Agilent

# Agilent 8697 Headspace Samplers

## Maintenance

# Notices



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## Safety Notices

**CAUTION**

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

**WARNING**

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

# Contents

# 1 About Maintaining the Headspace Sampler



This section provides an overview of the maintenance procedures included in this document. It also lists the tools needed for routine maintenance and the safety information one should be aware of before performing a maintenance task.

# Overview of Maintenance

This manual details the routine tasks needed to maintain the 8697 Headspace Sampler (Headspace). The procedures assume a basic knowledge of tool use and of Headspace operation. Readers are, for example, expected to know how to:

- Safely turn devices on and off
- Prepare and run samples
- Enter and develop methods
- Make typical pneumatic connections using Swagelok and other standard fittings

## Where to find a procedure

Included in this manual are sections on maintaining the following Headspace components:

- Fused silica column
- Transfer line
- Sample needle
- Sample loop
- 6 port valve
- Oven
- Vial racks
- Tray

# GC and Headspace Automated Maintenance Procedures

As a part of the GC system, the Headspace responds to GC maintenance requests. When the GC begins an automated maintenance task, the Headspace settings will change appropriately. The GC will not begin automated maintenance if the Headspace is preparing samples. Placing the GC into its maintenance mode also places the Headspace in maintenance mode. See the GC's Maintaining Your GC manual for more information.

The GC touchscreen or browser interface also provide access to the following automated Headspace maintenance procedures:

- Install/remove a transfer line to the GC inlet
- Install/remove fused silica from the transfer line
- Replace the sample probe
- Replace the sample loop
- Replace the six port valve
- Replace the rotor
- Clean the six port valve and rotor
- Clean the oven
- Clean the sample tray assembly

The automated procedures provide step-by-step instructions for your specific HS and GC configuration. In addition, they also cool down hot zones, adjust gas flows to safe levels for the task as needed, perform leak tests and other checks, and automatically reset any relevant Early Maintenance Feedback (EMF) counters. Access them from the touchscreen or browser interface: **Maintenance > Headspace > Perform Maintenance**.

Agilent recommends using the automated procedures available at the GC touchscreen or browser interface whenever possible.

While each maintenance procedure described in this manual refers to its automated version, each procedure still provides all of the steps needed to complete each task.

# Tools and Materials Required for Maintenance

**Table 1** lists the tools needed for most Headspace maintenance procedures. The specific tools required to perform a maintenance procedure are listed in step 1 of the procedure.

**Table 1 Required Tools**

| Tool | Description |
|---|---|
| T- 20 Torx Driver | |
| T- 20 Torx Key | (for working in limited space) |
| Long T- 20 Torx Driver | |
| Needle nose pliers | |
| 3/16-inch wrench | |
| 1/4-inch wrench | |
| Two 5/16-inch wrenches | |
| 7/16-inch wrench | |
| Column cutter wafer | |
| Lab tissue | |
| Isopropanol | (for cleaning fused silica column ends) |
| Clean, lint-free gloves | |
| Pencil magnet | (for placing a valve rotor) |
| Shop vacuum/vacuum cleaner | (for cleaning up broken vial glass) |

# Safety

Before performing a maintenance task, read the important safety and regulatory information found in the *8697 Headspace Samplers Safety* manual.

# 2 Removing Covers and Components



This section describes how to remove covers and components as needed for routine maintenance.

Only the covers and components listed in this chapter should be removed. Removing other Headspace covers can compromise the safety features of the instrument, leading to personal injury or damage to the instrument.

# Automated Maintenance Procedures and Covers

Normally, removing covers is performed as part of some other maintenance. If using the automated maintenance procedures, that procedure will cool down any hot parts and will show you how to remove the covers as needed. If not using the automated maintenance tasks, you must first cool the Headspace heated zones on your own.

# Install/Remove the Transfer Line Support Bracket

1. If necessary, remove any existing ALS post from the mounting hole next to the transfer line.
2. Place the transfer line support bracket on the inlet carrier cover. The locater holes in the support bracket should align over the holes for the inlet ALS injector post and the raised mounting detail. See the figures below.

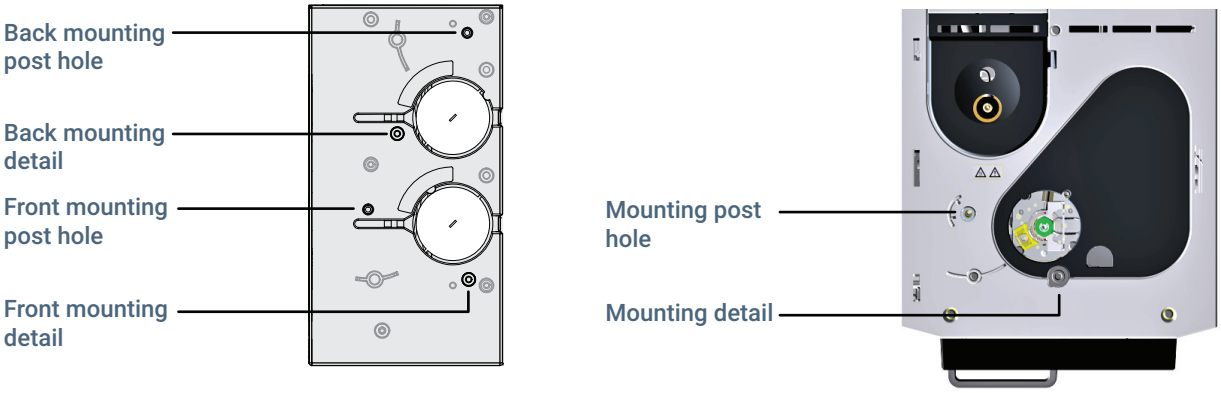



Figure 1. Mounting location for support bracket, 8890 inlet carrier cover shown

3. Locate the knurled thumbscrews provided in the HS ship kit transfer line support assembly.
4. Install the long knurled thumbscrew into the inlet cover through the transfer line support bracket.

5 Install the short knurled set screw into the bracket. Make sure it does not protrude beyond the back side of the bracket (otherwise it will interfere when placing the transfer line).

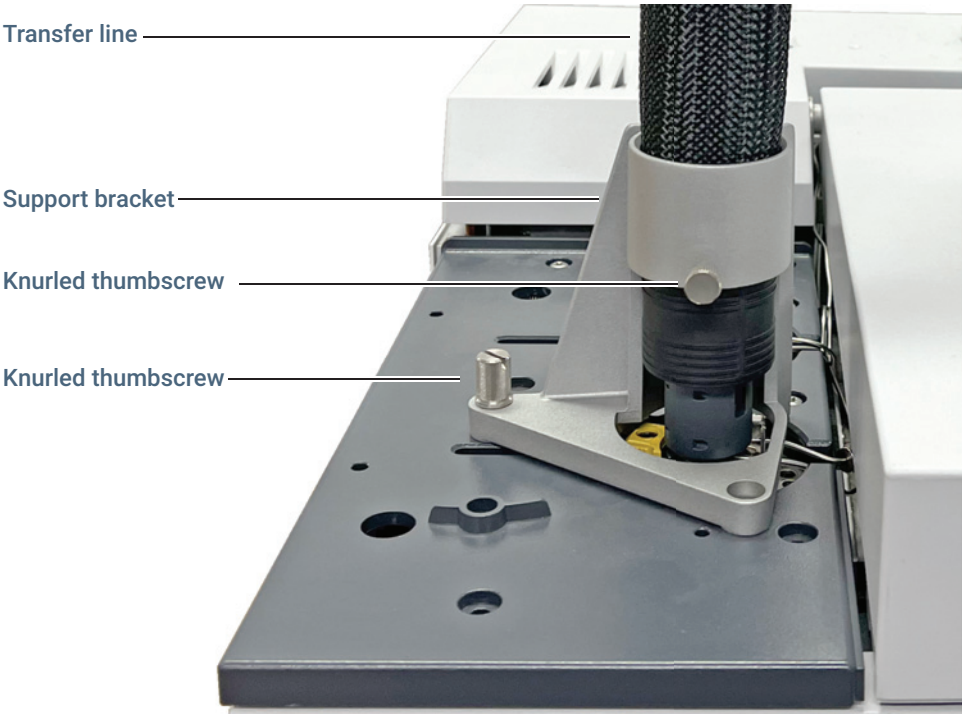



Figure 2. Install the short knurled set screw into the bracket

# Remove the Pneumatics Cover

The pneumatics cover protects the valve thermal enclosure and transfer line. To remove the pneumatics cover:

1 Press the **Park** button on the front of the tray to "park" the tray.

2 Remove the T-20 screw that secures the cover in place (**Figure 3**).

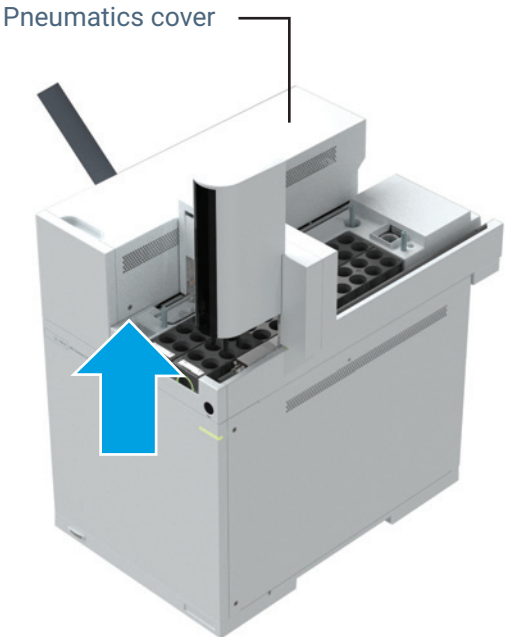



Figure 3. Remove the T-20 Torx screw from the pneumatics cover

3 Slide the cover out, then lift to remove.

Reinstallation is the reverse of these steps.

**WARNING**

**The valve thermal enclosure and its contents may be hot enough to cause burns.**

# Remove the Valve Thermal Enclosure

The valve thermal enclosure protects the 6 port valve and sample loop. To remove the valve thermal enclosure:

1 Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.

**WARNING**

**The valve thermal enclosure and its contents may be hot enough to cause burns.**

2 Cool down the sample loop and sample probe to a safe handling temperature. If you will disconnect the transfer line from the Headspace, cool down the transfer line and GC column oven as needed.

3 Carefully lift the valve thermal enclosure straight up and off of the Headspace (**Figure 4**).

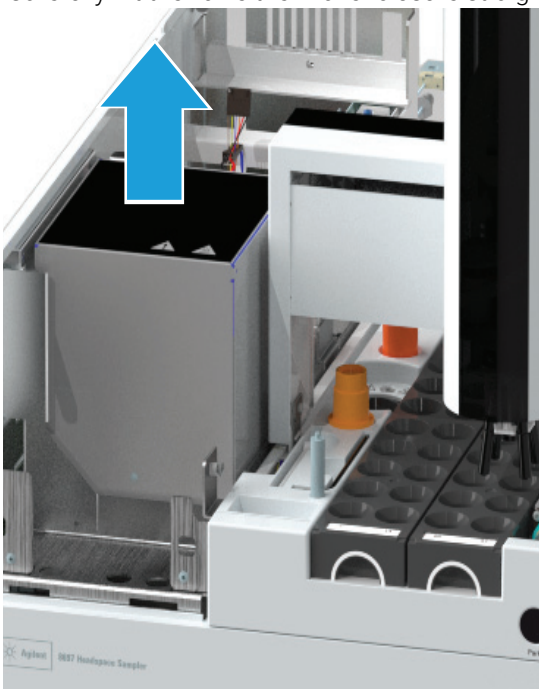


Figure 4. Lift the valve thermal enclosure straight up

# Install the Valve Thermal Enclosure

To install the valve thermal enclosure:

1 Locate the valve thermal enclosure's transfer line cutout, and align it with the transfer line (**Figure 5**).

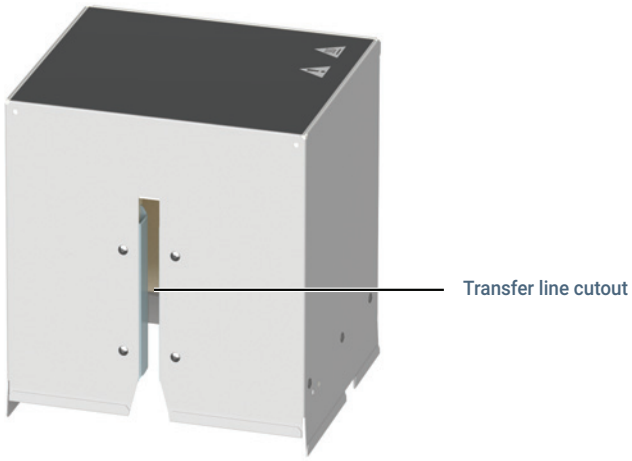



Figure 5. The valve thermal enclosure's transfer line cutout

2 Align the valve thermal enclosure over the sample valve and loop cover. Carefully lower the valve thermal enclosure over the valve and loop areas with the transfer line cutout facing the left side of the Headspace.

