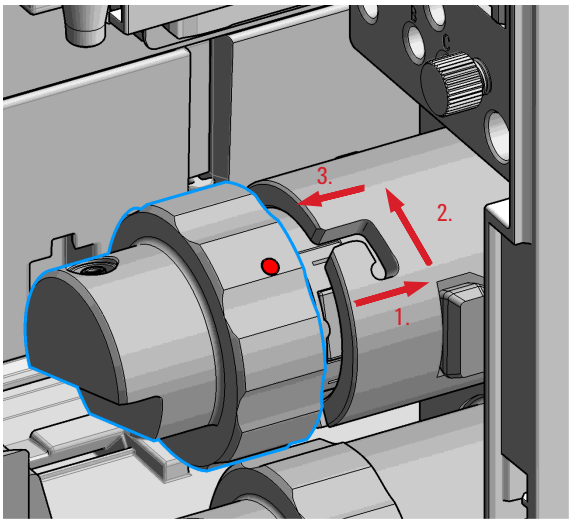
2 Open the front door.



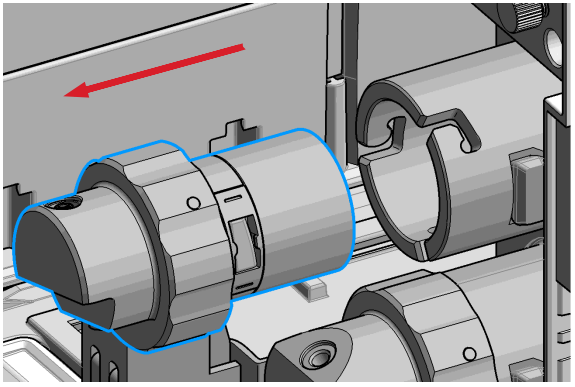
3 Remove capillaries and valves from the flush head.



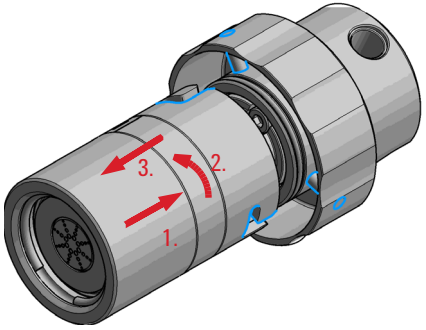
4 Press and turn the Flush Head a quarter left (bayonet fitting) and detach the metering device from the actuator.



5 Pull the flush head away from the hydraulic box



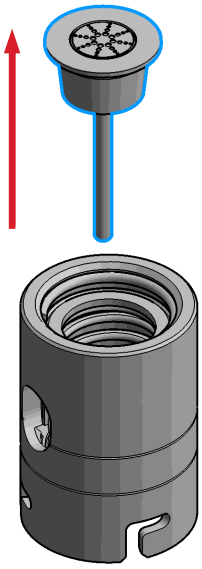
6 Press against the rear side of flush head and turn a quarter left (bayonet fitting) and separate the flush head, head body and the piston.



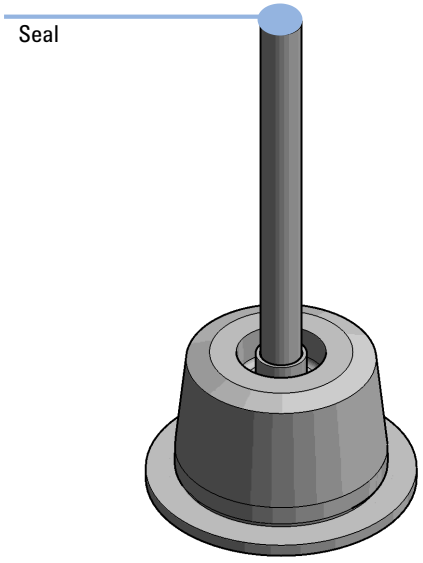
NOTE

Be careful not to break the piston.

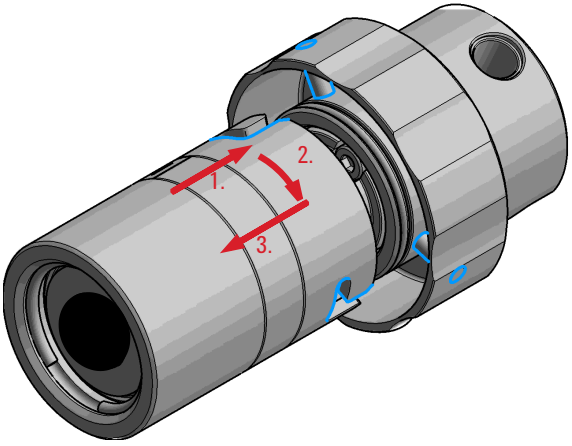
7 Remove the piston from the head body.



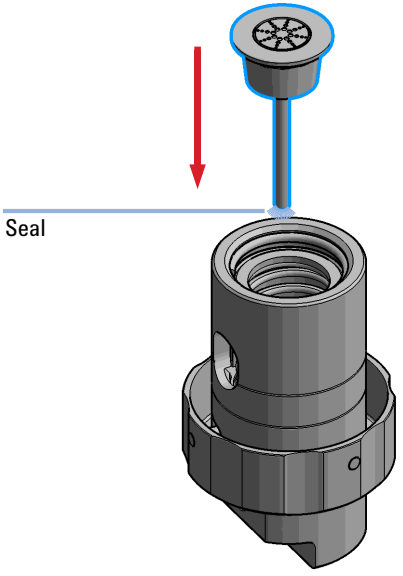
8 Carefully remove the metering seal from the tip of the piston.



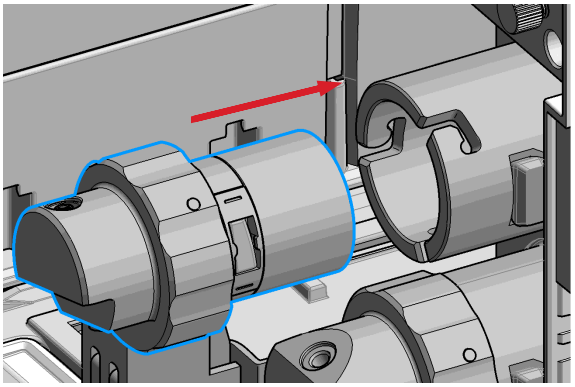
9 Reassemble the flush head and the head body (without piston).



10 Carefully insert the piston with the new metering seal into the flush head assembly.



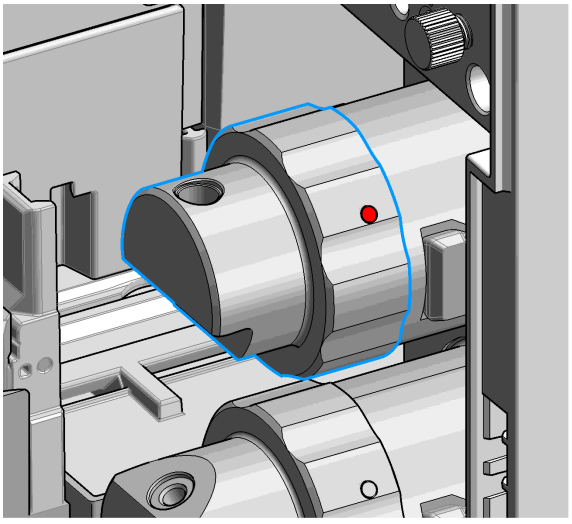
11 Reinstall the flush head to the actuator housing.



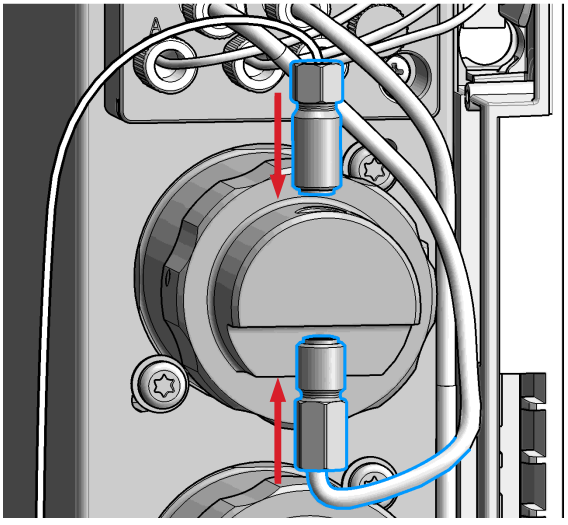
NOTE

For proper installation, check the correct position of the tag.

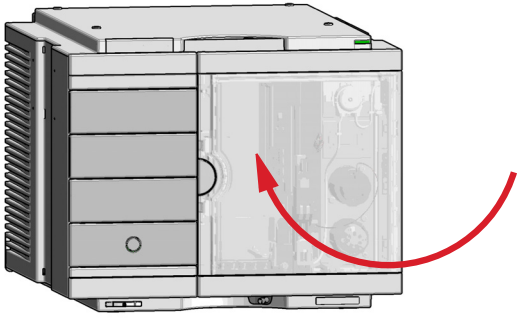
12 Fix the flush head.



13 Connect the capillaries.



14 Close the front door.



Remove the Sample Loop-Flex

For bio-inert modules use bio-inert parts only!

When

If the sample loop flex is defective or damaged.

Tools required

p/n	Description
8710-0510	Wrench open 1/4 — 5/16 inch

Parts required

p/n	Description
G4267-60300	Sample Loop Flex 20 µL, right (red coded)
G4267-60400	Sample Loop Flex 40 µL, right (green coded)
G4267-60500	Sample Loop Flex 100 µL, right (blue coded)
G7167-68500	Sample Loop Cartridge 500 µL right
G7167-68900	Sample Loop Cartridge 900 µL right
G5668-60500	Bio-inert Sample Loop 100 µL (for G5668A)

Further sample loops for the Dual Needle option are available, see "Sample Loops and Capillaries (Dual Needle)" on page 294.

Preparations

Finish any pending acquisition job and return any plate on the workspace back to the hotel.

WARNING

Risk of injury by uncovered needle

An uncovered needle is a risk of harm to the operator.

➔ Do not open the safety lock of the needle assembly

➔ Be careful working at the z-robot.

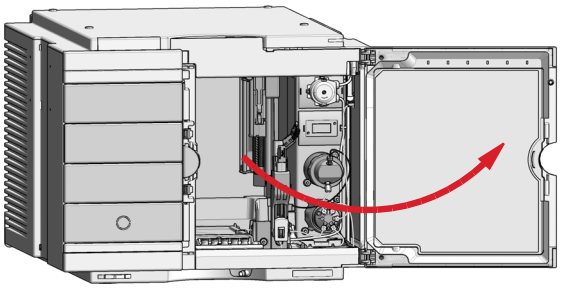
➔ Wear safety goggles, when removing the needle assembly.

1 In the Local Controller start the maintenance mode and select **Change needle/seat** function.

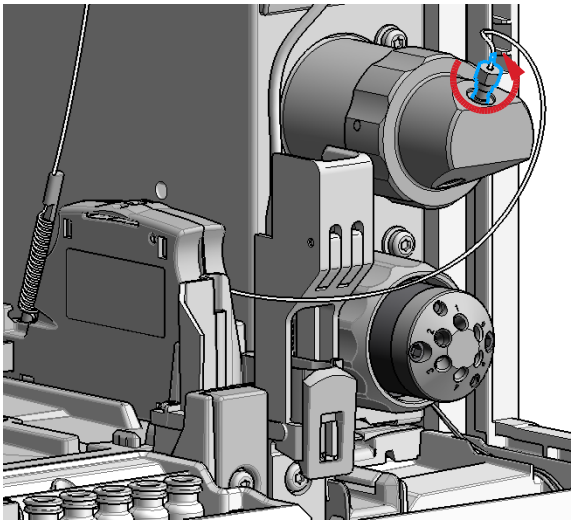
OR

In the Agilent Lab Advisor software select **Service & Diagnostics** in the system screen (**Tools**) **Maintenance Positions > Change Needle/Loop**, click **Start** and wait until the needle assembly is in maintenance position.