CAUTION

**Be sure to not damage the transfer line and other nearby cables when lowering the valve thermal enclosure.**

# Remove the Pneumatics Assembly

Remove the pneumatics assembly (**Figure 6**) to access the oven components.

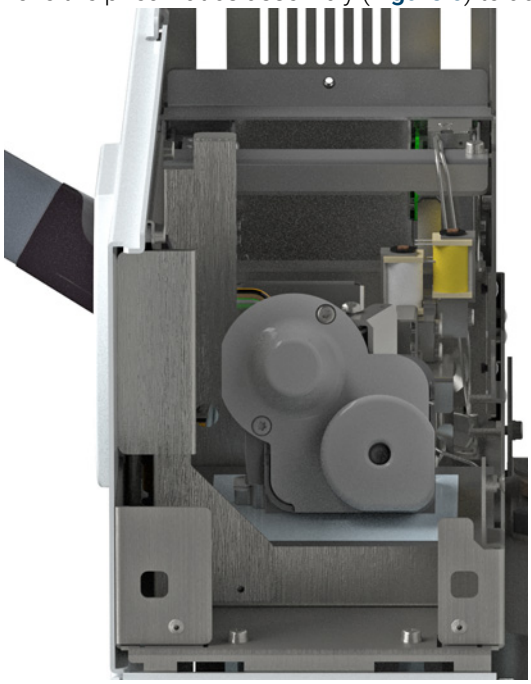


Figure 6. Pneumatics assembly without covers

To remove the pneumatics assembly:

1. Set your GC oven, Headspace oven, sample loop, and transfer line to ambient temperatures and wait for them to cool.

   Alternatively, place the GC and Headspace in maintenance mode: **Maintenance > Instrument > Perform Maintenance > Maintenance Mode > Start Maintenance**.

2. Once the GC oven, Headspace oven, sample loop, and transfer line have cooled to ambient temperature, turn the Headspace off and unplug the power cord.
3. Turn all gas flows off at their sources, and if necessary, disconnect the gas lines at the pneumatics assembly back panel.
4. Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.
5. Remove the valve thermal enclosure. See **"Remove the Valve Thermal Enclosure"** on page 14.
6. Remove the valve/loop cover. See **"Remove the Valve/Loop Cover"** on page 19.

7 Loosen the 3/16-inch nut in the internal reducer (**Figure 7**). (Stabilize the valve fitting using a 1/4-inch wrench.)

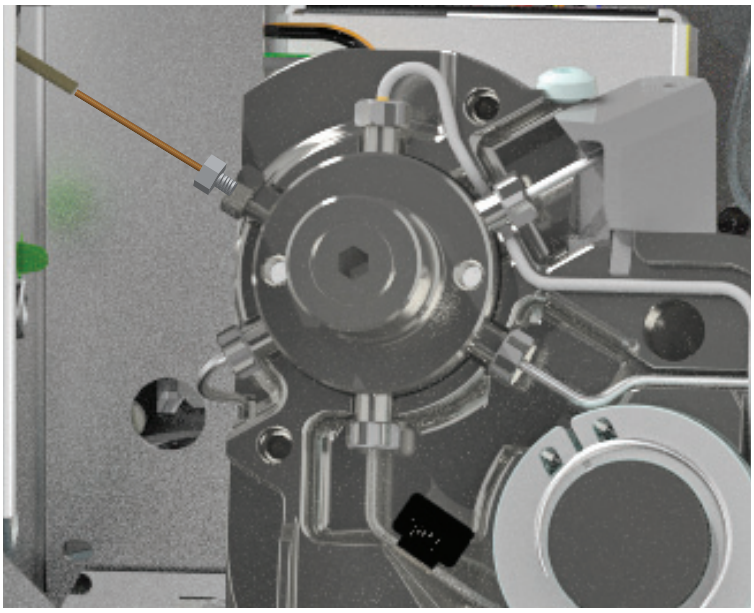


Figure 7. 3/16-inch internal reducer with valve cover removed.

8 Remove the fused silica column from the internal reducer.

9 Loosen the 1/4-inch nut and remove the reducer fitting. (To reuse the internal reducer, remove the polyimide graphite ferrule by tapping the reducer on the benchtop.)

10 Disconnect the transfer line from the GC. See **"Disconnect the Transfer Line from the GC"** on page 50.

**11** Loosen the 6 screws that secure the pneumatics assembly to the chassis. Note that one screw is on the side of the assembly. (**Figure 8**).

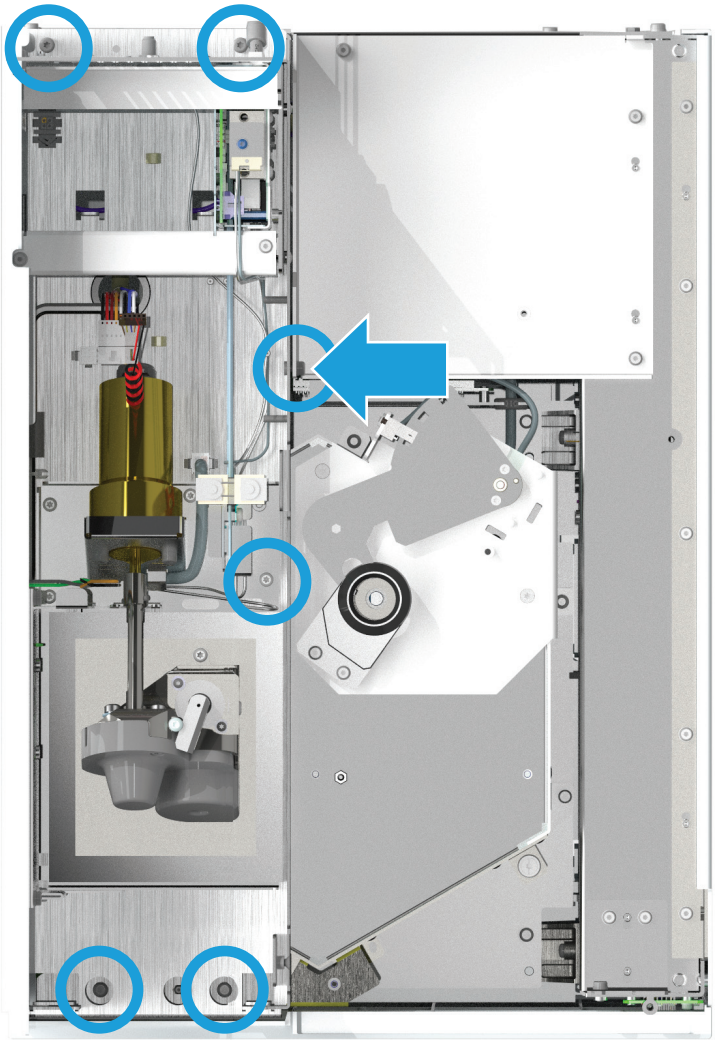


Figure 8. Loosen the screws that secure the pneumatics assembly

CAUTION

**Do not remove the pneumatics assembly completely. Be careful to not damage any attached cables and gas lines when moving the pneumatics assembly.**

**12** Lift the pneumatics assembly straight up, rotate the assembly about 90-degrees counterclockwise, and lay it across the back of the Headspace.

Reinstallation is the reverse of these steps.

# Remove the Valve/Loop Cover

1 Gather the following:
   - T-20 Torx driver
2 Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.
3 Remove the valve thermal enclosure. See **"Remove the Valve Thermal Enclosure"** on page 14.
4 Completely loosen the three T-20 Torx captive screws on the valve/loop cover (**Figure 9**).

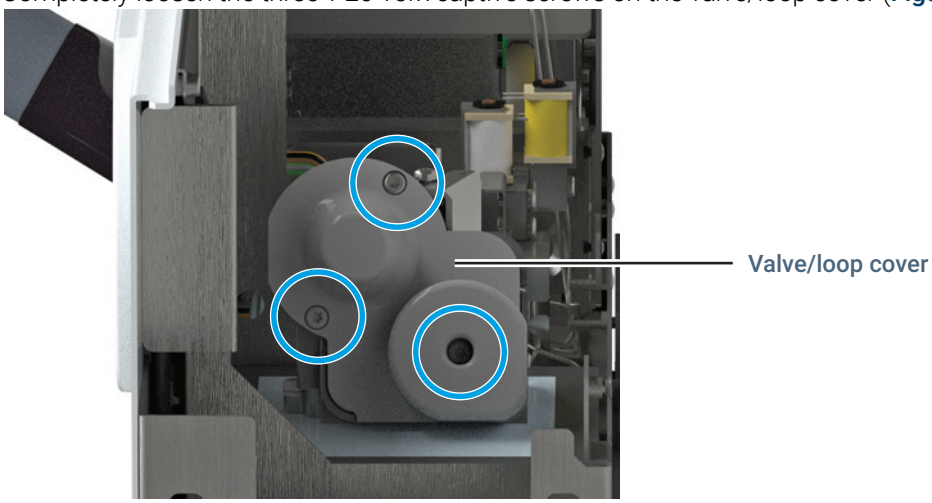


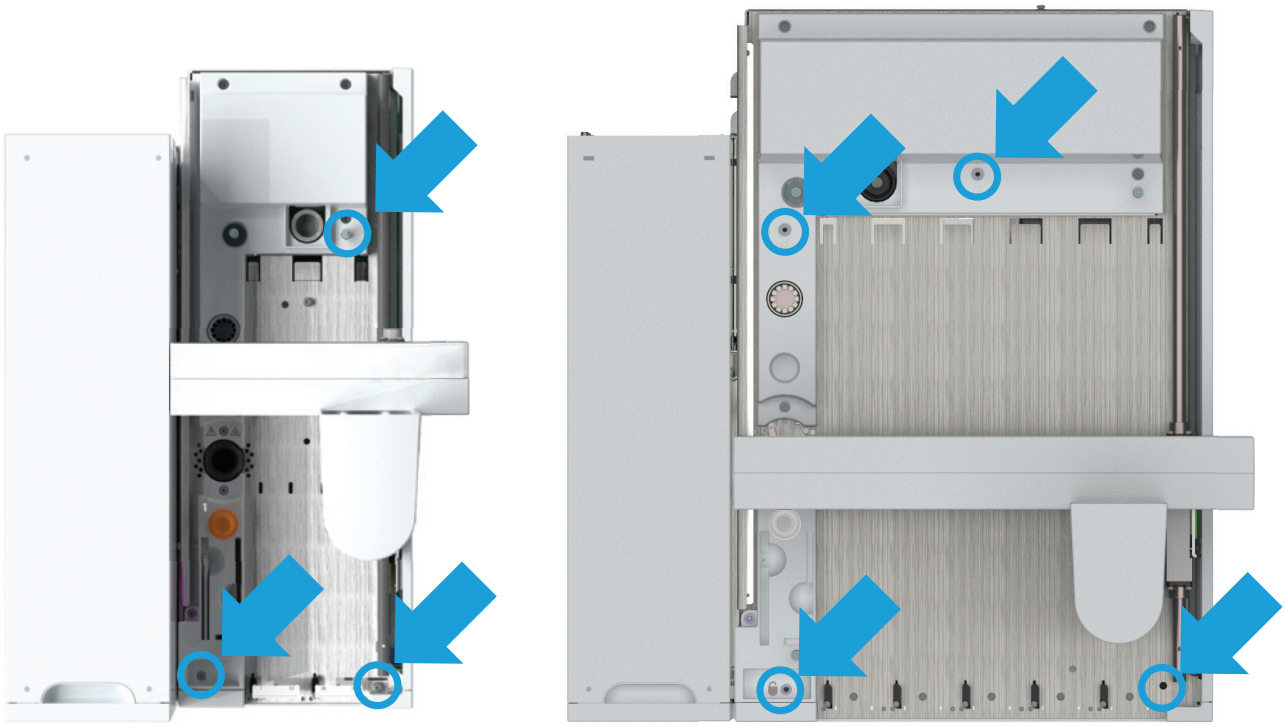

Figure 9. Valve/loop cover

5 Remove the valve/loop cover.

Reinstallation is the reverse of these steps.

# Remove the Tray Assembly

1 Gather the following:
   - Lint-free gloves
2 Set your GC oven, Headspace oven, and transfer line to ambient temperatures and wait for them to cool.
3 Once the GC oven, Headspace oven, and transfer line have cooled to ambient temperature, turn the Headspace off and unplug the power cord.
4 Turn all gas flows off at their sources.
5 Remove all sample vials and vial racks.
6 Disconnect the tray cable from the mainframe.
7 Loosen the screws that secure the tray to the mainframe. (**Figure 10**)



**8697 48-Vial tray** **8697 120-Vial tray**

Figure 10. Loosen retained screws

8 Lift the tray assembly off of the Headspace and place it on a flat surface.

Reinstallation is the reverse of these steps. When re-installing, you may need to align the tray over the back alignment posts first, then pivot the tray down and over the forward post.