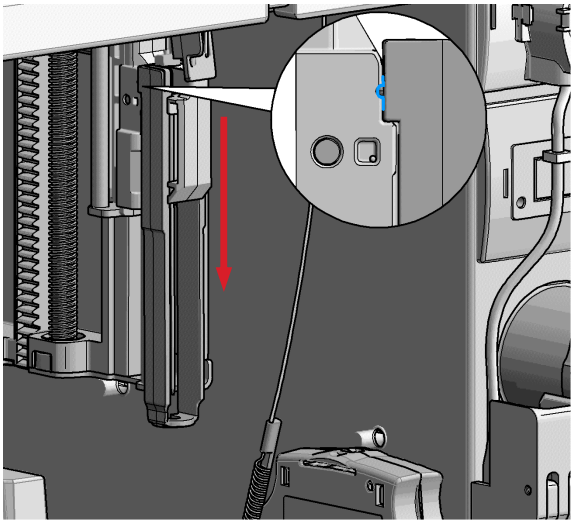
2 Open the front door.



3 The needle assembly is still connected to the loop capillary. Use a 1/4 inch wrench to loosen the fitting of the loop capillary connected to the analytical head.



4 Lock the needle in the safety position.



NOTE

During normal operation of the Multisampler the needle assembly has to be unlocked.

CAUTION

Damage of the loop
The loop shape may be damaged if the loop is stretched or bent too far.

➔ **Avoid to change the loop shape.**

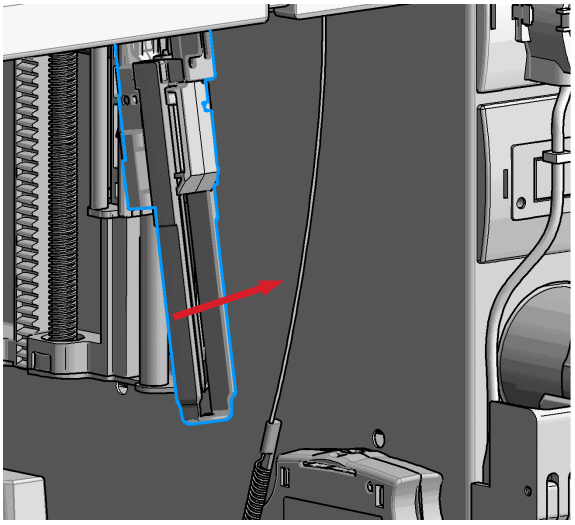
➔ **Do not pull or bend the loop too far.**

WARNING

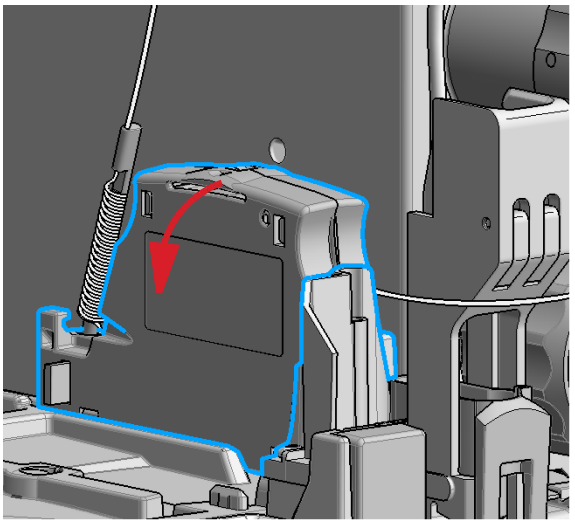
Sharp needle
Uncovered needles may cause injuries

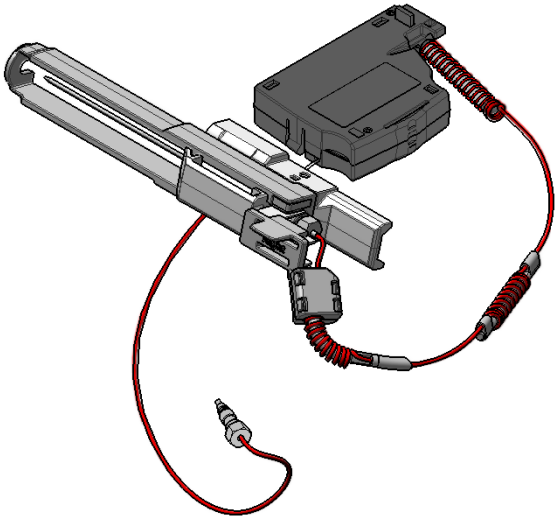
➔ **Make sure the needle is in the safety lock position.**

5 Remove the needle assembly by slightly pulling the needle cartridge.

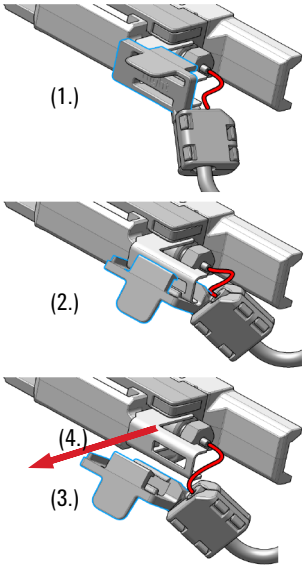


6 Remove the cartridge out of its proper position. By gently tilting and pulling it out of the work space of the multisampler.





7 Remove the loop plastic adapter.



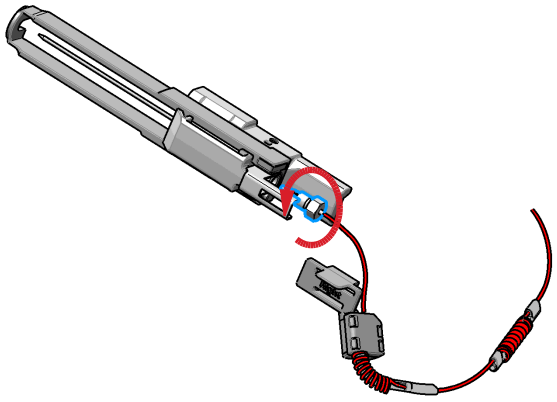
NOTE

Do not open the rear plastic clamp.

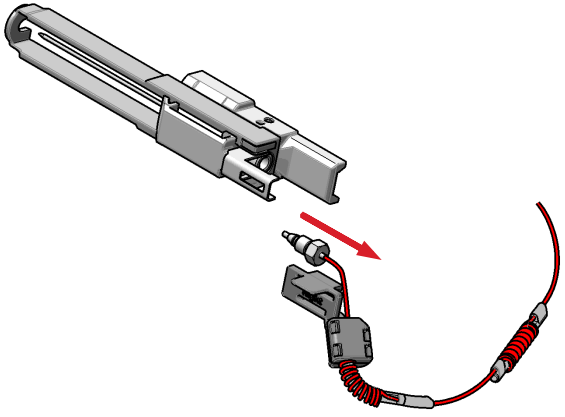
NOTE

If the plastic adapter is damaged the sample loop has to be replaced.

8 Use a 1/4 inch wrench to loosen the fitting of the loop capillary.



9 Remove the needle assembly.



Installing the Sample Loop-Flex

For bio-inert modules use bio-inert parts only!

When

If the sample loop flex is defective or damaged.

Tools required

p/n	Description
8710-0510	Wrench open 1/4 — 5/16 inch

Parts required

p/n	Description
G4267-60300	Sample Loop Flex 20 µL, right (red coded)
G4267-60400	Sample Loop Flex 40 µL, right (green coded)
G4267-60500	Sample Loop Flex 100 µL, right (blue coded)
G7167-68500	Sample Loop Cartridge 500 µL right
G7167-68900	Sample Loop Cartridge 900 µL right
G5668-60500	Bio-inert Sample Loop 100 µL (for G5668A)

Further sample loops for the Dual Needle option are available, see "Sample Loops and Capillaries (Dual Needle)" on page 294.

Preparations

Finish any pending acquisition job and return any plate on the workspace back to the hotel.

WARNING

Risk of injury by uncovered needle

An uncovered needle is a risk of harm to the operator.

➔ Do not open the safety lock of the needle assembly

➔ Be careful working at the z-robot.

➔ Wear safety goggles, when removing the needle assembly.

CAUTION

Mismatching sample loop configuration

Damage to the system

➔ Make sure, that the sample loop configuration matches to the hardware installed.

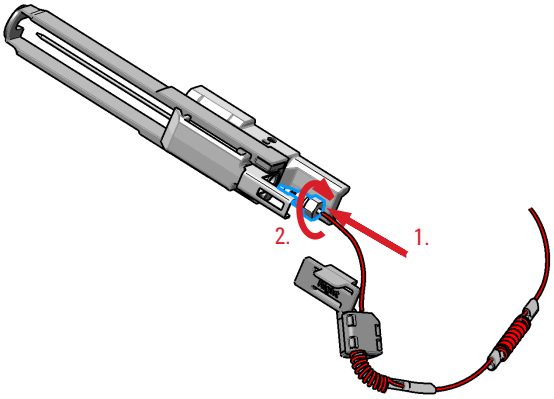
NOTE

If you have changed the sample loop, verify that the correct sample loop is configured in the CDS (see "Setting up the Autosampler with Agilent OpenLab CDS ChemStation Edition" on page 118).

NOTE

For details on the setup of the dual-needle system, see"Modify Capillaries" on page 128.

1 Install the loop capillary on top of the needle cartridge (1.) and tighten the fitting hand tight (2.).



NOTE

If the sample loop is changed, we recommend changing the needle as well.

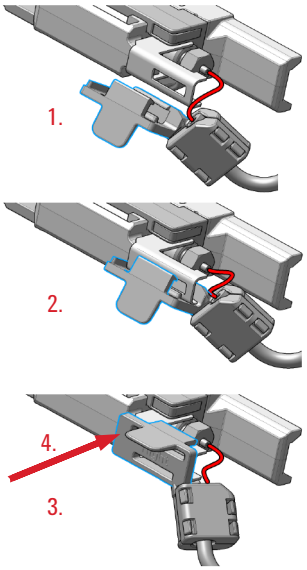
CAUTION

Blockages inside of the needle assembly union

➔ **Do not overtighten the fitting. A quarter turn should be sufficient.**

2 Then use a 1/4 inch wrench to tighten the fitting of the loop capillary.

3 Install loop plastic adapter.



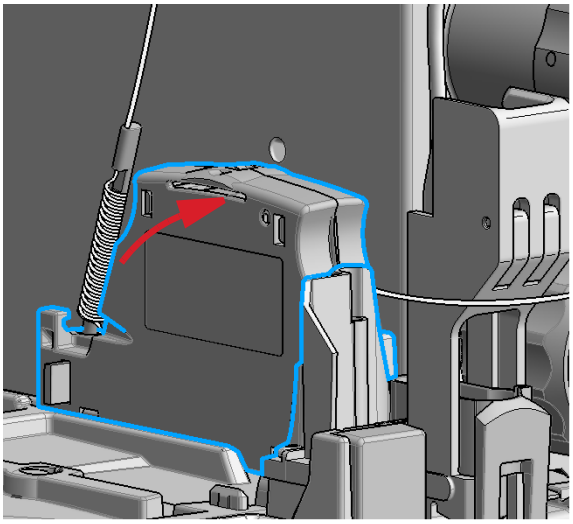
NOTE

Verify the sample loop info on the plastic adapter. A left or a right sample loop must be installed in the correct slot of the needle parkstation. For single needle, the default position is on the right.

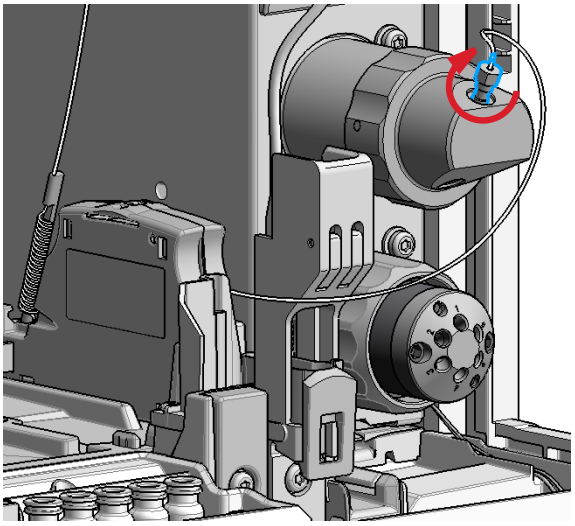
NOTE

If the plastic adapter is damaged the sample loop has to be replaced.

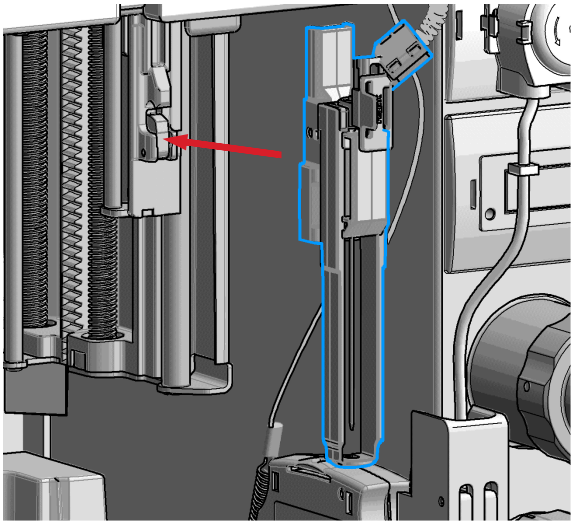
4 Click the sample loop cartridge in the designated location and keep the right orientation.



5 Install the shorter capillary of the sample loop cartridge to the analytical head.



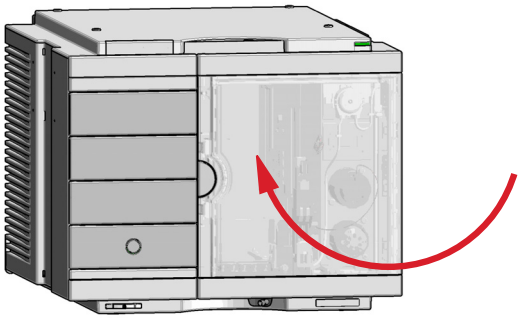
6 Pinch and reinsert the needle assembly and the connected sample loop capillary into the z- arm coupler.



NOTE

Check the tension of the loop capillary. This must be forced and guided to the hydraulic box to prevent it from being caught by the Z-drive.

7 Close the front door.



Next Steps:

8 In the Local Controller close **Change needle /seat**.

OR

In Agilent Lab Advisor software **Change needle/loop**. Click **NEXT** and wait until the needle is in the needle park station.

Click **Back** to leave the Maintenance window.

NOTE

If you need an autoreferencing step included you must choose the change needle procedure

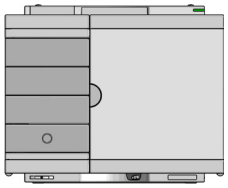
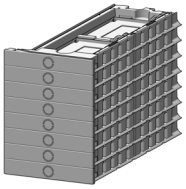
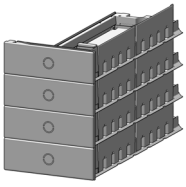
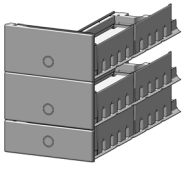
NOTE

If you have changed the sample loop, verify that the correct sample loop is configured in the CDS (see "Setting up the Autosampler with Agilent OpenLab CDS ChemStation Edition" on page 118).

Replace the Dummy Drawer

Optional Configurations

Table 23 Overview on optional configurations (examples for uniform types)

		1H	2H	3H	Dummy-Drawer
	**Delivery Status**	-	G7167-60020 1x	-	G4267-60024 3x
	**Up to 8 single height drawers** 16 positions Shallow wellplates and MTP Max Sample capacity 1536 / 6144 samples (96 Shallow Wellplates / 384 MTP)	G7167-60021 8x	-	-	-
	**Up to 4 Dual Height drawers** 8 positions Vials (2 mL), deep well plates, MTP, Eppendorf Max Sample capacity 432 / 3072 samples (2 mL Vials/ 384 MTP)	-	G7167-60020 4x	-	-
	**Up to 2 Drawers Triple Height** 4 positions (2H or 2*1H option left over) Vials (6 ml), deep well plates, MTP, Eppendorf Max Sample capacity 60 / 216/ 1536 samples (6 mL Vials/ 2 mL Vials/ 384 MTP)	-	G7167-60020 1x	G7167-60022 2x	-

NOTE

Mixed configurations are possible (for example 1x3H- with 1x2H- and 3x1H-drawer).

All positions in the Sample Hotel must be filled either with dummies or drawers. The drawers must be installed from bottom to top.

Installing and Replacing of Drawers (Upgrade Drawer Kit)

Tools required	Description
	Screwdriver

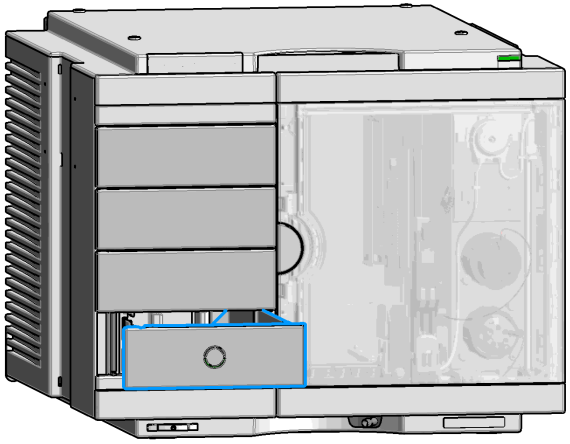
Parts required	p/n	Description
	G7167-60020	Drawer 2H
	G7167-60021	Drawer 1H
	G7167-60022	Drawer 3H

NOTE Before you start the new drawer installation you have to remove the lower drawer (2H drawer = default configuration) from the Sample Hotel.

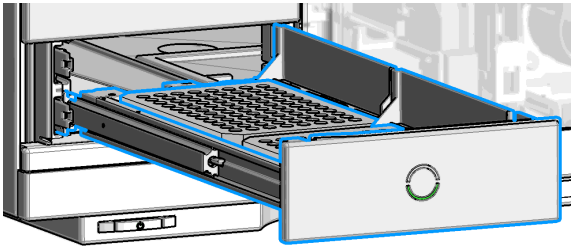
NOTE For best cooling performance the 2H drawer must be installed in the lowest position.

NOTE More detailed video information is available on the Agilent Information CD.

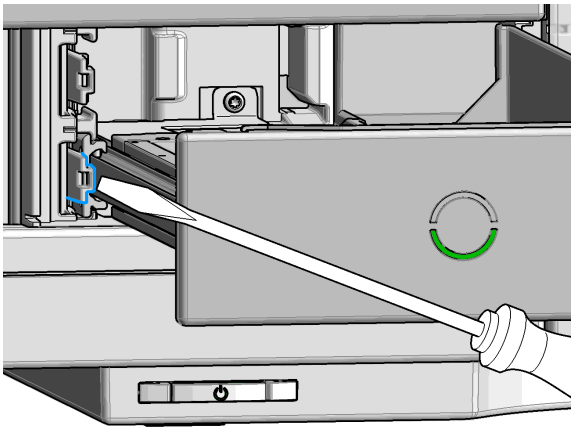
1 Open the drawer.



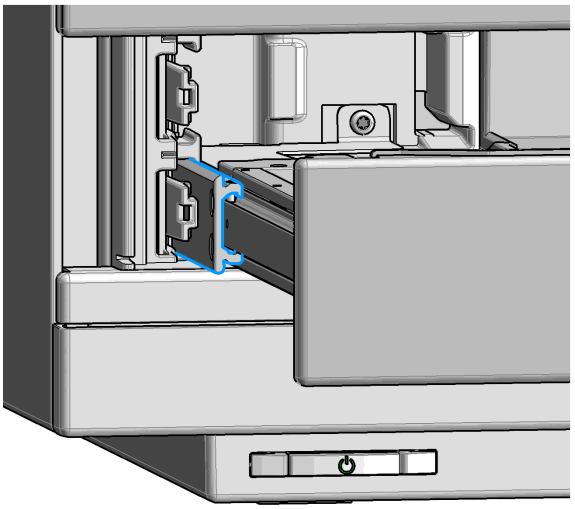
2 Pull the drawer completely out.



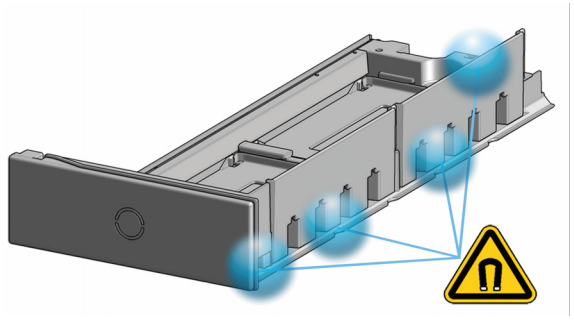
3 Unlatch the drawer: Use a screwdriver to press the clamping lever lightly to the left.



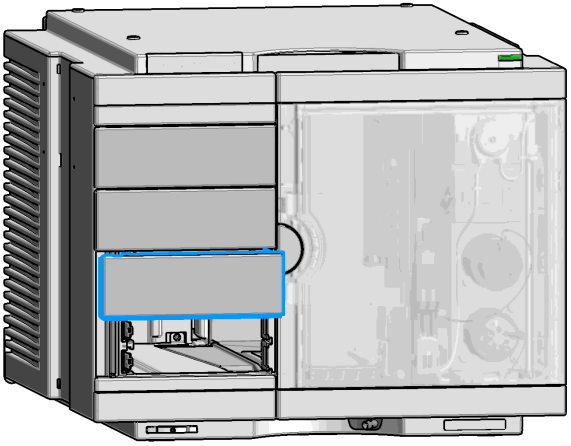
4 Remove the drawer from the rail guide.



The drawer is now out of the hotel.



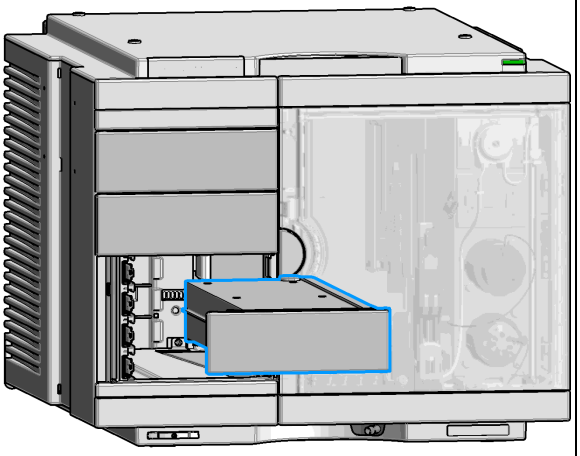
5 Grab in the recession below the dummy drawer front panel (1.) and lift the left side (2.).



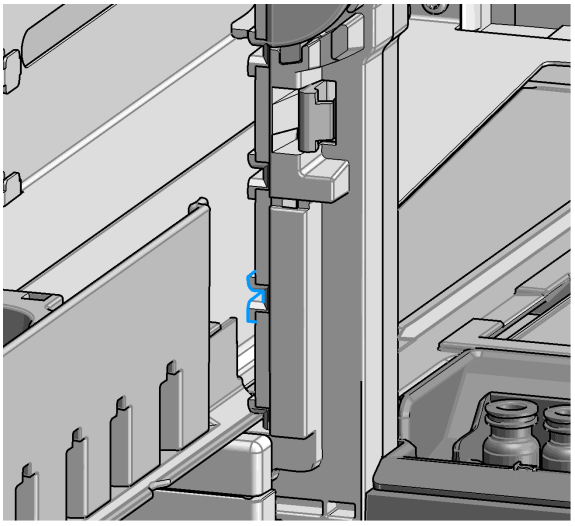
6 Remove the dummy drawer.

NOTE

At this stage remove all other dummies that will be replaced by hotel drawers.



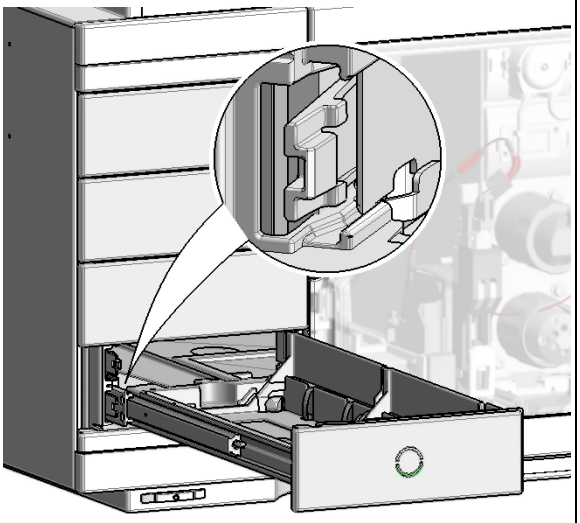
7 Place the new drawer horizontally into the sample hotel. Check that the drawer matches the middle bracket of the sample hotel.



8 Push until the complete drawer locks in place.

NOTE

Take care that the clamping lever locks.



NOTE

Always fill sample hotel completely (no empty drawer slots). Otherwise the drawers can't be configured in the software.