# 3 Maintenance



This section provides the basic maintenance procedures for the Agilent 8697 Headspace Sampler.

# Clean the Sample Tray Assembly

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

The following describes how to clean the sample tray assembly.

1 Gather the following.
- T-20 Torx driver
- Lint-free gloves
- Lint-free cloth
- Vacuum cleaner

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Clean Sample Tray > Start Maintenance**.

**WARNING**

**When handling/cleaning broken glass and sample residue within the headspace sampler, all applicable local and national laboratory safety practices must be followed. This would include, but is not limited to, correct usage of Personal Protective Equipment (PPE), correct use of storage vials, using vent hoods, and correct handling of chemicals, as defined in the laboratory's internal safety analysis and standard operating procedures. Failure to adhere to laboratory safety practices could lead to injury or death. Samples may include hazardous materials. Wear PPE appropriate for the sample.**

**WARNING**

**Hot surfaces. If using the optional cooling plate, the tray can be set to temperatures up to 80 °C. Before cleaning the tray, cool it to ambient temperature (or a safe handling temperature) or wear appropriate heat resistant gloves.**

3 Clean the vial racks.
- **a** Remove the vial racks from the tray assembly.
- **b** Carefully remove all vials from the vial racks and set them aside.
- **c** Remove any broken glass from the vial racks using a vacuum cleaner or other technique appropriate for the sample.
- **d** Wipe away any spills from the vial racks using a lint-free cloth or other technique appropriate for the sample.

4 Remove the tray assembly from the Headspace. See **"Remove the Tray Assembly"** on page 20.

5 Clean the tray assembly using a lint-free cloth or other technique appropriate for the sample.
- **a** Wipe away any spills on the surfaces of the tray assembly.
- **b** Clean inside the vial cooling position.
- **c** Clean inside the bar code reader position if applicable.
- **d** Wipe away any residue on the gantry and gripper fingers.

6 Clean the Headspace tray and mainframe surfaces of any spills or broken glass that may have fallen through the tray assembly base.

   **a** Clean any broken glass on the Headspace tray surface using a vacuum cleaner or other appropriate technique.

   **b** Wipe away any spills from the tray surface using a lint-free cloth or other technique appropriate for the sample.

Reassembly is the reverse of these steps.

# Clean the Oven

1 Gather the following:
   - Lint-free gloves
   - Lint-free wipes
   - T-20 Torx driver
   - 1/8-inch hex key wrench
   - Needle nose pliers
   - Shop vacuum

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Clean Oven > Start Maintenance**.

   If not using the automated procedure, set your GC oven, Headspace oven, and transfer line to ambient temperatures and wait for them to cool.

3 Once the GC oven, Headspace oven, and transfer line have cooled to ambient temperature, turn off the Headspace and unplug the power cord.

4 Turn all gas flows off at their sources.

5 Remove the tray assembly. See **"Remove the Tray Assembly"** on page 20.

**WARNING**

**Be careful! Certain parts may be hot enough to cause burns. If hot, wear heat-resistant gloves to protect your hands.**

6 Disconnect the pneumatics assembly from the mainframe and place it sideways across the mainframe so that you can fully access the oven. See **"Remove the Pneumatics Assembly"** on page 16.

7 Disconnect the shutter motor cable from the connector board. (**Figure 11**)

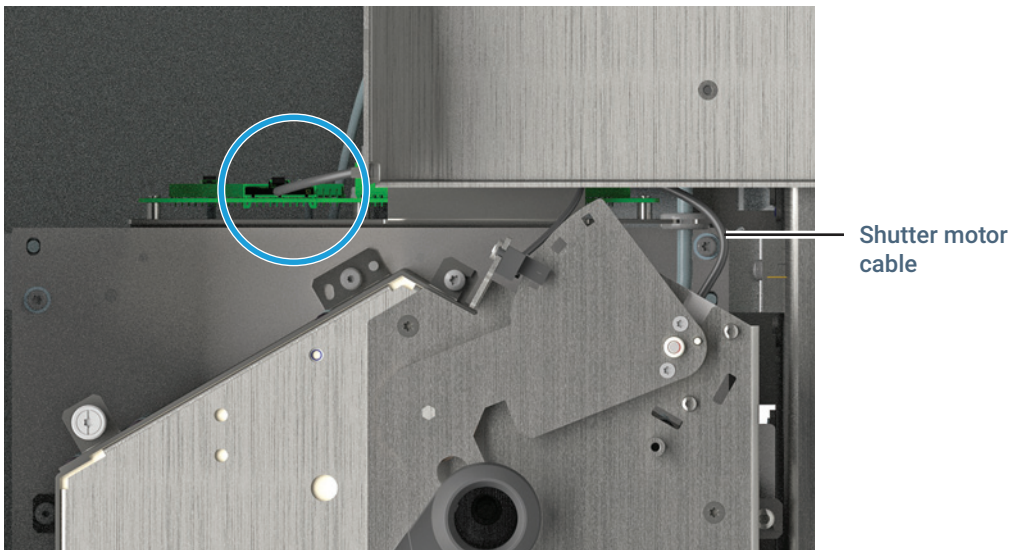



Figure 11. Disconnect the shutter motor cable from the connector board

8 Disconnect the oven top assembly from the oven and set aside.

**a** Remove four T-20 Torx screws from the oven top assembly (**Figure 12**).

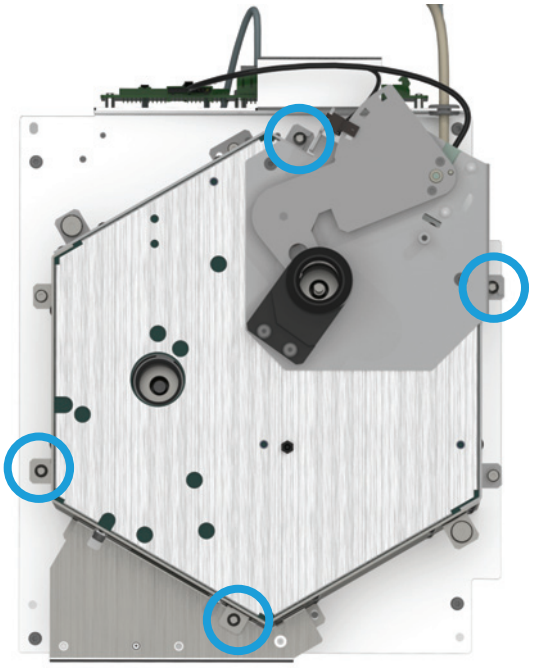


Figure 12. Remove T-20 Torx screws from the oven top assembly

**b** Completely loosen the two T-20 Torx captive thumbscrews (**Figure 13**).

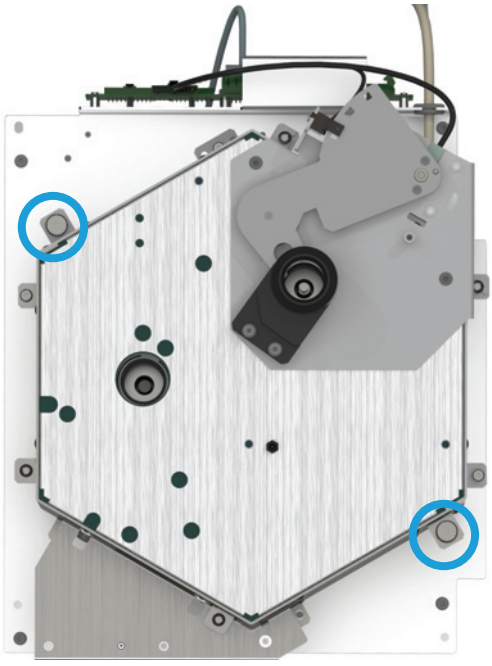


Figure 13. Loosen the thumbscrews on the oven top assembly

**c** Lift the oven top assembly off of the oven and set it aside.

**WARNING**

**The ribbon heater edges are sharp. Broken glass edges are sharp. Wear protective gloves to avoid personal injury The carousel and oven can contain sample residue.**

**When handling/cleaning broken glass and sample residue within the headspace sampler, all applicable local and national laboratory safety practices must be followed. This would include, but is not limited to, correct usage of Personal Protective Equipment (PPE), correct use of storage vials, using vent hoods, and correct handling of chemicals, as defined in the laboratory's internal safety analysis and standard operating procedures. Failure to adhere to laboratory safety practices could lead to injury or death.**

**Samples may include hazardous materials. Wear PPE appropriate for the sample.**

**9** Remove the carousel assembly.

**a** Using a 1/8-inch hex key wrench, loosen the set screw that secures the fan blades to the fan motor shaft, then remove the fan blades.

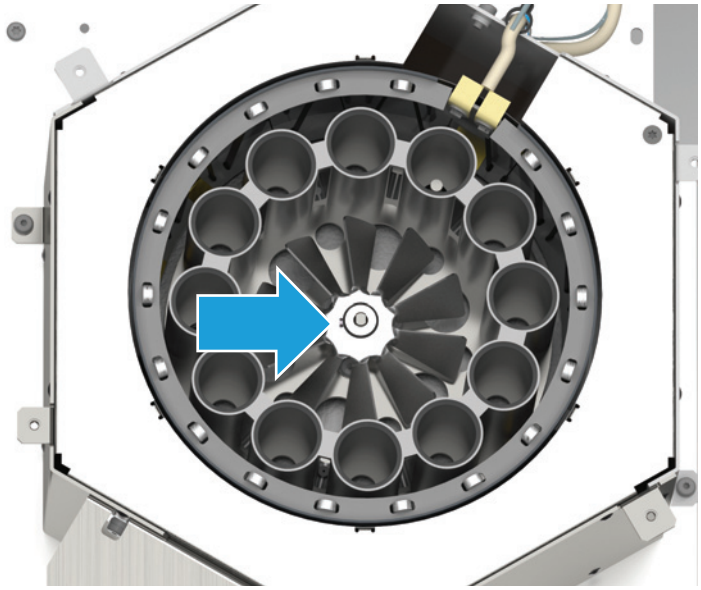


Figure 14. Removing the fan blades

**b** Remove three T-20 Torx screws from the center of the carousel (**Figure 15**).

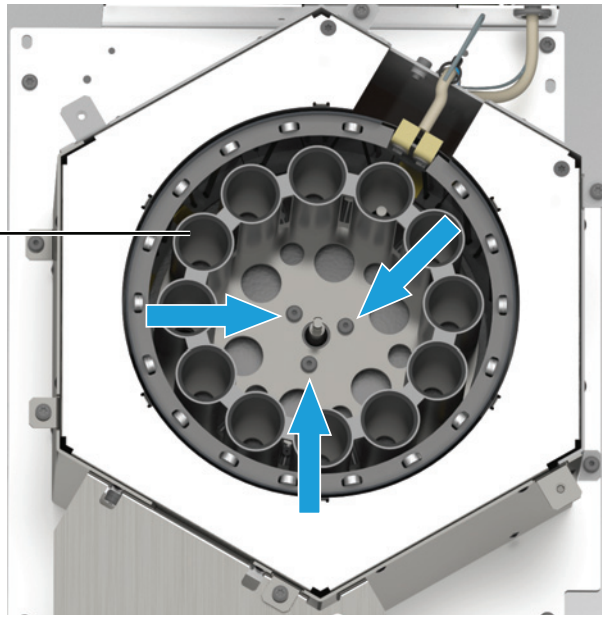



Figure 15. Removing the carousel

**c** Carefully lift the carousel out of the oven assembly.

**d** Clean up any sample residue or broken glass inside the carousel using a chemical spill protocol appropriate for the sample (including personal protective equipment, or PPE).

**WARNING**

**The ribbon heater edges are sharp. Broken glass edges are sharp. Wear protective gloves to avoid personal injury The carousel and oven can contain sample residue.**

**When handling/cleaning broken glass and sample residue within the headspace sampler, all applicable local and national laboratory safety practices must be followed. This would include, but is not limited to, correct usage of Personal Protective Equipment (PPE), correct use of storage vials, using vent hoods, and correct handling of chemicals, as defined in the laboratory's internal safety analysis and standard operating procedures. Failure to adhere to laboratory safety practices could lead to injury or death.**

**Samples may include hazardous materials. Wear PPE appropriate for the sample.**

**CAUTION**

**Parts of the ribbon heater are very fragile. Be careful when cleaning near the ribbon heater to avoid accidental damage.**

**10** Clean up any sample residue and broken glass inside the oven using a chemical spill protocol appropriate for the sample (including personal protective equipment, or PPE).

- Use tweezers to remove broken glass near and around the ribbon heater.
- If using a vacuum cleaner, vacuum only the open central area inside the oven. Do not vacuum near the heater.

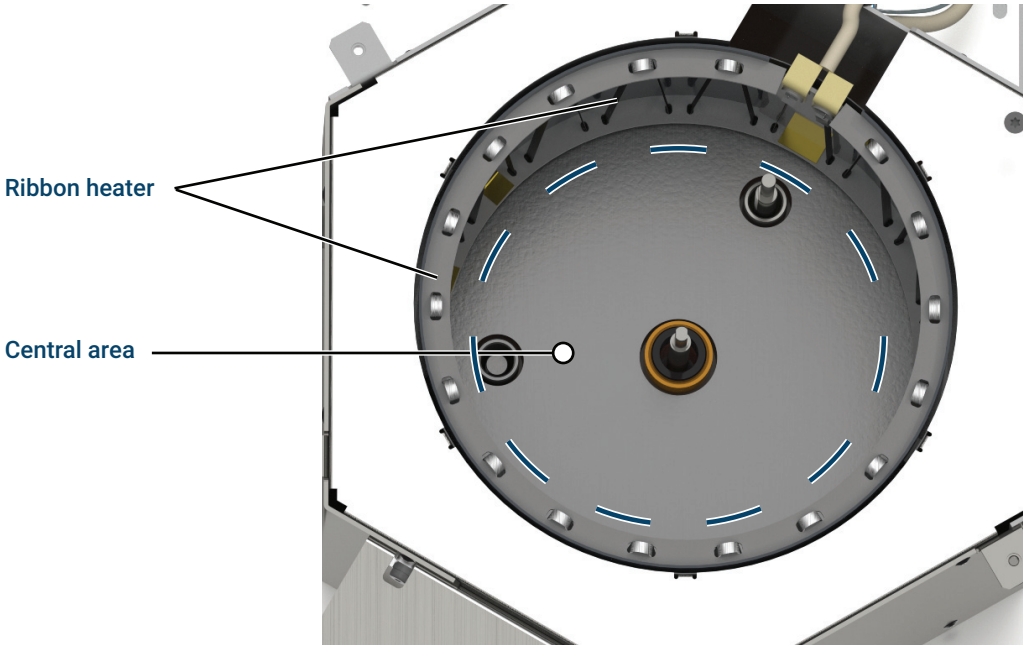



Figure 16. Cleaning the oven area

**11** Reassembly is the reverse of these steps. After restoring power to the HS, recalibrate the system. On the GC touchscreen or in the browser interface, go to **Settings > Calibration > Headspace**, then select **Start System Calibration**.

# Replace the Sample Probe

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
- Sample probe G4556-63825
- Lint-free gloves
- T-20 Torx driver
- 1/4-inch wrench

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Replace Sample Probe > Start Maintenance**.

Set your GC oven, Headspace oven, and transfer line to ambient temperatures and wait for them to cool.

3 Turn all gas flows off at their sources.

4 Access the pneumatics area:
- **a** Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.
- **b** Remove the valve thermal enclosure. See **"Install the Valve Thermal Enclosure"** on page 15.

5 Remove the valve/loop cover (**Figure 17**). See **"Remove the Valve/Loop Cover"** on page 19.

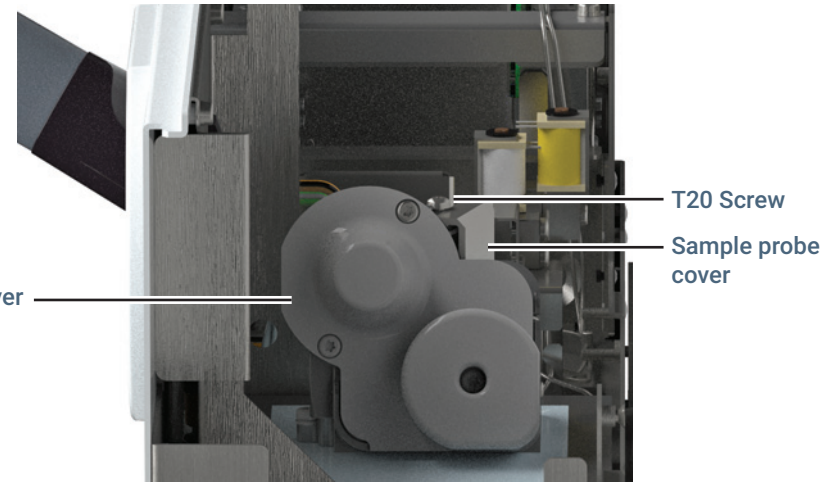



Figure 17. The valve and sample probe covers

6 Remove the T-20 Torx screw that secures the sample probe and lift the cover to remove.

7 Using a 1/4-inch wrench, loosen the sample probe connection on the 6 port valve and remove the sample probe fitting from the valve.

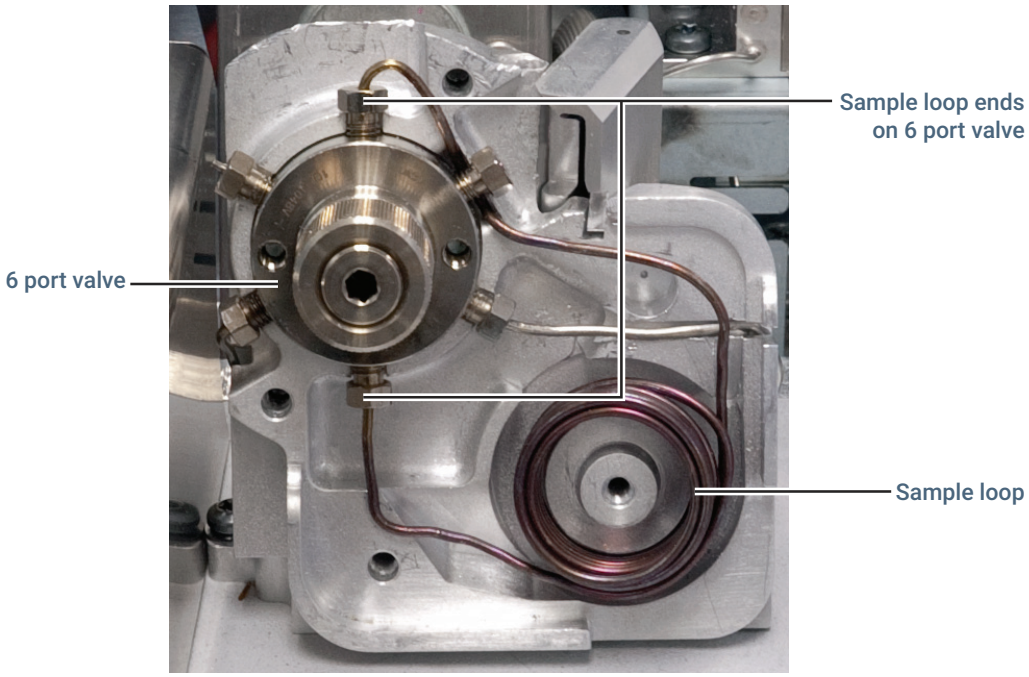



Figure 18. Disconnect the sample loop from the 6 port valve

8 Using a 1/4-inch wrench, unscrew the nut on the other end of the sample probe.

9 Remove the sample probe by lifting it straight up.

10 Check that the nut at the end of the new sample probe spins freely.

11 Being careful to avoid scratching the sample probe, slide the new sample probe down into the probe opening.

12 Rotate the probe so that the valve fitting end is aligned with position 5 on the 6 port valve.

13 Finger-tighten the nut onto the 6 port valve. Once the nut is well-engaged, loosen it by one rotation.

14 Finger-tighten the nut on the other end of the probe.

15 Gently push the sample probe further into position.

16 Tighten the nut on the other end of the sample probe using a 1/4-inch wrench.

17 Reinstall the sample probe cover and secure in place with the T-20 Torx screw.

18 Tighten the nut attached to the 6 port valve using a 1/4-inch wrench.

19 Replace all covers and restore all gas flows.

# Replace the Sample Loop

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
   - Lint-free gloves
   - Sample loop (see **Table 7**)
   - Sample loop adapters, as needed (see **Table 2**)
   - T-20 Torx driver
   - 1/4-inch wrench
   - Needle nose pliers

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Replace the sample loop > Start Maintenance**.

   If not using the automated procedure, set your GC oven, Headspace oven, and transfer line to ambient temperatures and wait for them to cool.

3 Turn all gas flows off at their sources.

4 Access the pneumatics area:
   **a** Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.
   **b** Remove the valve thermal enclosure. See **"Remove the Valve Thermal Enclosure"** on page 14.

5 Remove the valve/loop cover. See **"Remove the Valve/Loop Cover"** on page 19.

6 Remove the sample probe cover:
   **a** Remove the T-20 Torx screw that secures the sample probe cover.
   **b** Lift the sample probe cover from the probe.

7 Using a 1/4-inch wrench, disconnect the two sample loop ends from the 6 port valve (**Figure 19**).

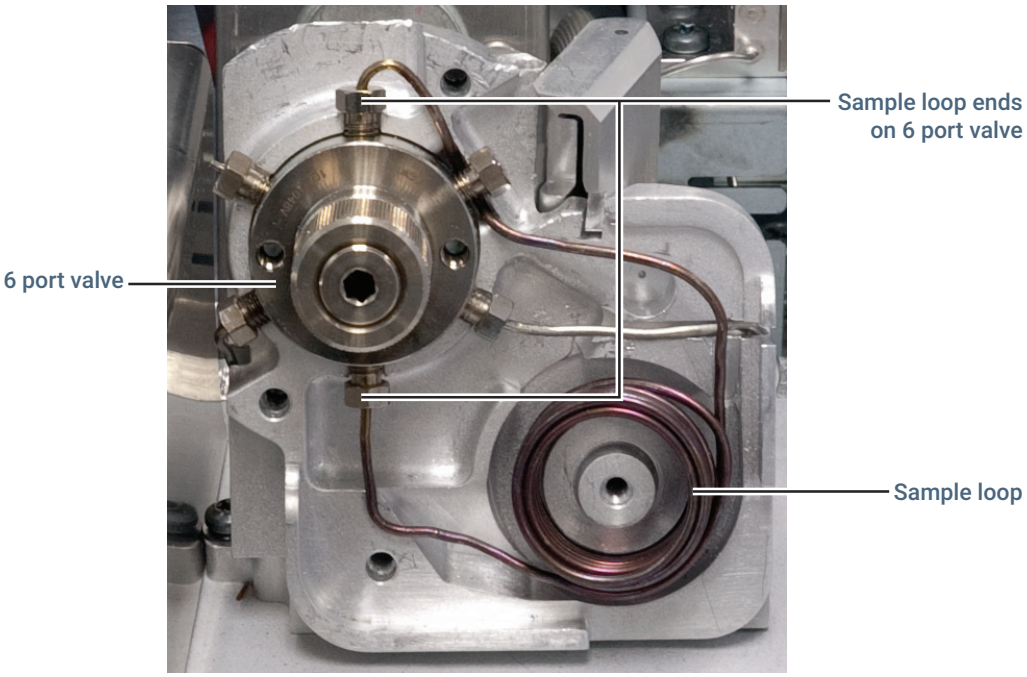



Figure 19. Disconnect the sample loop from the 6 port valve

8 Using a 1/4-inch wrench, loosen the sample probe connection on the 6 port valve.

9 Remove the sample loop (**Figure 19**). Pull the loosened sample probe fitting out just enough to slide the sample loop tubing underneath it.

10 If the new sample loop requires different sample loop adapters, replace the sample loop adapters in the sample loop block and the valve/loop cover. See **"Replace the Sample Loop Adapters"** on page 34 for more information.

11 On the new sample loop, check that the nuts on both ends spin freely before installing.

**12** With the sample loop in front of the 6 port valve, connect both ends of the new sample loop to positions 1 and 4 as shown in **Figure 21**.

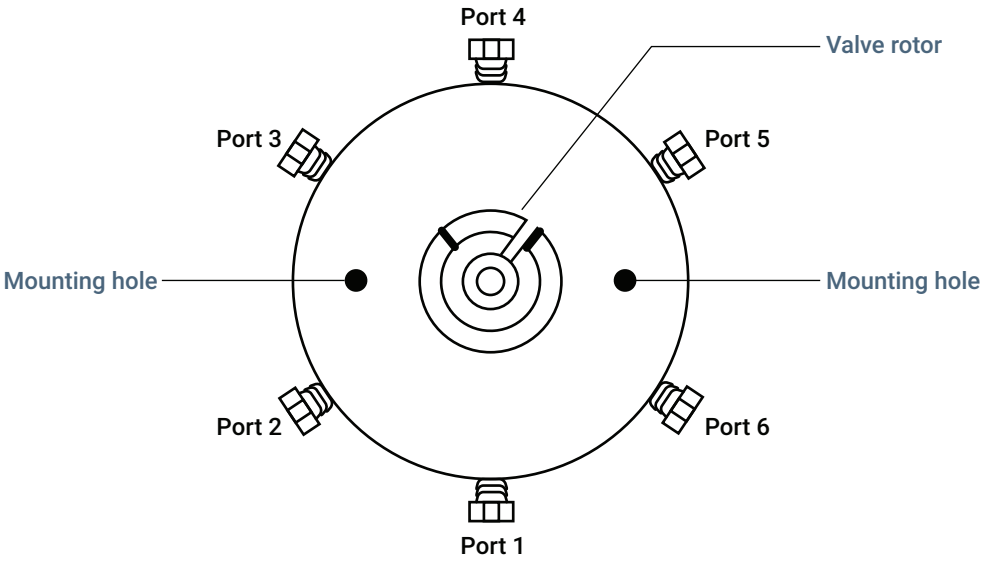



Figure 20. 6 port valve position numbers

**13** Finger tighten the nuts. Once both nuts are well-engaged, loosen them by one rotation.

**14** Rotate the sample loop towards the sample loop block (to the right). Fit the upper end of the sample loop over and behind connection 5 on the valve. Continue rotating the sample loop until it fits into the recessed fitting in the sample loop block as shown in **Figure 21**.