9 Configure the hotel drawers in the controller software (see the Online Help of the software for details).

Configuration of the Hotel Drawers

The configuration of your drawers is necessary to detect the new drawer configuration for your CDS system. When a wrong configuration is detected there will be a mismatch in your CDS system and your are not able to use the new drawers. The new drawer configuration is active and stored after you have done the Drawer Configuration.

Configure the Hotel Drawers in the Control Software

Software required

OpenLAB (A.02.01 or above)

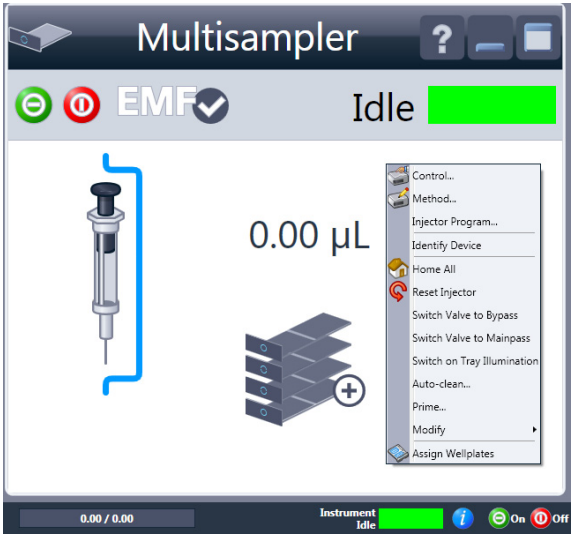
LC driver (A.02.10 or above

Preparations

- Stop the acquisition run.
- Remove the sample containers (trays and well plates) from workspace.
- Complete the drawer installation.
- Remove the sample containers (trays and well plates) from the drawers.
- Verify that all sample trays (palettes) are installed in their drawers.
- All open drawers and dummies have to be closed and installed properly.

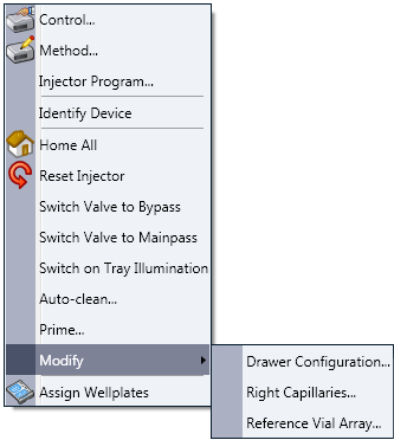
1 Start OpenLAB CDS ChemStation Edition.

2 Right-click on the **Multisampler** GUI.



3 Select **Modify > Drawer Configuration** in the GUI screen.

NOTE For correct detection, it is necessary to remove all sample containers (for example 54 vial tray or well plates).



4 Follow the Setup or Change configuration screen.

5 System is ready after the robot has done Auto Referencing (see "Auto Referencing" on page 182).

Configure the Hotel Drawers in Lab Advisor

Software required Lab Advisor (B.02.05 or above)

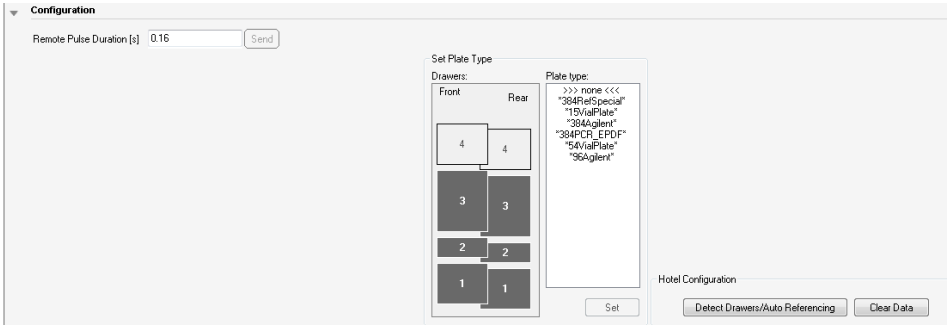
Preparations

- Stop the acquisition run.
- Remove the sample containers (trays and well plates) from workspace.
- Complete the drawer installation.
- Remove the sample containers (trays and well plates) from the drawers.
- Verify that all sample trays (palettes) are installed in their drawers.
- All open drawers and dummies have to be closed and installed properly.

1 Start the Lab Advisor Software.

2 Connect the instrument and select **Instrument Control** in the system screen.

3 Switch In the **Configuration** menu of the Multisampler. Select **Detect Drawers** in the **Hotel Configuration**.



4 Follow the Detect Hotel Configuration screen to detect the physically available drawers.

NOTE For correct detection, it is necessary to remove all sample containers (for example 54 vial tray or well plates).

5 System is ready after the robot has done Auto Referencing (see "Auto Referencing" on page 182).

Remove the Sample Cooler

When	If the cooler is damaged or defective
Tools required	**Description** Screwdriver, Pozidriv #1 PT3
Preparations	• Drain off all condensate before dismounting the sample cooler. • Make sure that there is no condensate left.

WARNING

Heavy weight

The module is heavy.

➔ Carry the module at least with 2 people.

➔ Avoid back strain or injury by following all precautions for lifting heavy objects.

➔ Ensure that the load is as close to your body as possible.

➔ Ensure that you can cope with the weight of your load.

CAUTION

Routing of the condensation tubing

Proper routing of the condensation tubing is critical for correct condensate drainage.

➔ Do not place the sampler directly on the bench.

CAUTION

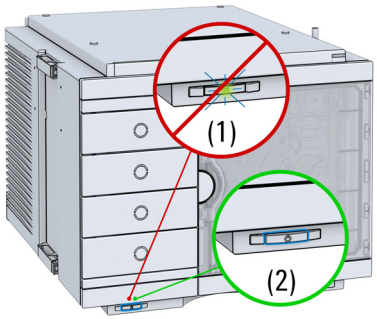
Condensate inside the cooler

Damage to the electronics

➔ Unplug the power cords.

➔ Drain off all condensate before dismounting the sample cooler.

➔ Make sure that there is no condensate left.

1	Next Steps:
 Power switch (1) On (2) Off	**2** Remove the power cable from the module. **3** Open the four screws on cooler cover. **4** Slide the sample cooler the half way out. **5** Remove power and the signal cable. **6** Slide the cooler completely out. **7** Place the sample cooler on the bench.

NOTE

If the sampler with a sample cooler needs to be shipped to another location via carrier, ensure:

- The two modules are shipped in separate boxes.
- The Sample handler of the multisampler is parked properly, see *Park Robot* in *Agilent Lab Advisor* online help for more information.
- The sample containers (vial trays) are removed from the sample hotel.
- The condensed water inside of the sample cooler is removed.

Install the Sample Cooler

When	If the cooler is damaged or defective.	
Tools required	**Description**	
	Screwdriver, Pozidriv #1 PT3	
Parts required	**p/n**	**Description**
	G7167-60005	Sample cooler

CAUTION

Routing of the condensation tubing

Proper routing of the condensation tubing is critical for correct condensate drainage.

➔ Do not place the sampler directly on the bench.

CAUTION

Condensate inside the cooler

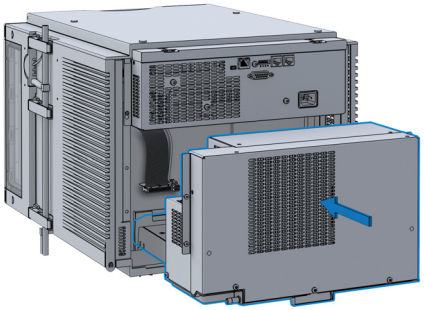
Damage to the electronics

➔ Unplug the power cords.

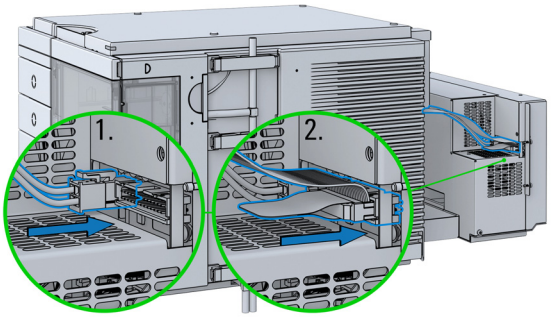
➔ Drain off all condensate before dismounting the sample cooler.

➔ Make sure that there is no condensate left.

1 Slide in halfway



2



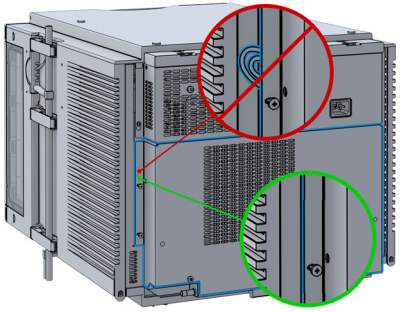
CAUTION

Damage to the cables

➔ **Do not bend or pinch the cables.**

➔ **Fit in the cooler perfectly.**

3



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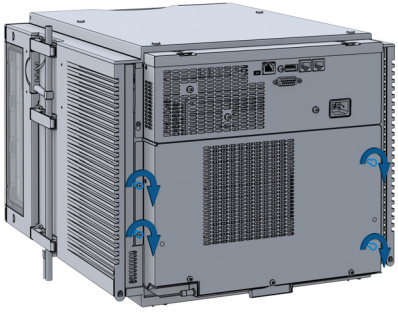
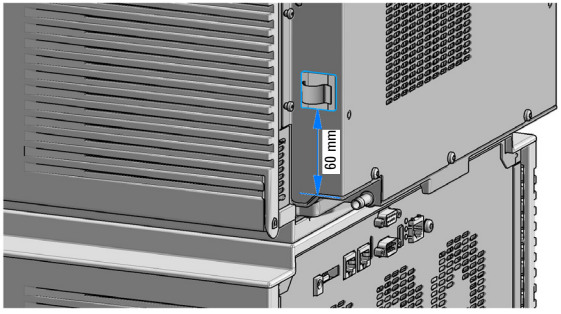


5



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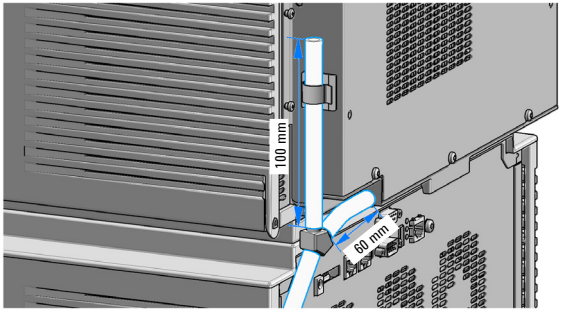
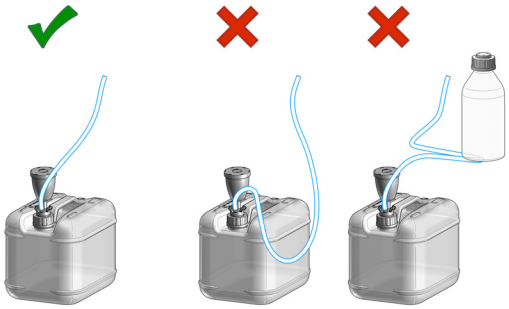


7



NOTE

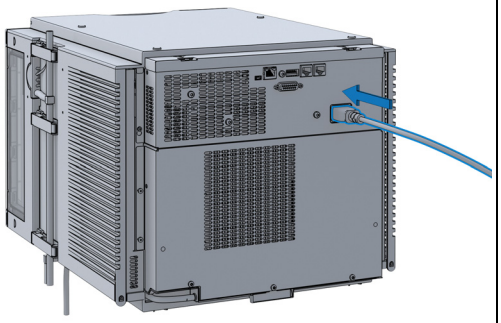
Check leak waste handling for further info.

CAUTION

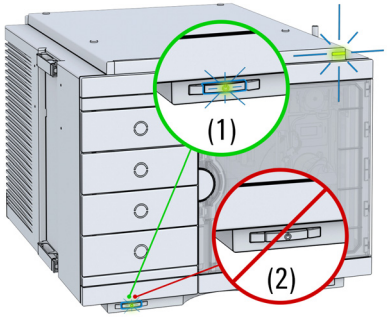
Damage to the sample cooler

→ **Wait at least 30 min before switching on the compressor of the sample cooler.**

8



9



Power switch

(1) On

(2) Off

Replace the Module Firmware

When

The installation of newer firmware might be necessary
- if a newer version solves problems of older versions or
- to keep all systems on the same (validated) revision.