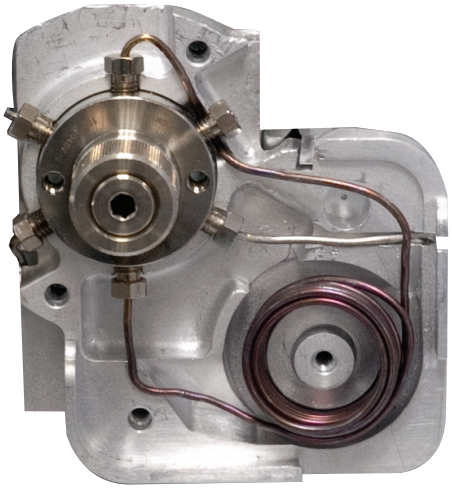


Figure 21. Correct sample loop placement in the sample loop block

**15** Tighten both nuts securing the sample loop to the 6 port valve about 1/4-turn past finger tight.

**16** Reconnect the sample probe (see **"Replace the Sample Probe"** on page 29).

**17** Reinstall the sample probe cover.

**18** Reinstall the remaining parts and covers in reverse order.

# Replace the Sample Loop Adapters

Different size sample loops require different sample loop adapters. Normally, only change or replace the sample loop adapters when changing sample loop size. A full set of adapters shipped with the Headspace.

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

This procedure assumes the sample loop has been removed, exposing any adapters in the valve/loop cover and sample loop area. (See **"Replace the Sample Loop"** on page 31.)

1 Gather the following:
   - Lint-free gloves
   - Sample loop (see **Table 7**)
   - Sample loop adapters, as needed (see **Table 2**)
   - Needle nose pliers

2 Remove any sample loop adapters from the sample loop block and cover.
   **a** Grip the sample loop adapter using needle nose pliers in the locations shown in **Figure 22**.
   **b** Squeeze the needle nose pliers together and gently pull the sample loop adapter from the block or cover as shown in **Figure 22**.

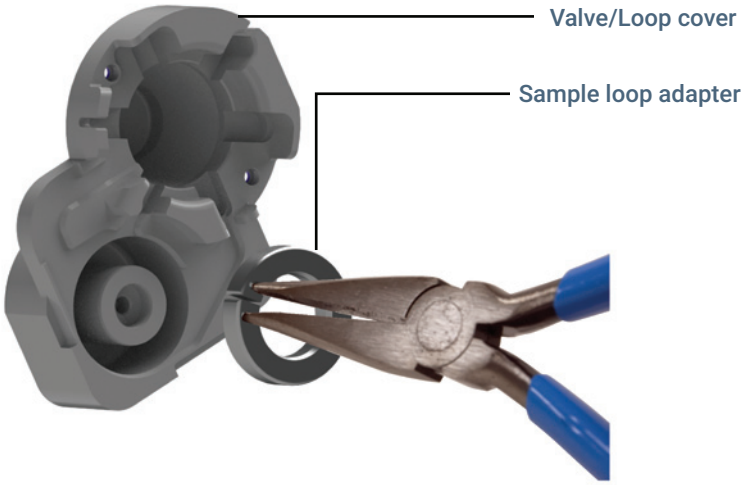



Figure 22. Removing a sample loop adapter (G4556-20178 shown) from the valve/loop cover

   **c** Repeat as necessary until all sample loop adapters have been removed from both the sample loop block and cover.

3 Use **Table 2** to select the appropriate adapters for your sample loop size.

**Table 2 Sample loop adapters**

| Sample loop size | Adapter p/n | Quantity | Installation location |
|---|---|---|---|
| 0.025 mL | G4556-20177<br>G4556-20178 | 1<br>1 | Sample loop block<br>Valve/loop cover |
| 0.050 mL | G4556-20177<br>G4556-20178 | 1<br>1 | Sample loop block<br>Valve/loop cover |
| 0.10 mL | G4556-20177<br>G4556-20178 | 1<br>1 | Sample loop block<br>Valve/loop cover |
| 0.50 mL | G4556-20177 | 2 | Valve/loop cover, as needed |
| 1.0 mL | G4556-20177 | 2 | Valve/loop cover, as needed |
| 3.0 mL | G4556-20177 | 1 | Valve/loop cover, as needed |

4 Use **Table 2** to determine the installation location for each selected adapter (sample loop block or valve/loop cover), and install the adapters. Be sure that the curved side of the adapters face inward on both the sample loop block and cover so that the flat sides are against the sample loop once assembled.

The sample loop adapters are installed. Continue with sample loop installation.

# Replace the 6 Port Valve

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
   - T-20 Torx driver
   - Lint-free gloves
   - 1/4-inch wrench

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Replace Six Port Valve > Start Maintenance**.

   If not using the automated procedure, set your GC oven, Headspace oven, sample loop, and transfer line to ambient temperatures and wait for them to cool.

3 Wait for the Headspace oven, sample loop, and transfer line to cool before continuing.

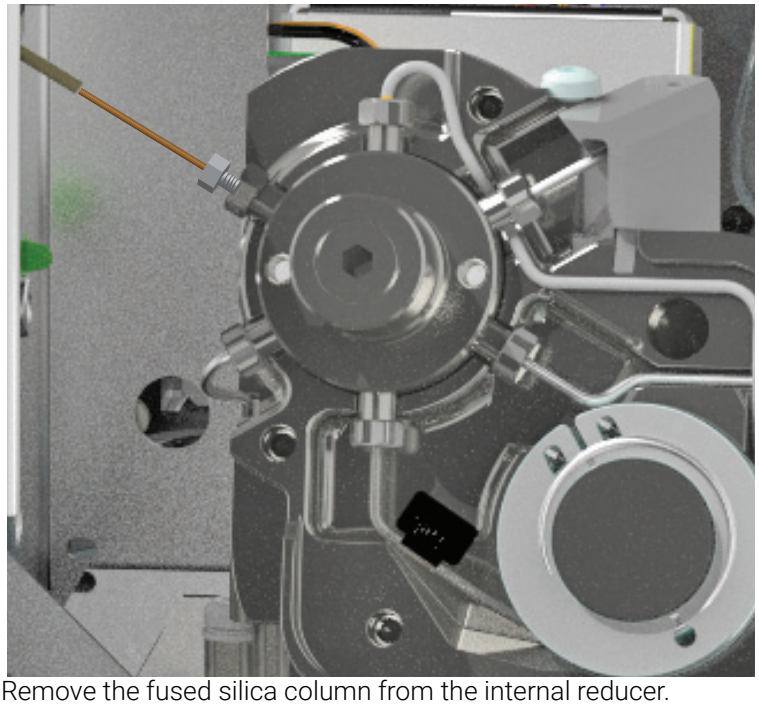
4 Turn off all gas flows.

5 Access the pneumatics area:
   **a** Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.
   **b** Remove the valve thermal enclosure. See **"Remove the Valve Thermal Enclosure"** on page 14.

6 Remove the valve/loop cover and valve cover. See **"Remove the Valve/Loop Cover"** on page 19.

7 Disconnect the transfer line from the 6 port valve.

**a** Loosen the 3/16-inch nut in the internal reducer. (Use a 1/4-inch wrench to stabilize the 1/4-inch nut).



**b** Remove the fused silica column from the internal reducer.

**c** Loosen the 1/4-inch nut and remove the reducer fitting.

To reuse the internal reducer in the future, you must first remove the polyamide graphite ferrule. To remove the polyamide graphite ferrule, do one of the following:

- Gently tap the internal reducer on the benchtop.
- Bake the internal reducer with ferrule in the GC oven at 200 °C for 5 minutes, then cool the oven and remove the ferrule.
- Use special ferrule tool RFT-5300 for a 0.53 mm transfer line, or RFT-2500 for a 0.25- to 0.32-mm transfer line.

**d** Carefully straighten the transfer line so there are no sharp curves. This will help from damaging the fused silica and make for easy removal.

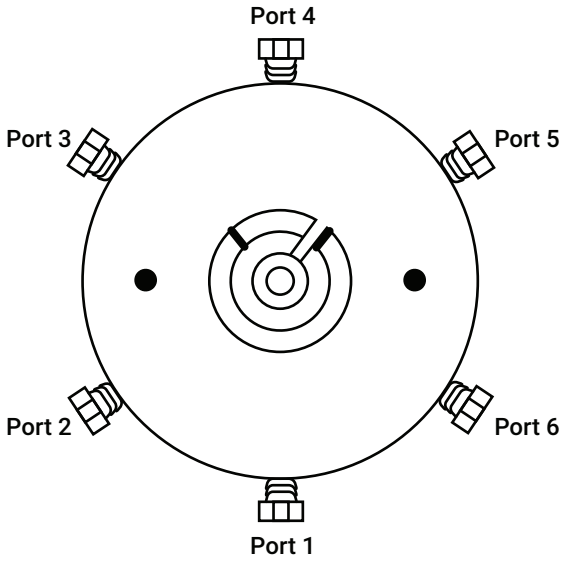
8 Gently grasp the fused silica tubing at the Headspace end and pull the tubing out of the transfer line. Save the 3/16-inch nut for future use, if desired.

9 Using a 1/4-inch wrench, remove all connections from the 6 port valve.

10 Remove the two T-20 Torx screws on the back of the valve block.

11 Lift the 6 port valve out of the pneumatics area.

**12** Orient the new valve as shown below. Port 1 should be at the bottom, and port 4 at the top.




**13** Install the new valve. Make sure the stator is oriented correctly and engaged with the 6 port valve motor coupler.

**14** Reinstall the connections to the valve, and reassemble the remaining components in reverse order in which each was removed.

# Replace the 6 Port Valve Rotor

1. Gather the following:
   - Lint-free gloves
   - 1/4-inch wrench
   - Pencil magnet
2. Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Replace Six Port Valve Rotor > Start Maintenance**.

   If not using the automated procedure, set your GC oven, Headspace oven, sample loop, and transfer line to ambient temperatures and wait for them to cool.
3. Turn all gas flows off at their sources.
4. Access the pneumatics area:
   a. Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.
   b. Remove the valve thermal enclosure. See **"Remove the Valve Thermal Enclosure"** on page 14.
5. Remove the valve/loop cover. See **"Remove the Valve/Loop Cover"** on page 19.
6. Using your hand, unscrew the preload assembly on the front of the valve (**Figure 23**).

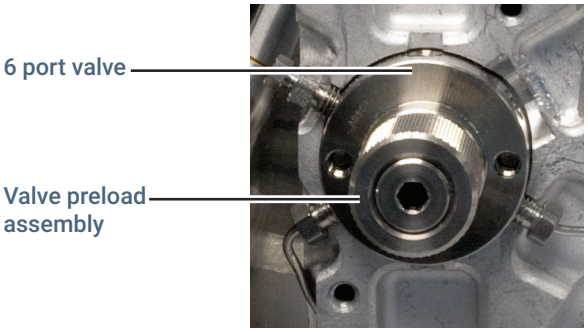



Figure 23. Valve preload assembly

7. Rotate the valve one cycle to break the seal between the rotor and the valve body.
8. Carefully remove the rotor from the valve body using a small pencil magnet.

9 Using a small pencil magnet, set the new rotor in place on the 6 port valve with the rotor ID letter facing port 4 (**Figure 24**).

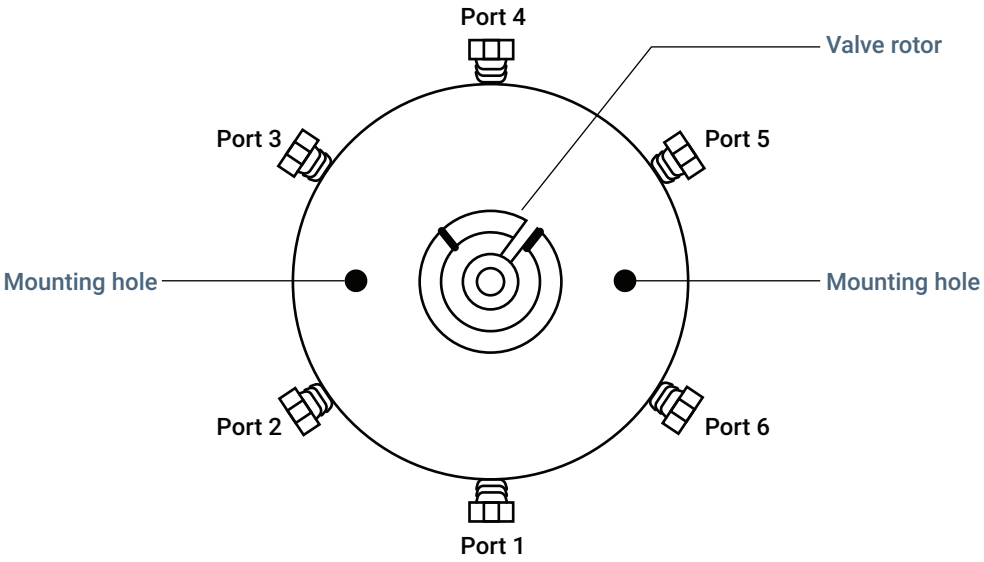



Figure 24. The 6 port valve and valve rotor

10 Completely insert the rotor into the valve body. Make sure the rotor tab does not touch the interior of the valve body.