The installation of older firmware might be necessary
- to keep all systems on the same (validated) revision or
- if a new module with newer firmware is added to a system or
- if third party control software requires a special version.

Tools required

Description
Agilent Lab Advisor software

Parts required

#	Description
1	Firmware, tools and documentation from Agilent web site

Preparations

Read update documentation provided with the Firmware Update Tool.

To upgrade/downgrade the module's firmware carry out the following steps:

1 Download the required module firmware, the latest FW Update Tool and the documentation from the Agilent web.
http://www.agilent.com/en-us/firmwareDownload?whid=69761

2 For loading the firmware into the module follow the instructions in the documentation.

Module Specific Information

There is no specific information for this module.

10
Parts for Maintenance and Upgrade or Options

This chapter provides information on parts material required for the module.

Standard Parts

Standard Parts

p/n	Description
G4267-87201	Needle Assembly
G4267-87210	Needle Assembly (slotted) for high injection volumes
G4267-87012	High Pressure Needle Seat, 0.12 mm (PEEK)
5068-0198	Rotor Seal 1300 bar (PEEK) for 1290 Infinity II Injection Valve (Single Needle)
5068-0209	Rotor Seal (PEEK) for 1260 Infinity II Injection Valve (Single Needle)
5068-0232	Rotor Seal (PEEK) for Dual needle Injection Valve
5068-0229	Rotor Seal (PEEK) for Dual needle Peripheral Valve
G4267-60300	Sample Loop Flex 20 µL, right (red coded)
G4267-60400	Sample Loop Flex 40 µL, right (green coded)
G4267-60500	Sample Loop Flex 100 µL, right (blue coded)
G7167-68500	Sample Loop Cartridge 500 µL right
G7167-68900	Sample Loop Cartridge 900 µL right
G7167-60300	Extension Sample Loop-Flex 500 – 900 µL Right Single Needle
G4267-40033	Transport-Protection

Standard Parts Bio-Inert

For bio-inert modules use bio-inert parts only!

p/n	Description
G5668-87200	Needle Bio-Sampler (G5668A)
5068-0099	Rotor Seal (PEEK) (G5668A)
G5668-87017	Bio Seat ID 0.17 (G5668A)
G5668-60500	Bio-inert Sample Loop 100 µL

Hotel Drawer

Item	p/n	Description
1	G7167-60021	Drawer 1H (including 2*G4267-60206 Sample Tray (Palette))[1]
2	G7167-60020	Drawer 2H (including 2*G4267-60205 Sample Tray (Palette))[1]
3	G7167-60022	Drawer 3H 2 p/k (including 2*G4267-60205 Sample Tray (Palette))[1]
	G4267-60024	Dummy Drawer (not shown)

[1] Note: This partnumber should only be used for repairs. For increasing the capacity in the Sample Hotel please order a pair of drawers via ELSA http://wadnts02.germany.agilent.com/csc/tools/web_elsa/elsa.htm.

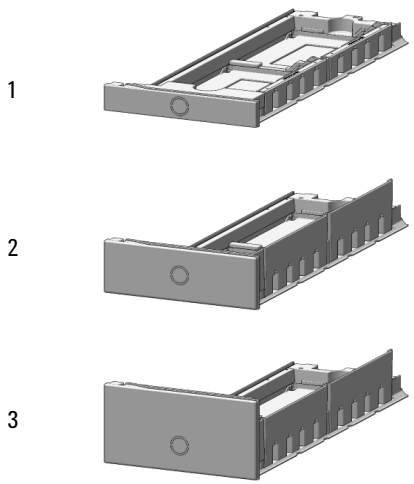


Figure 48 Hotel drawer

Analytical Head Assembly 40 µL

Item	p/n	Description
	G4267-60042	Analytical Head, 40 µL
1	G4267-60423	Head Assembly, 40 µL
2	0905-1717	Metering seal 40 µL
	G4267-60422	Seal Support Assembly, 40 µL
4	0515-4384	Screw
5	G4267-60432	Spring Adapter Assembly
6	5067-5620	Piston ceramic 40 µL
	5043-1000	O-Ring (not shown)
	5500-1159	Capillary ST 0.17 mmx100 mm SX/S-2.3 Capillary from the metering device to the injection valve (not shown)

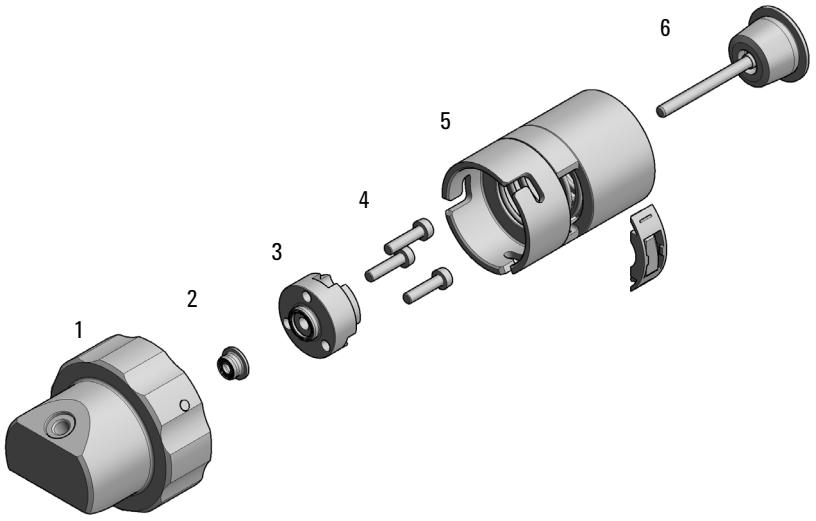


Figure 49 Analytical head assembly, 40 µL

Analytical Head Assembly 100 µL

Item	p/n	Description
	G4267-60043	Analytical Head, 100 µL for G7167A, G7167B
1	G4267-60433	Head Assembly, 100 µL
2	0905-1719	PE Seal
	G4267-60434	Seal Support Assembly, 100 µL
4	0515-1052	Screw 2.5 mm hex
5	G4267-60432	Spring Adapter Assembly
6	5067-5678	Piston ceramic 100 µL
	5043-1000	O-Ring (not shown)
	5500-1159	Capillary ST 0.17 mmx100 mm SX/S-2.3 Capillary from the metering device to the injection valve (not shown)

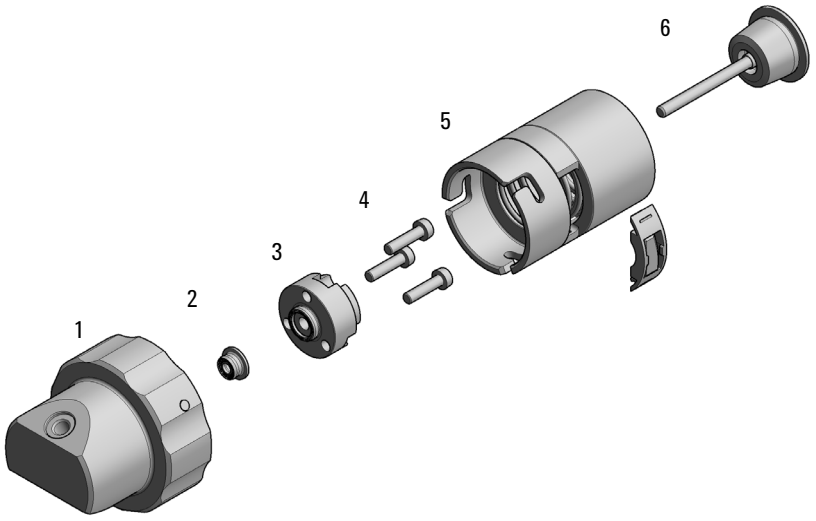


Figure 50 Analytical head assembly, 100 µL

Bio Analytical Head Assembly (100 µL) (1200 bar)

For bio-inert modules use bio-inert parts only!

Item	p/n	Description
	G5668-60043	Bio Analytical Head 100 µL for G5668A
	G5668-60433	BIO Analytical Head 100 µL
	G5611-21503	Piston Seal PTFE (Bio-inert)
	G4267-60434	Seal Support Assembly, 100 µL
4	0515-1052	Screw 2.5 mm hex
5	G4267-60432	Spring Adapter Assembly
6	5067-5678	Piston ceramic 100 µL

Capillary from the metering device to the injection valve (not shown)

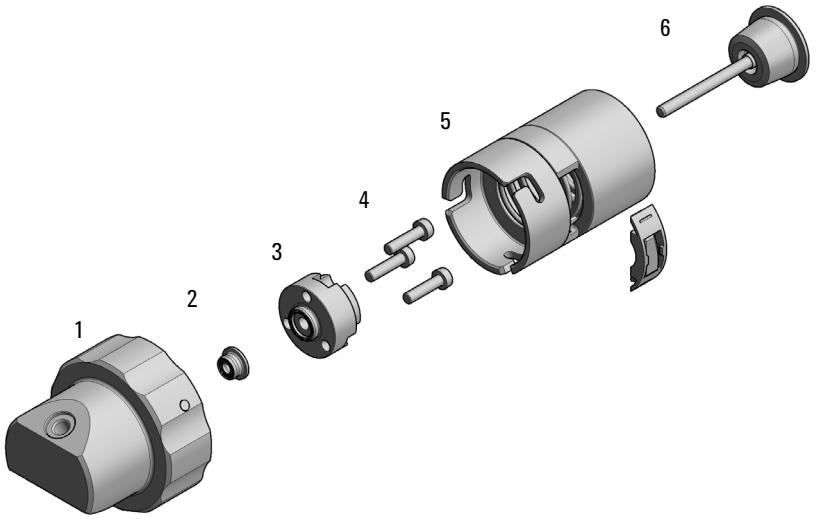
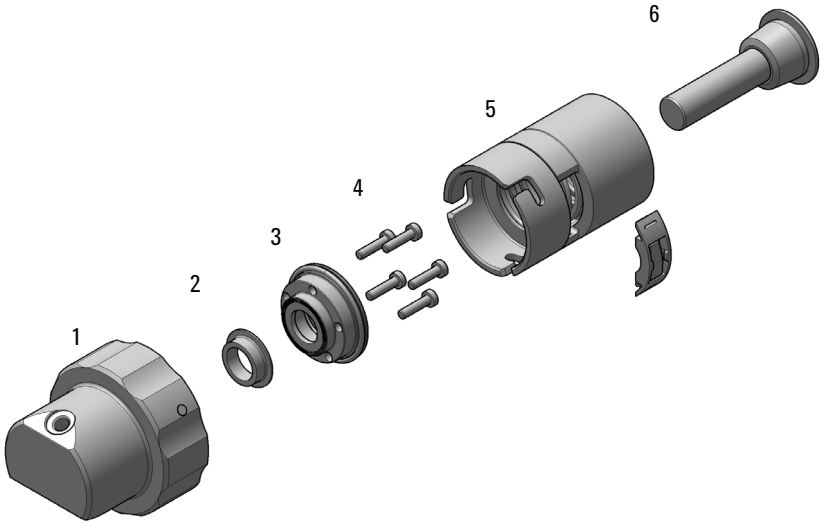


Figure 51 Analytical head assembly, 100 µL

Analytical Head Assembly 900 µL

Item	p/n	Description
	G4267-60046	Analytical head, 900 µL, 400 bar
1	G4267-60461	Head Assembly, 900 µL
2	0905-1294	Metering seal, 900 µL
3	G4267-60463	Seal Support Assembly, 900 µL
4	SCREW-SKT	SCREW-SKT HD CAP M2.5 X 0.45 10MM LG (not available)
5	G4267-60432	Spring Adapter Assembly
6	G4267-60462	Piston Assembly, 900 µL
	5043-1000	O-Ring (not shown)
	5500-1159	Capillary ST 0.17 mmx100 mm SX/S-2.3 Capillary from the metering device to the injection valve (not shown)


6
5
4
3
2
1

Flush Head Assembly 500 µL

Item	p/n	Description
	G4267-60049	Flush head, 500 µL
1	G4267-60491	Flush Head Assembly, 500 µL
2	5023-2473	Sealing Plate 500 µL
3	G4267-60482	Cylinder Assembly, 500 µL
4	5067-5918	Seal 500 µL
5	0515-5167	Screw
6	1410-1881	Bearing-Sleeve 8 mm-ID 10 mm-OD 10 mm-LG PI
7	G4267-60432	Spring Adapter Assembly
8	5067-5919	Piston Assembly 500 µL
9	G4267-60451	Pump Valve IN
10	G4267-60452	Pump Valve Out
	5043-1000	O-Ring (not shown)
	5500-1167	Capillary ST 0.17 mm x 250 mm SL-SL Capillary from the flush head to the injection valve (not shown)

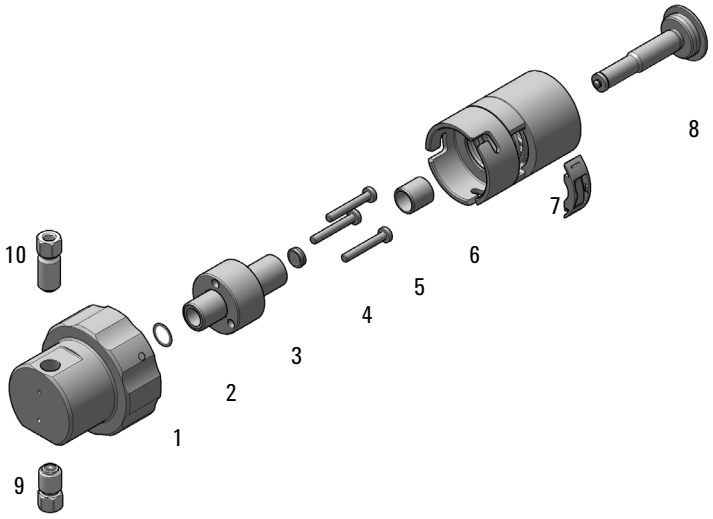


Figure 52 Flush head assembly, 500 µL

Bio Flush Head Assembly 500 µl

For bio-inert modules use bio-inert parts only!

Item	p/n	Description
	G5668-60049	Flush Head Bio 500 µL
1	G5668-60491	Flush Head Bio Assembly, 500 µL
2	5023-2473	Sealing Plate 500 µL
3	G4267-60482	Cylinder Assembly, 500 µL
4	G5668-60494	Seal 500 µL Bio
5	0515-5167	Screw
6	1410-1881	Bearing-Sleeve 8 mm-ID 10 mm-OD 10 mm-LG PI
7	G4267-60432	Spring Adapter Assembly
8	5067-5919	Piston Assembly 500 µL
9	G5668-60492	Pump Valve IN
10	G5668-60493	Pump Valve Out

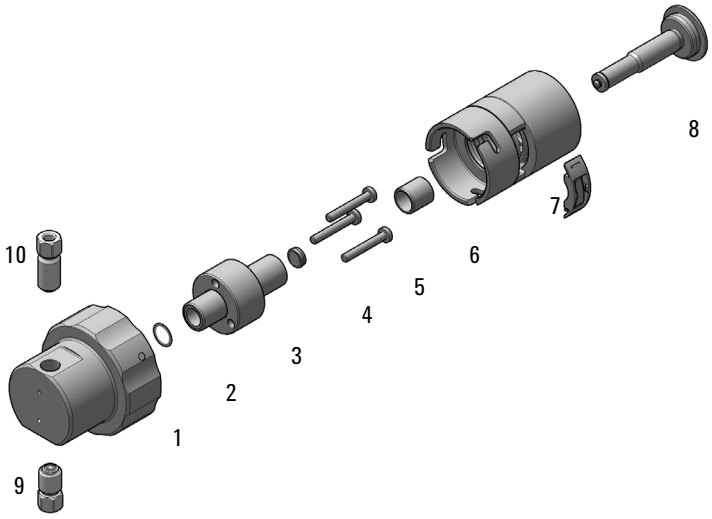


Figure 53 Flush head assembly, 500 µL

2ps 6pt Injection Valve VICI

Item	p/n	Description
	5067-4232	2pos/6port Injection Valve (VICI) 1300 bar 1300 bar (G7167B)
1	5068-0210	Stator screws
2	5068-0197	Stator head
3	5068-0198	Rotor Seal 1300 bar (PEEK)
	5500-1159	Capillary ST 0.17x100 SX/S-2.3 Metering Device to Injection Valve
	5067-4650	Capillary ST 0.12 mm x 150 mm SL/SX Pump to sampler
	5500-1157	Capillary ST, 0.12 mm x 500 mm SL/S Sampler to column compartment
	5067-6127	Blank Nut SL

NOTE For the VICI Valve SL/SX fittings are mandatory.

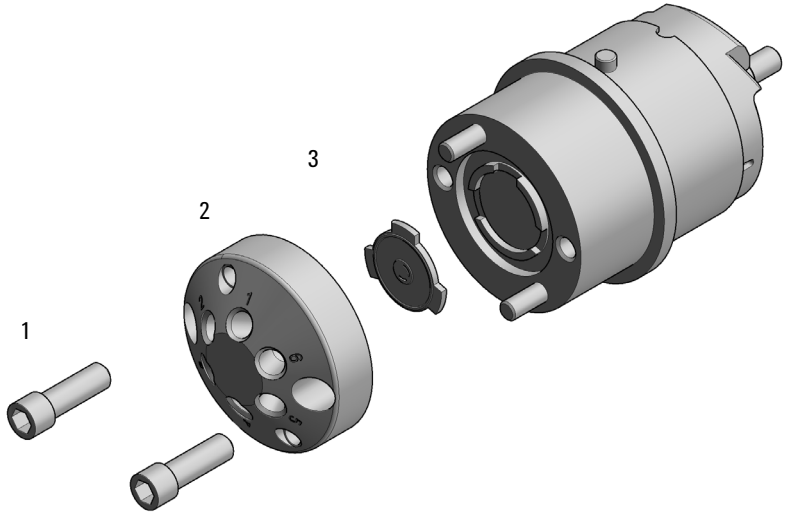


Figure 54 Injection valve assembly (VICI)

2ps 6pt Injection Valve IDEX

Item	p/n	Description
	5067-6698	2ps-6pt RC Injection Valve
1	1535-4857	Stator screws
2	5068-0208	Stator head
3	5068-0120	Stator ring
4	5068-0209	Rotor Seal (PEEK)
5	1535-4045	Bearing ring

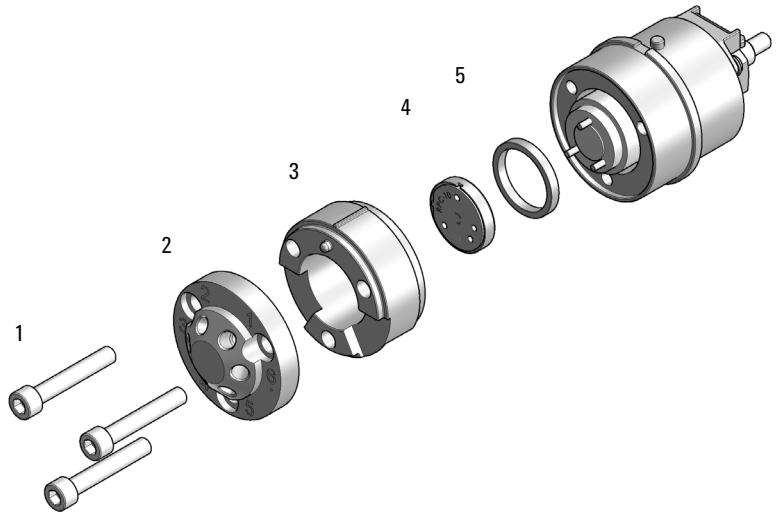


Figure 55 Injection valve assembly (IDEX)

2ps 6pt Injection Valve Bio-inert IDEX

For bio-inert modules use bio-inert parts only!

p/n	Description
5067-4263	2pos/6port Injection Valve Bio-inert 600 bar (G5668A)
1535-4857	Stator screws
5068-0060	Bio-inert stator head
0100-1851	Stator face, ceramic
5068-0120	Stator ring
5068-0099	Rotor Seal (PEEK)
1535-4045	Bearing ring

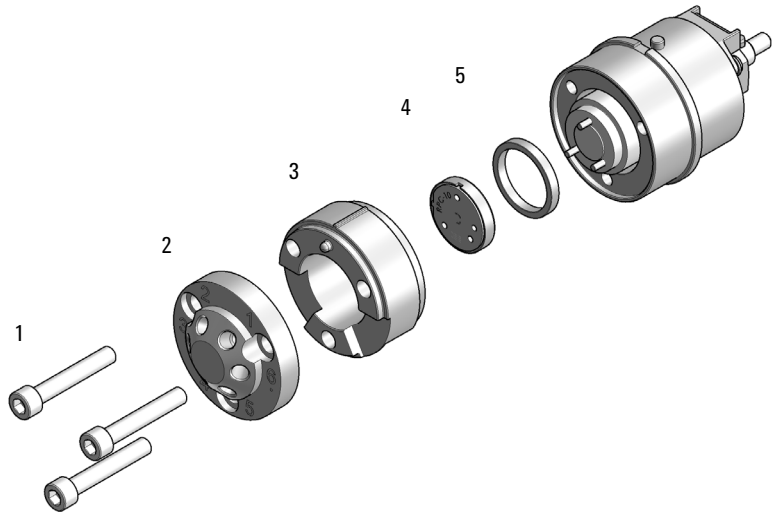


Figure 56 Injection valve assembly (IDEX)

Injection Valve with Actuator

Item		p/n	Description
	1	5067-4232	2pos/6port Injection Valve (VICI) 1300 bar (G7167B)
OR		5067-6698	2ps-6pt RC Injection Valve
	2	5043-0291	Lock Nut
	3	5188-8030	Tag Reader
	4	5067-4162	Direct-Actuator-50 Assembly

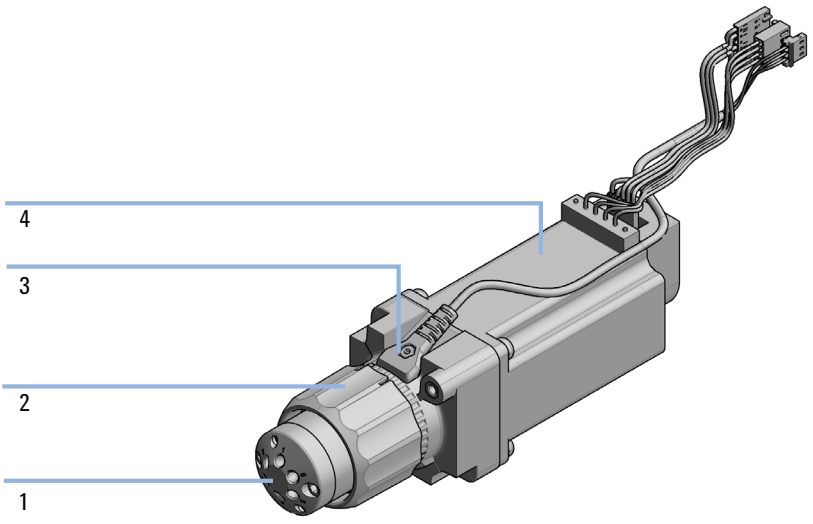


Figure 57 Injection valve with actuator

Sample Loops and Capillaries (Dual Needle)

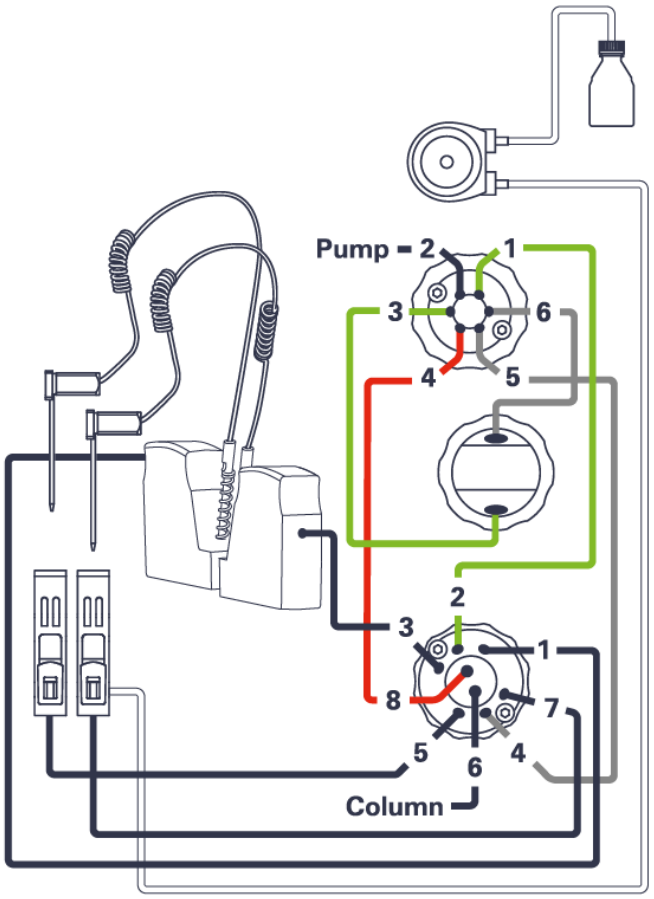


Figure 58 Capillary connections (Dual Needle Option)

NOTE Important for precision and avoiding of retention time shifts: only these sample loops must be used for the dual needle option.