11 Using a small, narrow object such as a pencil, hold the rotor in place while pulling the pencil magnet from the rotor.

12 Replace the preload assembly on the front of the valve. Finger-tighten it one turn beyond the point where it first touches the rotor. Cycle the valve 10 times to seat the seal.

13 Reassemble.

# Clean the 6 Port Valve and Rotor

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

**CAUTION**

**Be careful to not damage the rotor and valve in any way. The rotor must be replaced if any damage is found.**

1 Gather the following:
   - T-20 Torx driver
   - Lint-free gloves
   - Compressed gas
   - Cotton swabs
   - Solvent
   - Needle nose pliers
   - Clean lab tissues

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Clean Six Port Valve and Rotor > Start Maintenance**.

   If not using the automated procedure, set your GC oven, Headspace oven, sample loop, and transfer line to ambient temperatures and wait for them to cool.

3 Remove the rotor from the 6 port valve. (See **"Replace the 6 Port Valve Rotor"** on page 39.)

4 Once the rotor is removed, wet a cotton swab with solvent and polish the inside of the valve. Be sure to wipe away any loose residue.

5 Use compressed gas to remove any remaining residue.

6 Using needle nose pliers, carefully dip the rotor into solvent.

7 Wipe the rotor with a clean lab tissue.

8 Use compressed gas to blow away any remaining residue.

9 Make sure there are no scratches or dents in the interior of the 6 port valve and rotor.

10 Reinstall the rotor into the 6 port valve. Follow the instructions in **"Replace the 6 Port Valve Rotor"** on page 39, starting at **step 9**.

# Attach the Transfer Line to a Split Splitless or Multimode Inlet

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
- 3/16-inch open end wrench
- 1/4-inch open end wrench
- Wrench, angled, septum nut (GC inlet wrench) (SSL/MMI only)
- Polyimide ferrule sized for this column (or, use a new 1/16-inch internal reducer union)
- 530 µm, 250 µm, or 320 µm fused silica column (at least 1.2 m length)
- 11-mm septum for GC inlet
- Transfer line septum nut (G3452-60845)
- Isopropanol
- Lab tissue
- Lint-free gloves
- Capillary column cutter (5181-8836)
- Septum, transfer line, 9-mm (5183-4801)

**WARNING**

**Be careful! The oven and/or inlet may be hot enough to cause burns. If either is hot, wear heat-resistant gloves to protect your hands.**

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Install Transfer Line to GC > Start Maintenance**.

If not using the automated procedure, set your GC oven, Headspace oven, and transfer line to ambient temperatures, and wait for them to cool.

3 Install the transfer line to the 6 port valve. See **"Install a Fused Silica Column into the Transfer Line"** on page 52.

4 Slide the transfer line septum nut over the tubing and snap onto the end of the transfer line.

5 Slide the 9 mm septum onto the tubing until the septum is against the bottom of the transfer line septum nut.

6 Trim the tubing 42 ± 5 mm past the end of the septum.

7 Install the transfer line end cap for protection until ready to install the transfer line into the inlet.

8 If needed, install the transfer line support bracket. See **"Install/Remove the Transfer Line Support Bracket"** on page 11.

9 Remove the endcap to expose the fused silica tubing.

10 Install the inlet liner (with o-ring) that is appropriate for your application. If desired, remove the transfer line support bracket so inlet maintenance is easier. See **"Install/Remove the Transfer Line Support Bracket"** on page 11.

11 Carefully lower the transfer line into the transfer line support bracket and thread the fused silica into the inlet.

12 Finger-tighten the transfer line septum nut until it stops turning.

13 Finger tighten the bracket thumbscrew to secure the transfer line in the support bracket.

14 Restore carrier gas flow if needed.

15 Heat the split splitless or multimode inlet to operating temperature.

16 Retighten the fittings, if necessary.

Refer to the documentation supplied with your split splitless or multimode inlet for more information.

# Attach the Transfer Line to a Volatiles Interface

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
   - Lint-free gloves
   - One 7/16-inch wrench
   - Two 5/16-inch wrenches
   - Capillary column cutter (5181-8836)
   - Ferrule (19258-20870)
   - Nut (19258-20830)
   - Appropriate sized graphite/Vespel ferrule (for 250-, 320-, or 530-µm transfer line diameters). See **Table 3**.

**WARNING**

**Be careful! The oven and/or inlet may be hot enough to cause burns. If either is hot, wear heat-resistant gloves to protect your hands.**

2 Cool the GC inlet to a safe handling temperature.

3 Cool the GC oven to room temperature to prevent column damage. Then turn off the carrier gas.

4 Install the transfer line to the 6 port valve. See **"Install a Fused Silica Column into the Transfer Line"** on page 52. If not present, install the transfer line support bracket. See **"Install/Remove the Transfer Line Support Bracket"** on page 11.

5 Remove the endcap to expose the fused silica tubing.

6 Slide the transfer line nut (G2319-20212) onto the tubing. The threads should face the volatiles interface.

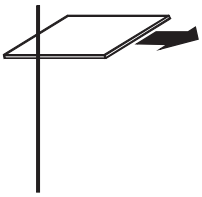
7 Slide the graphite/Vespel ferrule over the fused silica in the transfer line.

**Table 3 Graphite/Vespel ferrules**

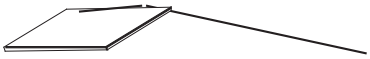
| Transfer Line Diameter | Description | Part Number |
|---|---|---|
| 250-µm | Ferrule, 0.4 mm VG cond .25 col lng 10/PK | 5062-3508 |
| 320-µm | Ferrule, 0.5 mm VG cond .32 col lng 10/PK | 5062-3506 |
| 530-µm | Ferrule, 0.8 mm VG cond .53 col lng 10/PK | 5062-3538 |

8 Use a column cutter to trim approximately 1 cm from the leading edge of the fused silica.

**a** Score the column using a glass scribing tool. The score must be square to ensure a clean break.



**b** Break off the column end by supporting it against the column cutter opposite the scribe. Inspect the end with a magnifying loupe to make certain there are no burrs or jagged edges.



**c** Wipe the column walls with a tissue dampened with isopropanol to remove fingerprints and dust.

9 Screw the nut and graphite/Vespel ferrule into the volatiles interface. Tighten 1/4-turn past finger-tight.

10 Finger tighten the bracket thumbscrew to secure the transfer line in the support bracket.

11 Establish a flow of carrier gas through the transfer line and check for leaks. If the transfer line nut leaks, tighten an additional 1/8 turn with the supplied wrench. Purge as recommended by the column manufacturer.

12 Heat the volatiles interface to operating temperature.

13 Retighten the fittings, if necessary.

Refer to the documentation supplied with your volatiles interface for more information.

# Attach the Transfer Line to a Purged Packed Inlet

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
- 3/16-inch open end wrench
- 1/4-inch open end wrench
- Two 7-mm wrenches
- Polyimide ferrule sized for this column (or, use a new 1/16-inch internal reducer union)
- Isopropanol
- Lab tissue
- Lint-free gloves
- Transfer line septum nut (G3452-60845)
- Capillary column cutter (5181-8836)
- Inlet septum, green (5183-4759)

**WARNING**

**Be careful! The oven and/or inlet may be hot enough to cause burns. If either is hot, wear heat-resistant gloves to protect your hands.**

2 Cool the GC inlet to a safe handling temperature.

3 Cool the GC oven to room temperature to prevent column damage. Then turn off the carrier gas.

4 Install the transfer line to the 6 port valve. See **"Install a Fused Silica Column into the Transfer Line"** on page 52.

5 Slide the transfer line septum nut over the tubing and snap onto the end of the transfer line.

6 Slide the 9 mm septum onto the tubing until the septum is against the bottom of the transfer line septum nut.

7 Trim the tubing so that it extends 2 mm past the end of the septum.

8 Install the transfer line end cap for protection until ready to install the transfer line into the inlet.

9 Install the inlet liner (with o-ring) that is appropriate for your application. If desired, remove the transfer line support bracket so inlet maintenance is easier. See **"Install/Remove the Transfer Line Support Bracket"** on page 11.

10 If needed, install the transfer line support bracket. See **"Install/Remove the Transfer Line Support Bracket"** on page 11.

11 Remove the endcap to expose the fused silica tubing.

12 Carefully lower the transfer line into the transfer line support bracket and thread the fused silica into the inlet.

13 Finger-tighten the transfer line septum nut until it stops turning.

14 Finger tighten the bracket thumbscrew to secure the transfer line in the support bracket.

15 Heat the purged packed inlet to operating temperature.

16 Retighten the fittings, if necessary.

Refer to the documentation supplied with your GC for more information.

# Attach the Transfer Line to a Cool On-Column Inlet

Make sure your column dimensions are correct in relation to the size of your fused silica. Your column id can not be greater than 530 um. Refer to your cool on-column inlet documentation for more information.

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
   - Lint-free gloves
   - Capillary column cutter (5181-8836)

**WARNING**

**Be careful! The oven and/or inlet may be hot enough to cause burns. If either is hot, wear heat-resistant gloves to protect your hands.**

2 Cool the GC inlet to a safe handling temperature.

3 Cool the GC oven to room temperature to prevent column damage. Then turn off the carrier gas.

4 Install the transfer line to the 6 port valve. See **"Install a Fused Silica Column into the Transfer Line"** on page 52.

5 Loosen the septum nut on the inlet to make transfer line installation easier.

6 Trim the fused silica so that it extends 42 mm out of the inner metal sleeve on the transfer line.

7 Carefully lower the transfer line into the transfer line support bracket and thread the fused silica into the inlet.

8 Finger-tighten the septum retainer nut until it stops turning.

9 Finger tighten the bracket thumbscrew to secure the transfer line in the support bracket.

10 Heat the cool on-column inlet to operating temperature.

11 Retighten the fittings, if necessary.

Refer to the documentation supplied with your cool on-column inlet for more information.

# Remove the Transfer Line from the GC

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

1 Gather the following:
   - 3/16-inch open end wrench (provided in ship kit)
   - 1/4-inch open end wrench

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Install Transfer Line to GC > Start Maintenance**.

   If not using the automated procedure, set your GC oven, GC inlet, Headspace oven, and transfer line to ambient temperatures and wait for them to cool.

**CAUTION**

**Disconnecting the transfer line may interrupt GC carrier gas flow. Cool the GC column oven and inlet as needed to prevent column damage.**

**WARNING**

**Be careful! The oven and/or inlet may be hot enough to cause burns. If either is hot, wear heat-resistant gloves to protect your hands.**

3 Remove the pneumatics cover. See **"Remove the Pneumatics Assembly"** on page 16.

4 Remove the valve thermal enclosure. See **"Remove the Valve Thermal Enclosure"** on page 14.

5 Disconnect the transfer line from the GC. See **"Disconnect the Transfer Line from the GC"** on page 50. Gently set aside the transfer line.

6 If desired, remove the transfer line support bracket. See **"Install/Remove the Transfer Line Support Bracket"** on page 11.

# Disconnect the Transfer Line from the GC

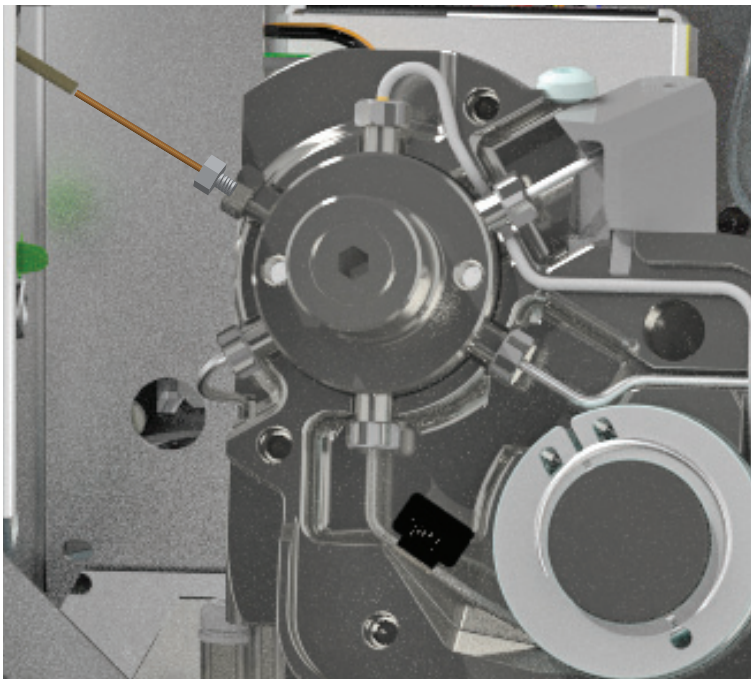
**WARNING**

**Hot surfaces. If not using an automated maintenance procedure, cool down the GC inlet, GC oven, HS sample loop, transfer line, and other heated zones to a safe handling temperature. Allow to cool.**

1. Loosen the bracket thumbscrew.
2. Unscrew the septum retainer nut from the GC SSL or MMI inlet. For a COC inlet, loosen the septum retainer nut. For a VI, loosen the nut that secures the column to the interface.
3. Carefully lift the transfer line (and septum retainer nut) straight up and out of the inlet.
4. Install the transfer line end cap onto the transfer line to protect the exposed end of the fused silica.

# Remove the Fused Silica Column from the Transfer Line

1. Follow the procedure **"Disconnect the Transfer Line from the GC"** on page 50.
2. Loosen the 3/16-inch nut in the internal reducer. (Use a 1/4-inch wrench to stabilize the 1/4-inch nut).



3. Remove the fused silica column from the internal reducer.
4. Loosen the 1/4-inch nut and remove the reducer fitting.

   To reuse the internal reducer in the future, you must first remove the polyamide graphite ferrule. To remove the polyamide graphite ferrule, do one of the following:

   - Gently tap the internal reducer on the benchtop.
   - Bake the internal reducer with ferrule in the GC oven at 200 °C for 5 minutes, then cool the oven and remove the ferrule.
   - Use special ferrule tool RFT-5300 for a 0.53 mm transfer line, or RFT-2500 for a 0.25- to 0.32-mm transfer line.
5. Carefully straighten the transfer line so there are no sharp curves. This will help from damaging the fused silica and make for easy removal.
6. Gently grasp the fused silica tubing at the Headspace end and pull the tubing out of the transfer line. Save the 3/16-inch nut for future use, if desired.

# Install a Fused Silica Column into the Transfer Line

**CAUTION**

**Wear clean, lint-free gloves to prevent contamination of parts with dirt and skin oils.**

**CAUTION**

**Transfer line bends with a bend radius of less than 75 mm are not recommended. However, if a sharp bend is necessary to route the transfer line, be sure the bend radius is at least 35 mm.**

1 Gather the following:
   - T-20 Torx driver
   - 3/16-inch open end wrench
   - Column cutting wafer
   - 1/4-inch open end wrench
   - Wrench, angled, septum nut (GC inlet wrench)
   - Polyimide ferrule sized for this column (or, use a new 1/16-inch internal reducer union)
   - 530 µm, 250 µm, or 320 µm fused silica column (at least 1.2 m length)
   - 9-mm septum for GC inlet (5183-4801)
   - Septum nut adapter (G3452-60845)
   - Isopropanol
   - Lab tissue
   - Lint-free gloves

2 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Install Transfer Line to GC > Start Maintenance**.

   If not using the automated procedure, set your GC oven, Headspace oven, and transfer line to ambient temperatures and wait for them to cool.

3 Remove the existing fused silica from the transfer line. See **"Remove the Transfer Line from the GC"** on page 49.

   If no fused silica is currently installed, cool the transfer line, 6 port valve (sample loop), and GC inlet and oven to safe handling temperatures.

4 Remove the pneumatics cover. See **"Remove the Pneumatics Cover"** on page 13.

5 Remove the valve thermal enclosure. See **"Install the Valve Thermal Enclosure"** on page 15.

6 The transfer line will install in valve port 3 (at the 10 O'clock position), as shown in **Figure 25**.

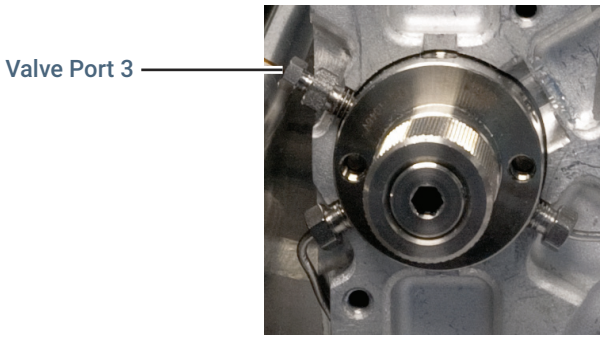



Figure 25. Valve Port 3

The transfer line installs using a 1/16-inch internal reducer, as shown in **Figure 26**. If possible, leave the existing 1/4-inch nut and ferrule in place and install the new fused silica into it using a new ferrule and the existing 3/16-inch nut.

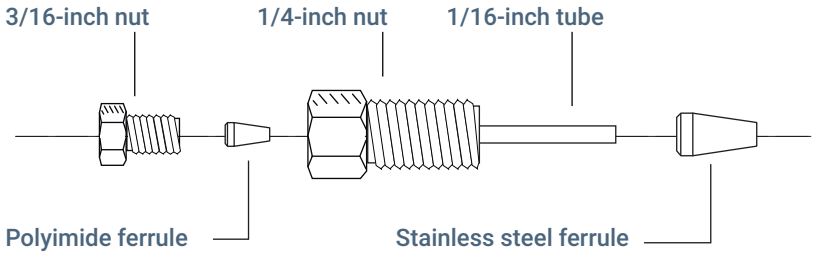



Figure 26. Internal reducer parts

**WARNING**

**Wear safety glasses to protect your eyes from flying particles while handling, cutting, or installing glass or fused silica capillary columns. Use care in handling these columns to prevent puncture wounds**

7 A new internal reducer fitting must be disassembled and prepared for use. (If using the installed 1/4-inch nut, skip this step.)

- **a** Unscrew the 3/16-inch reducer nut and remove the polyimide ferrule. Set the ferrule aside for later use.
- **b** Reinstall the 3/16-inch nut finger tight into the 1/4-inch nut.
- **c** Slide the 1/16-inch stainless steel ferrule over the 1/16-inch tube end of the reducer fitting.
- **d** Holding the ferrule in place, carefully insert the assembly into the open valve port.
- **e** Finger tighten the 1/4-inch nut, then tighten 1/4 turn more to seal.
- **f** Unscrew the 3/16-inch nut and remove for now.

8 Slide the stainless steel ferrule over the 1/16-inch tube end of the reducer, then install into the open valve port. Finger-tighten, then tighten 1/4-turn more (**Figure 27**).

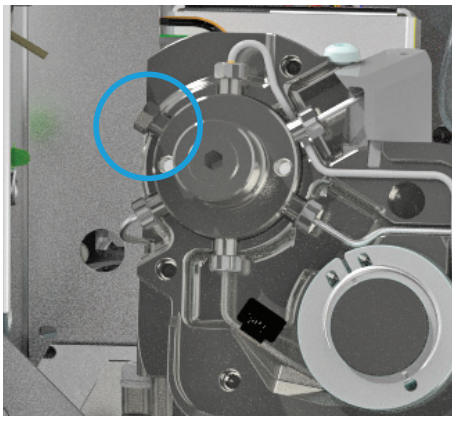
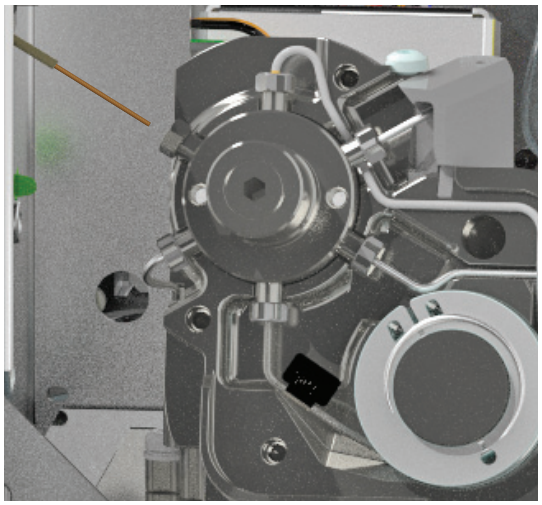


Figure 27. Installing into the open valve port

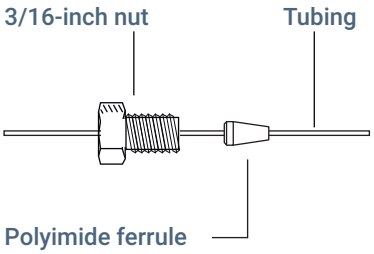
9 Gently straighten the transfer line.

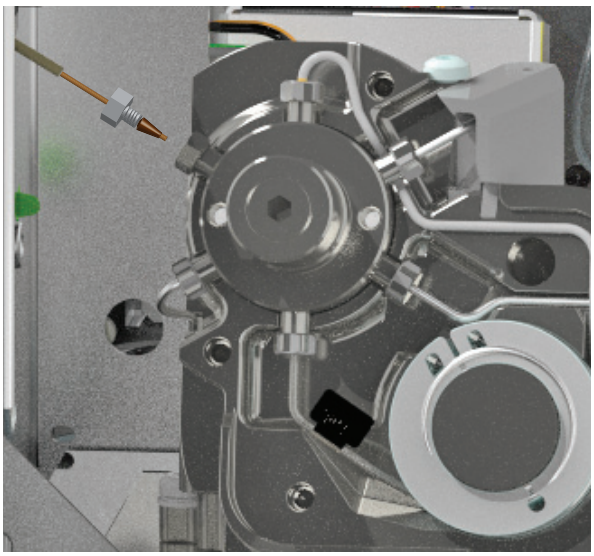
10 Uncoil about 1 m of the fused silica tubing. Working from the open end that will connect to the GC (not the end near the 6 port valve), gently slide the tubing through the transfer line until it comes out the end near the 6 port valve.

11 Gently grasp the fused silica tubing at the Headspace end and gently push and pull the tubing to verify that it is unbroken in the transfer line. The fused silica should move back and forth.



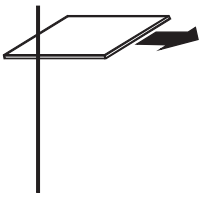
**12** Assemble the 3/16-inch nut and polyimide ferrule onto the fused silica tubing as shown below.



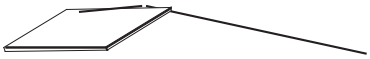



**13** Use a column cutter to trim approximately 1 cm from the leading edge of the fused silica.

**a** Score the column using a glass scribing tool. The score must be square to ensure a clean break.



**b** Break off the column end by supporting it against the column cutter opposite the scribe. Inspect the end with a magnifying loupe to make certain there are no burrs or jagged edges.



**c** Wipe the column walls with a tissue dampened with isopropanol to remove fingerprints and dust.

**14** Gently guide the fused silica into the reducer fitting (the 1/4-inch nut already in the 6 port valve) all the way in until it stops. Slide the polyimide ferrule and 3/16-inch nut into the 1/4-inch nut. Tighten the 3/16-inch nut finger-tight, then an additional 1/4-turn. See **Figure 28**.

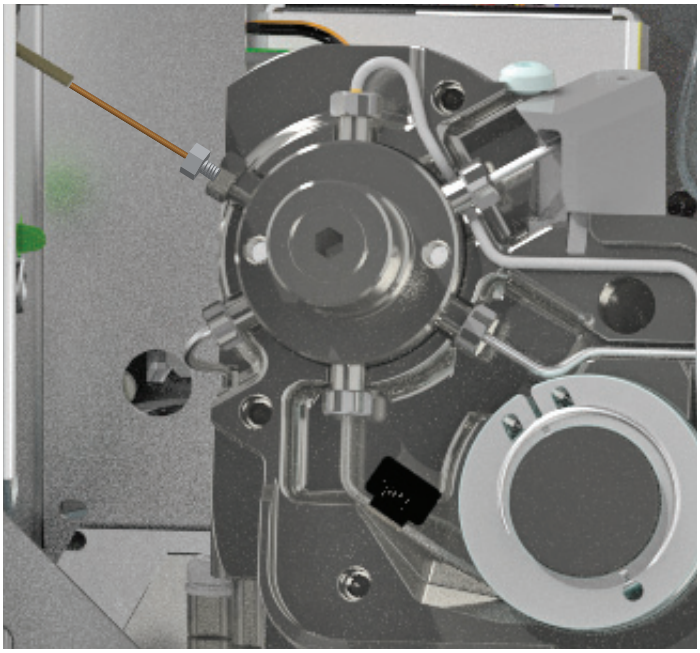


Figure 28. Transfer line installed into 6 port valve

**15** Attach the other end of the transfer line to the GC inlet.

- To attach the transfer line to a split splitless or multimode inlet, see **"Attach the Transfer Line to a Split Splitless or Multimode Inlet"**.
- To attach the transfer line to a volatiles interface, see **"Attach the Transfer Line to a Volatiles Interface"**.
- To attach the transfer line to a purged packed inlet, see **"Attach the Transfer Line to a Purged Packed Inlet"**.
- To attach the transfer line to a cool on-column inlet, see **"Attach the Transfer Line to a Cool On-Column Inlet"**.