NOTE It is mandatory that the configuration of the dual needle system, especially sample loops, must match to the installed hardware to avoid damage to the system.

Dual needle Sample Loops right

p/n	Description
G4267-60311	Sample Loop 20 µL right Dual needle
G4267-60411	Sample Loop 40 µL right Dual needle
G4267-60511	Sample Loop 100 µL right Dual needle
G7167-68511	Sample Loop 500 µL right Dual needle
G7167-68911	Sample Loop 900 µL right Dual needle
G7167-60300	Extension Sample Loop-Flex 500 – 900 µL Right Single Needle
G7167-60311	Extension Sample Loop-Flex 500 – 900 µL Right Dual Needle

Dual needle Sample Loops left

p/n	Description
G4267-60301	Sample loop 20 µL left Dual needle
G4267-60401	Sample loop 40 µL left Dual needle
G4267-60501	Sample loop 100 µL left Dual needle
G7167-68501	Sample Loop 500 µL left Dual needle
G7167-68901	Sample Loop 900 µL left Dual needle
G7167-60301	Extension Sample Loop-Flex 500 – 900 µL Left Dual Needle

Capillaries for the Dual Needle Option

p/n	Description
5500-1225	Capillary ST 0.12 mm x 180 mm SL-SL Port 4 Peripheral Valve/Port 8 Injection Valve
5500-1226	Capillary ST 0.17 mm x 180 mm SL-SL Port 2 Injection Valve/ Port 1 Peripheral Valve
5500-1227	Capillary ST 0.17 mm x 150 mm SL-SL Port 3 Peripheral Valve/Metering Device bottom
5500-1228	Capillary ST 0.3 mm x 80 mm SL-SL Metering Device Top/Port 6 Peripheral Valve
5500-1229	Capillary ST 0.3 mm x 180 mm SL-SL Port 4 Injection Valve/Port 5 Peripheral Valve
5500-1238	Capillary ST 0.12 mm x 105 mm SL/SL

3Pos/6Port Peripheral Valve Dual Needle

p/n	Description
5067-4256	3pos/6port Peripheral Valve DN 1300 bar
5068-0229	Rotor Seal (PEEK)
5068-0197	Stator head

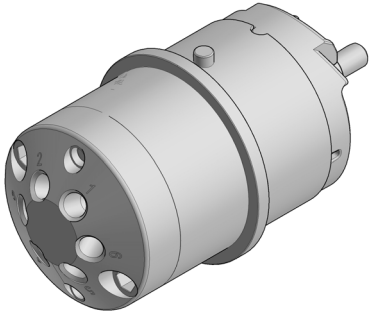


Figure 59 Peripheral valve (dual needle)

2Pos/8Port Injection Valve Dual Needle

Item	p/n	Description
	5067-4260	2pos/8port Injection Valve Dual Needle 1300 bar
1	5068-0231	Stator
2	5068-0232	Rotor Seal (PEEK)

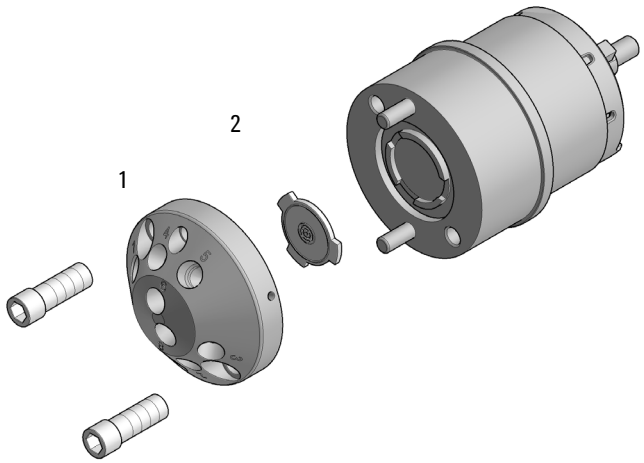


Figure 60 Injection valve (dual needle)

Needle Port Assembly

Item	p/n	Description
1	G4267-60044	Needle Port Assembly Station
2	G4267-40045	Needle port Adapter

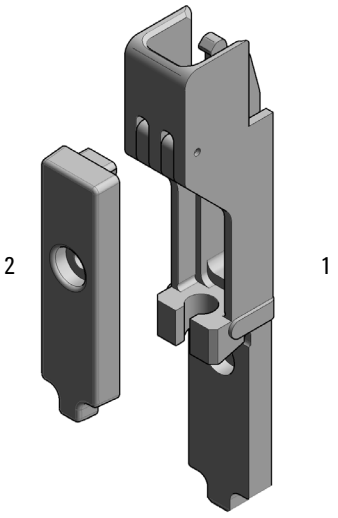


Figure 61 Needle port assembly

Door Assy

Item	#	p/n	Description
	1	5067-5415	Door Assy
1	1	5021-1879	Permanent Magnet
2	1		Pressure Spring (not available)
3	2	5067-5412	Hinge Universal
	1	G7167-68718	Light Protection Kit (not shown)

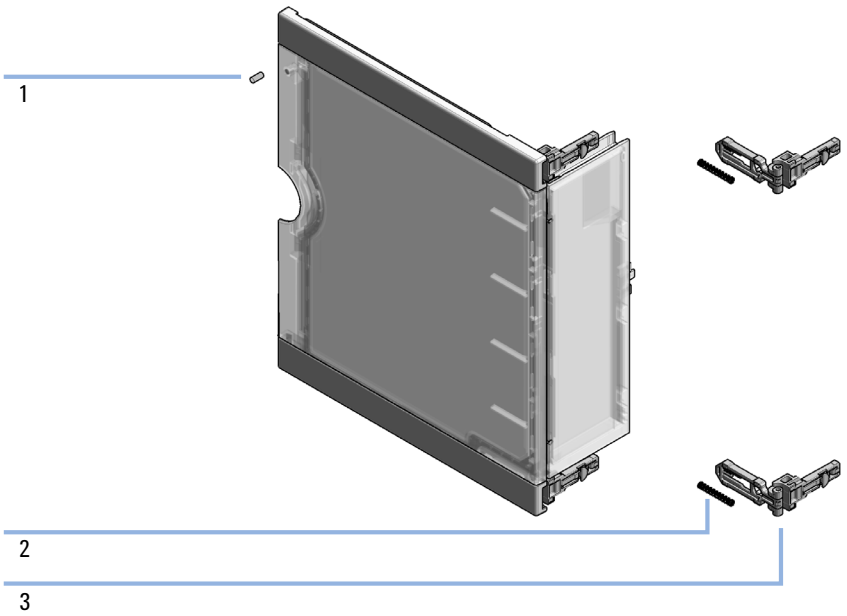


Figure 62 Door assy

Accessory Kit

Item	p/n	Description
	G4267-68705	Accessory Kit
	G7167-68715	Accessory Kit
1	G4220-60007	Bottle Head Assembly (not included in the accessory kit)
2	5063-6527	Tubing assembly, i.d. 6 mm, o.d. 9 mm, 1.2 m (to waste)
3	5500-1157	Capillary ST, 0.12 mm x 500 mm SL/S (1290 module)
OR	5500-1246	Capillary ST 0.17 mm x 500 mm SI/SI (1260 module)
4	5043-1013	Tubing Clip
5	5181-1519	CAN cable, Agilent module to module, 1 m
	5067-5967	Tubing Clip Tube Connector

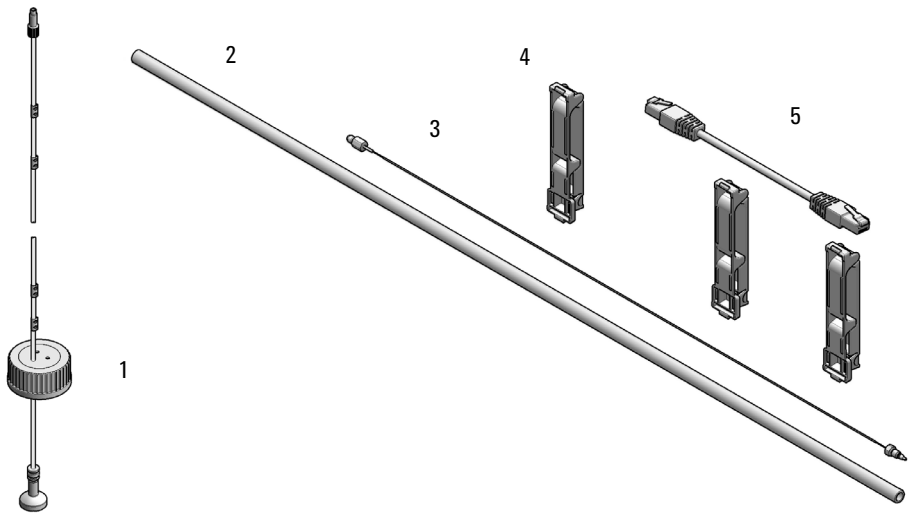


Figure 63 Accessory kit (standard)

Tools

Item	p/n	Description
1	0100-1710	Mounting Tool for Tubing Connections
2	5023-2533	Mounting tool

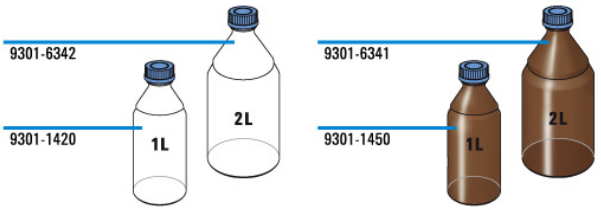
Tubing Connector Leak Kit (5067-6137)

p/n	Description
5067-6137	Tubing Connector Leak Kit

Figure 64 Tubing connector Leak Kit

Bottles

p/n	Description
9301-1420	Solvent bottle, transparent
9301-1421	Solvent Reservoir 1 L with cap
9301-6342	Solvent bottle, clear 2 L
9301-6341	Solvent bottle, amber 2 L



Tubing Kit Sampler Standard

Item	p/n	Description
	G4267-60061	Tubing-Kit-Sampler-Standard contains:
1	5042-9974	Tubing Flex (1.5 m)
2	5500-1155	Tube Connector, 90 degree, ID 6.4
3	0890-1760	Tubing Flexible 1 ea / 1 meter
4	5042-6422	Tubing connector, 1 mm o.d.
5	0100-1708	Nut 1/8 PPS
6	0100-1700	FERRULE-AY-18IN
7	0100-1846	UNION-TEFZEL
	5067-5967	Tubing Clip Tube Connector

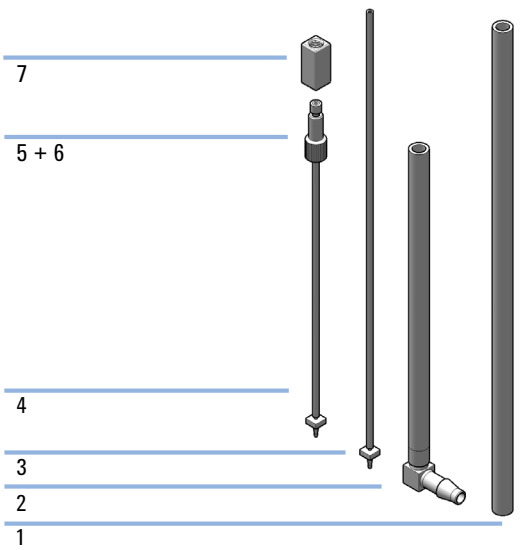


Figure 65 Tubing kit sampler standard

Tubing Kit Sampler Multi-Wash

Item	p/n	Description
	G4267-60081	Tubing-Kit-Sampler-Multi-Wash Contains:
1		Flex-Tubing
2		Flex-Tubing with tube connector 90 °
3		FEP Tubing OD 0.0625 with Ferrule/Nut for washport
4		FEP Tubing OD 0.0625 with Ferrule/Nut for flushpump

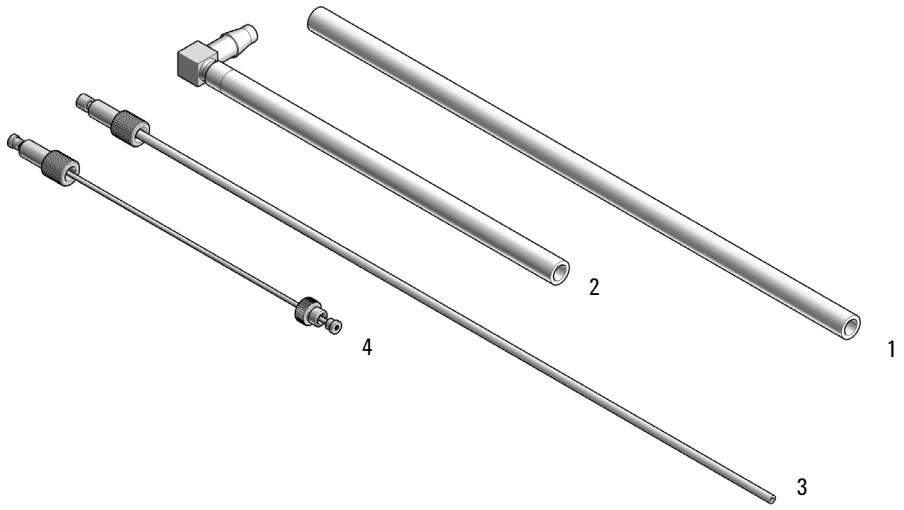


Figure 66 Tubing kit sampler multi-wash

Multi Draw Kit

NOTE At the moment, multidraw is only possible with the Standard Multisampler.