# Use ProSteel Tubing

If you wish to use ProSteel tubing in place of fused silica in the transfer line, the installation and removal procedures for ProSteel tubing are similar to the fused silica procedures except for the following steps:

1 Cut a ProSteel metal capillary (0.53 mm ID with maximum OD of 0.67 mm) to approximately 1 m in length using a precision tubing cutter.

2 Always use a ProSteel protective sleeve with ProSteel tubing. Without the ProSteel protective sleeve, the ProSteel tubing can permanently bind to the heated conduit tube.

   To install the ProSteel protective sleeve:

   **a** Trim the ProSteel protective sleeve to match the length of the transfer line (approximately 1 m), plus or minus a few millimeters.

   **b** Straighten the ProSteel tubing and protective sleeve.

   **c** Slide the ProSteel tubing into the protective sleeve.

3 Follow the procedure for installing the fused silica into the transfer line. See **"Install a Fused Silica Column into the Transfer Line"** on page 52.

   - Make sure the ProSteel protective sleeve protrudes a few millimeters from both ends of the transfer line for easy removal.
   - Be sure to use the appropriate ferrule and nut supplied with your ProSteel metal capillary.

See **"Remove the Transfer Line from the GC"** on page 49 for removal instructions.

# Replace Gripper Pads

1 Start the automated procedure: **Maintenance > Headspace > Perform Maintenance > Replace Gripper Pads**.

2 Park the tray.

3 Remove the vial racks.

4 Gently move the gantry forward so that the gripper is accessible.

5 Holding the gripper with one hand, remove each gripped pad by slowly pulling down, rotating the pad as needed.

6 When installing the new gripper pads, be sure that the pad seats all the way as the top as shown.

# Manually Remove Vials in the Oven

To manually remove any vials in the oven carousel, do the following:

1. On the GC touchscreen or browser interface, go to **Diagnostics > Headspace > Manual Operations**, then select the option to empty the oven of all vials.

   The oven carousel checks for vials. If none are found, the test is complete. If a vial is found, the test stops and the vial is placed on the shutter for easy removal.

2. Repeat step 1 as desired, or until all vial positions in the carousel are empty.

# Clean the X-Axis Track

Occasionally clean debris and dirt buildup from the track below the left edge of the sample tray. See the figure below.

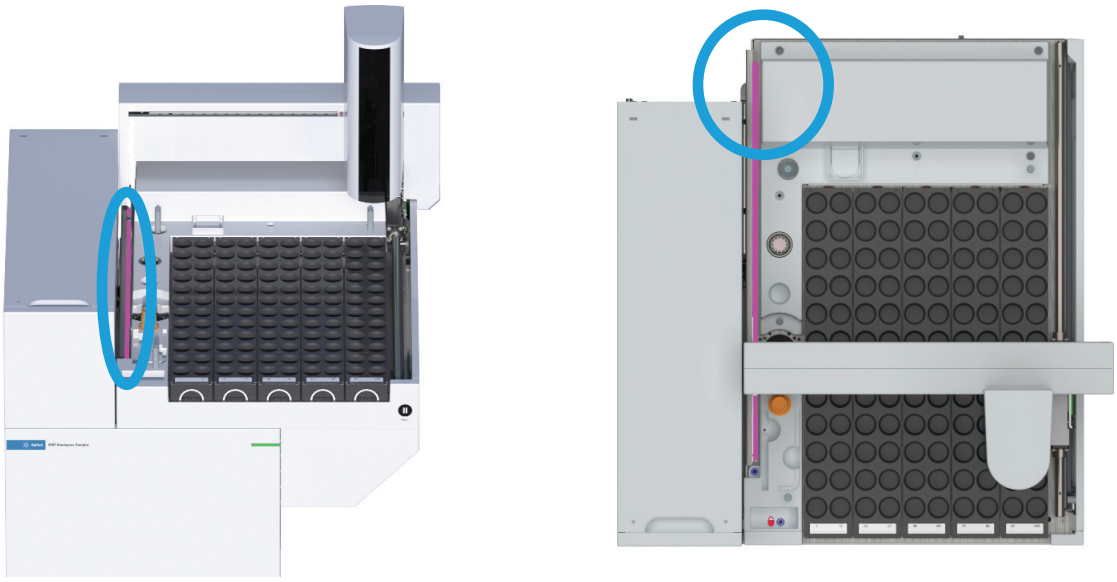



Figure 29. X-Axis track, highlighted in pink

1 Park the tray.

**CAUTION**

**Use a dampened cloth or paper towel only. Avoid dripping water into the instrument.**

2 Wipe the track shown in **Figure 29** with a clean cloth or paper towel dampened with water.

3 Unpark the tray.

4 If accessible, wipe the rear-most portion of the track.

# Periodic Cooling Plate Maintenance

This section contains some suggestions for ensuring good performance of your cooling plate. The maintenance interval varies with the use of the instrument.

On an occasional basis:

- Check for condensation buildup in the secondary drip tray. Use a towel or sponge to remove the excess condensate.
- Check that the drainage tubing drains condensate easily and has no back pressure. Be sure that:
  - The tubing slopes downward towards the drainage container.
  - The tubing slopes downward towards the drainage container.
  - The tubing is kept straight without kinks that may block the flow.
  - The tubing does not become clogged or dirty. Replace tubing if necessary.
  - The open end of the tubing is not submerged in the drainage container (**Figure 30**, "Drip tube correctly hung (left) and incorrectly submersed (right)," on page 61).

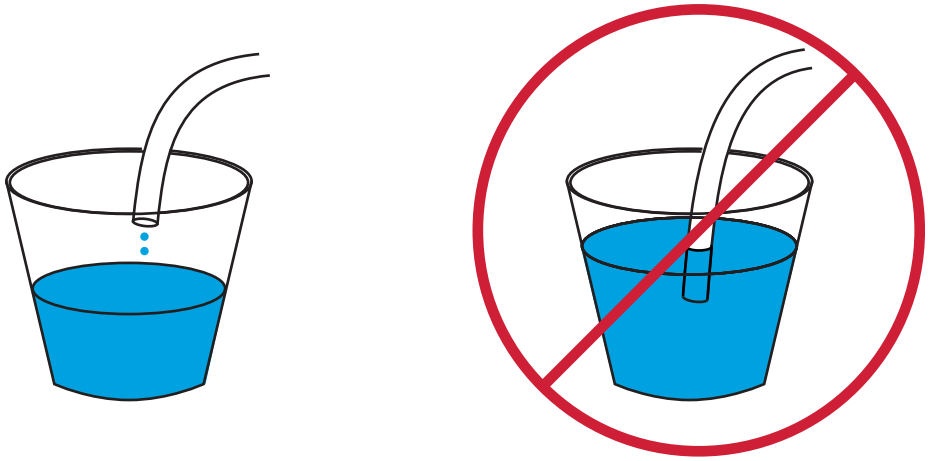


Figure 30. Drip tube correctly hung (left) and incorrectly submersed (right)

# 4 Consumables and Parts



This section lists the consumables and parts for the Agilent 8697 Headspace Sampler.

# Consumables and Parts for the Agilent 8697 Headspace Sampler

See the Agilent catalog for consumables and supplies for a more complete listing, or visit the Agilent Web site for the latest information (www.agilent.com).

### Table 4 Headspace sampler parts and standards

| Description | Part number |
|---|---|
| Leak test kit. Includes:<br>No hole ferrule<br>11 mm low bleed septa, 5/pk<br>Leak test vial<br>1/8-in. fitting plug<br>1/16-in. stainless steel ZDV plug (6 port valve cap) | G4511-68913<br>5181-7458<br>5182-3413<br>G4511-20180<br>0100-1526<br>G6600-80039 |
| Tray vial rack, 8697 | G4511-60402 |
| Tray vial rack labels<br>Rack 1 labels<br>Rack 2 labels<br>Rack 3 labels<br>Rack 4 labels<br>Rack 5 labels | <br>G4511-90401<br>G4511-90402<br>G4511-90403<br>G4511-90404<br>G4511-90405 |
| Replacement Gas Clean Filter, carrier gas (used for vial pressurization gas) | CP17973 |
| Column cutting wafer, ceramic | 5181-8836 |
| Sample probe, deactivated | G4556-63825 |
| 6-port valve, replacement rotor, WT series, 300 psi, 350 °C | 1535-4952 |
| Sample loop retainer clip, 1 each:<br>1 ea. used with 0.025, 0.05, and 0.10 mL sample loops<br>2 ea. used with 0.5 and 1.0 mL sample loops<br>1 ea. used with 3.0 mL sample loops | G4556-20177 |
| Sample loop retainer clip, 1 each:<br>1 ea. used with 0.025, 0.05, and 0.10 mL sample loops | G4556-20178 |
| **Inlet Liner for use with HS Transfer Line Accessory** | |
| Ultra Inert straight 2.0 mm liner | 5190-6168 |
| **Standards** | |
| Headspace OQ/PV sample | 5182-9733 |

## Table 5 Headspace sampler transfer line parts

| Description | Part number |
|---|---|
| **Transfer line components** | |
| Transfer line septa (9 mm) | 5183-4801 |
| Ferrule, polyimide, graphite, 5/pk | |
| 0.53 mm, 1/32 in. for tubing OD 0.50 x 0.80 mm | 0100-2595 |
| 0.4 mm id, for columns up to 250 µm od | 5190-1437 |
| Septum nut, transfer line, for split/splitless and multimode inlets | G3452-60845 |
| Blanking nut, 1/16-inch stainless steel | 01080-83202 |
| Nut and reducing union for 6 port valve and transfer line connection, 1/16-inch to 1/32-inch | 0100-2594 |
| **Transfer lines** | |
| Deactivated fused silica, 250 µm × 5 m | 160-2255-5 |
| Deactivated fused silica, 320 µm × 5 m | 160-2325-5 |
| Deactivated fused silica, 450 µm × 5 m | 160-2455-5 |
| Deactivated fused silica, 530 µm × 5 m | 160-2535-5 |
| ProSteel deactivated stainless steel, 5 m length | 160-4535-5 |
| Sleeve for ProSteel tubing, 5 m length | 4177-0607 |
| **Parts for connection to volatiles interface** | |
| Ferrule, 0.4 mm VG cond .25 col lng 10/pk | 5062-3508 |
| Ferrule, 0.5 mm VG cond .32 col lng 10/pk | 5062-3506 |
| Ferrule, 0.8 mm VG cond .53 col lng 10/pk | 5062-3538 |

## Table 6 Cooling Plate Replacement parts

| Description | Part number |
|---|---|
| Metal vial rack assembly (5) | G4512-60402 |
| Cooler drip tube | G4522-20540 |
| Secondary drip tray | G4556-40680 |
| Nut and ferrule set, 1/4 in, brass | 5080-8752 |
| Nut, 1/4-in. brass | 0100-0056 |
| Bulkhead union, 1/4 in. | G4522-20500 |
| Clamp, hose, 0.468-0.531-in od, 0.22-in wd | 1400-3298 |

## Table 7 Headspace sampler sample loops

| Description | Part number |
|---|---|
| **Sample loops, inert** | |
| 0.025 mL | G4556-80101 |
| 0.05 mL | G4556-80102 |
| 0.1 mL | G4556-80103 |
| 0.5 mL | G4556-80105 |
| 1.0 mL | G4556-80106 |
| 1.0 mL, Certified | G4556-80126 |
| 2.0 mL | G4556-80107 |
| 3.0 mL | G4556-80108 |
| 3.0 mL, Certified | G4556-80128 |
| 5.0 mL | G4556-80109 |

## Table 8 Headspace vials and caps

| Description | Part number |
|---|---|
| **Certified flat bottom vials** | |
| Certified flat bottom headspace vials, 20 mL, 100/pk | 5182-0837 |
| Certified flat bottom headspace vials, 10 mL, 100/pk | 5182-0838 |
| **20 mm Headspace caps, with septa** | |
| Certified headspace Al crimp cap, PTFE/Si septum, 20 mm,100/pk | 5183-4477 |
| **Headspace vial kits** | |
| Vial kit<br>20 mL Headspace crimp top, flat bottom vials, silver aluminum one-piece crimp caps with safety feature, PTFE/white silicone septa, 100/pk | 5182-0840 |
| **Cappers and decappers** | |
| A-Line High Power E-crimper, with power supply, 20 mm jaws | 5191-5624 |
| A-Line electronic crimper for 20 mm caps | 5191-5615 |
| A-Line electronic decapper for 20 mm cap | 5191-5613 |
| Ergonomic manual crimper for 20 mm caps | 5040-4669 |
| Ergonomic manual decapper for 20 mm caps | 5040-4671 |

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