Item	p/n	Description
	G7167-68711	Multidraw kit Contains:
1	0100-0900	Union
2	G7167-87307	Seat capillary, 500 µL, 0.5 mm id
3	G7167-87308	Seat capillary, 1500 µL, 0.9 mm id
	G7167-68500	Sample Loop Cartridge 500 µL right [1]
	G7167-68900	Sample Loop Cartridge 900 µL right [1]
	G7167-60300	Extension Sample Loop-Flex 500 – 900 µL Right Single Needle

[1] Upgrade kit only usable with 900 µL analytical head for Single Needle

NOTE Sample Loop Cartridges are not part of the multidraw kit.

NOTE If you want to use this upgrade kit in a single needle system, you have to install a 900 µL analytical head for single needle as well.

Bio-Inert Multi-Draw Kit

Multidraw upgrade kit (Bio-inert) (G5667-68711) contains:

For bio-inert modules use bio-inert parts only!

p/n	Description
5067-4741	ZDV union (Bio-inert)
0101-1234	Sample loop 2 mL
0101-1236	Sample loop 500 µL

Upgrade Kits

p/n	Description
G4757A	Multi-wash upgrade kit
G4758A	G71767A Dual-needle upgrade kit
G4759A	G71767B Dual-needle upgrade kit

NOTE

For instructions on how to install the Upgrade Kits, please refer to the respective Installation Notes:

- Agilent Infinity II Series Multi-wash Upgrade Kit Installation Note (G7167-90210)
- Dual-Needle Infinity II Upgrade Kit Installation Note (G7167-90220)

Leak System Parts

Item	p/n	Description
	G4267-68708	Drain management contains:
1	G4267-40013	Leak Plane
2		Ref Vial Holder (not orderable as one part)
3		Wash Port Assembly (not orderable as one part)
	G4267-60060	Blind seat not shown

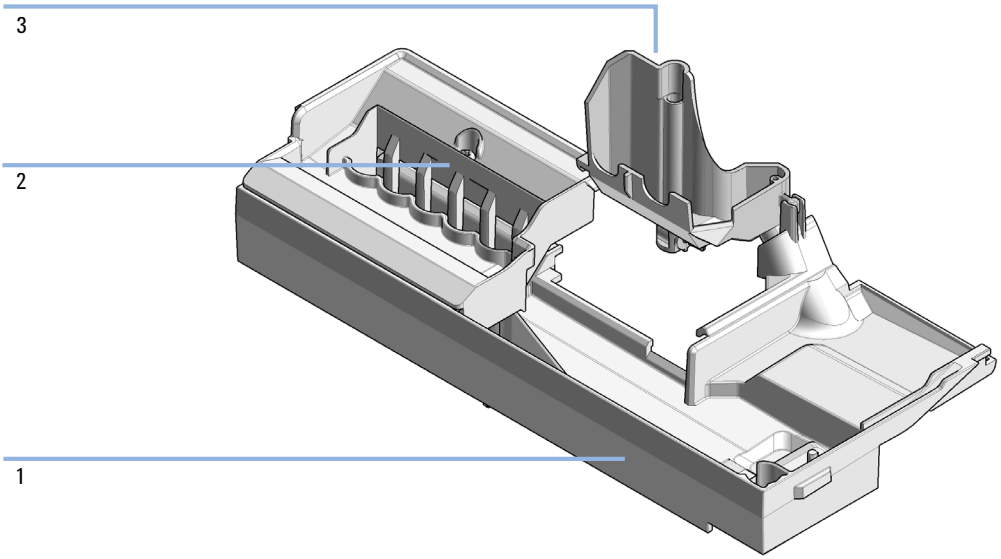


Figure 67 Drain management kit

Sample Cooler

The Sample Cooler Upgrade (G4760A) contains:

Item	p/n	Description
1	G7167-60005	Sample cooler
	G4267-81015	Cable Power Sample Cooler not shown
	G4267-81014	Cable-Ribbon Sample Cooler not shown
	2110-1519	Fuse 3.50 A125 V not shown
	5067-6208	Condensate Drainage Kit not shown

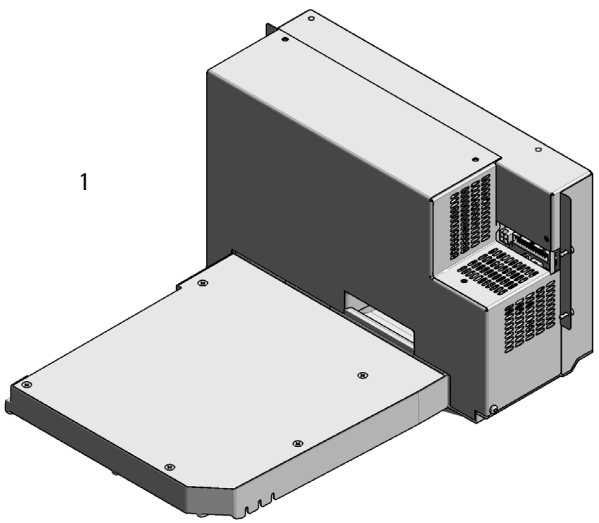


Figure 68 Sample cooler

11
Identifying Cables

This chapter provides information on cables used with the 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 35900A A/D converter
01046-60105	Analog cable (BNC to general purpose, spade lugs)

Remote cables

p/n	Description
5188-8029	ERI to general purpose
5188-8044	Remote Cable ERI – ERI
5188-8045	Remote Cable APG – ERI
5188-8059	ERI-Extension-Cable 1.2 m
5061-3378	Remote Cable to 35900 A/D converter
01046-60201	Agilent module to general purpose
5188-8057	Fraction Collection ERI remote Y-cable

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)

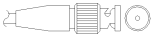
RS-232 cables (not for FUSION board)

p/n	Description
RS232-61601	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

USB cables

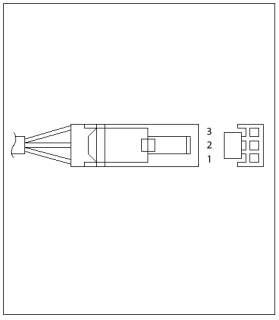
p/n	Description
5188-8050	USB A M-USB Mini B 3 m (PC-Module)
5188-8049	USB A F-USB Mini B M OTG (Module to Flash Drive)

Analog Cables

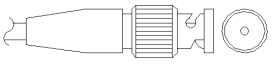


One end of these cables provides a BNC connector to be connected to Agilent modules. The other end depends on the instrument to which connection is being made.

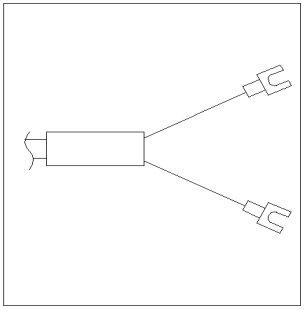
Agilent Module to 35900 A/D converters

p/n 35900-60750	35900	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 +

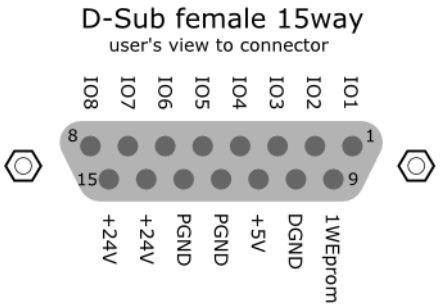
Agilent Module to General Purpose

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

Remote Cables

ERI (Enhanced Remote Interface)

- 5188-8029 ERI to general purpose (D-Sub 15 pin male - open end)
- 5188-8044 ERI to ERI (D_Sub 15 pin male - male)
- 5188-8059 ERI-Extension-Cable 1.2 m (D-Sub15 pin male / female)

p/n 5188-8029	pin	Color code	Enhanced Remote	Classic Remote	Active (TTL)
	1	white	IO1	START REQUEST	Low
	2	brown	IO2	STOP	Low
	3	green	IO3	READY	High
	4	yellow	IO4	POWER ON	High
	5	grey	IO5	NOT USED	
	6	pink	IO6	SHUT DOWN	Low
	7	blue	IO7	START	Low
	8	red	IO8	PREPARE	Low
	9	black	1wire DATA		
	10	violet	DGND		
	11	grey-pink	+5V ERI out		
	12	red-blue	PGND		
	13	white-green	PGND		
	14	brown-green	+24V ERI out		
	15	white-yellow	+24V ERI out		
	NC	yellow-brown			

- 5188-8045 ERI to APG (Connector D_Subminiature 15 pin (ERI), Connector D_Subminiature 9 pin (APG))

p/n 5188-8045	Pin (ERI)	Signal	Pin (APG)	Active (TTL)
	10	GND	1	
	1	Start Request	9	Low
	2	Stop	8	Low
	3	Ready	7	High
	5	Power on	6	High
	4	Future	5	
	6	Shut Down	4	Low
	7	Start	3	Low
	8	Prepare	2	Low
	Ground	Cable Shielding	NC	

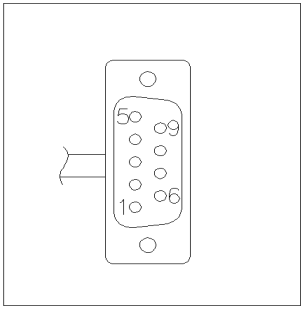
- 5188-8057 ERI to APG and RJ45 (Connector D_Subminiature 15 pin (ERI), Connector D_Subminiature 9 pin (APG), Connector plug Cat5e (RJ45))

Table 24 5188-8057 ERI to APG and RJ45

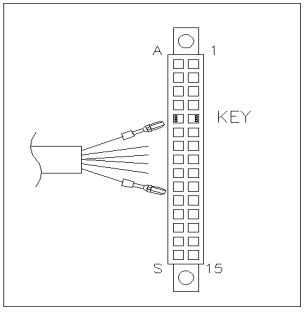
p/n 5188-8057	Pin (ERI)	Signal	Pin (APG)	Active (TTL)	Pin (RJ45)
					
	10	GND	1		5
	1	Start Request	9	High	
	2	Stop	8	High	
	3	Ready	7	High	
	4	Fraction Trigger	5	High	4
	5	Power on	6	High	
	6	Shut Down	4	High	
	7	Start	3	High	
	8	Prepare	2	High	
	Ground	Cable Shielding	NC		

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.

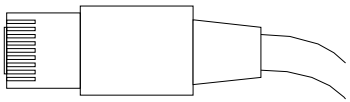
Agilent Module to Agilent 35900 A/D Converters

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

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)

Agilent Module to PC

p/n	Description
RS232-61601	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

USB

To connect a USB Flash Drive use a USB OTG cable with Mini-B plug and A socket.

p/n	Description
5188-8050	USB A M-USB Mini B 3 m (PC-Module)
5188-8049	USB A F-USB Mini B M OTG (Module to Flash Drive)