



Agilent 5977B Series MSD

Laboratory Operator Quick Reference Guide



**Ion Source
Routine Maintenance
Venting and Pump Down**



Agilent Technologies

Ion Source Cleaning

Clean the parts that contact the sample or ion beam. The other parts normally should not require cleaning.

If the contamination is serious, such as an oil backflow into the analyzer, seriously consider replacing the contaminated parts.

Abrasively clean the surfaces that contact the sample or ion beam.

Use an abrasive slurry of alumina powder and reagent-grade methanol on a cotton swab. Use enough force to remove all discolorations. Polishing the parts is not necessary; small scratches will not harm performance. Also abrasively clean the discolorations where electrons from the filaments enter the source body.

Rinse away all abrasive residue with reagent-grade methanol.

Take care to avoid recontaminating cleaned and dried parts. Put on new, clean gloves before handling the parts. Do not set the cleaned parts on a dirty surface. Set them only on clean, lint-free cloths.

NOTE

The main effect of operating the MSD in CI mode is the need for more frequent ion source cleaning. In CI operation, the ion source chamber is subject to more rapid contamination than in EI operation because of the higher source pressures required for CI.

CAUTION

Do not overtighten the repeller nut or the ceramic repeller insulators will break when the source heats up. The nut should only be finger-tight.

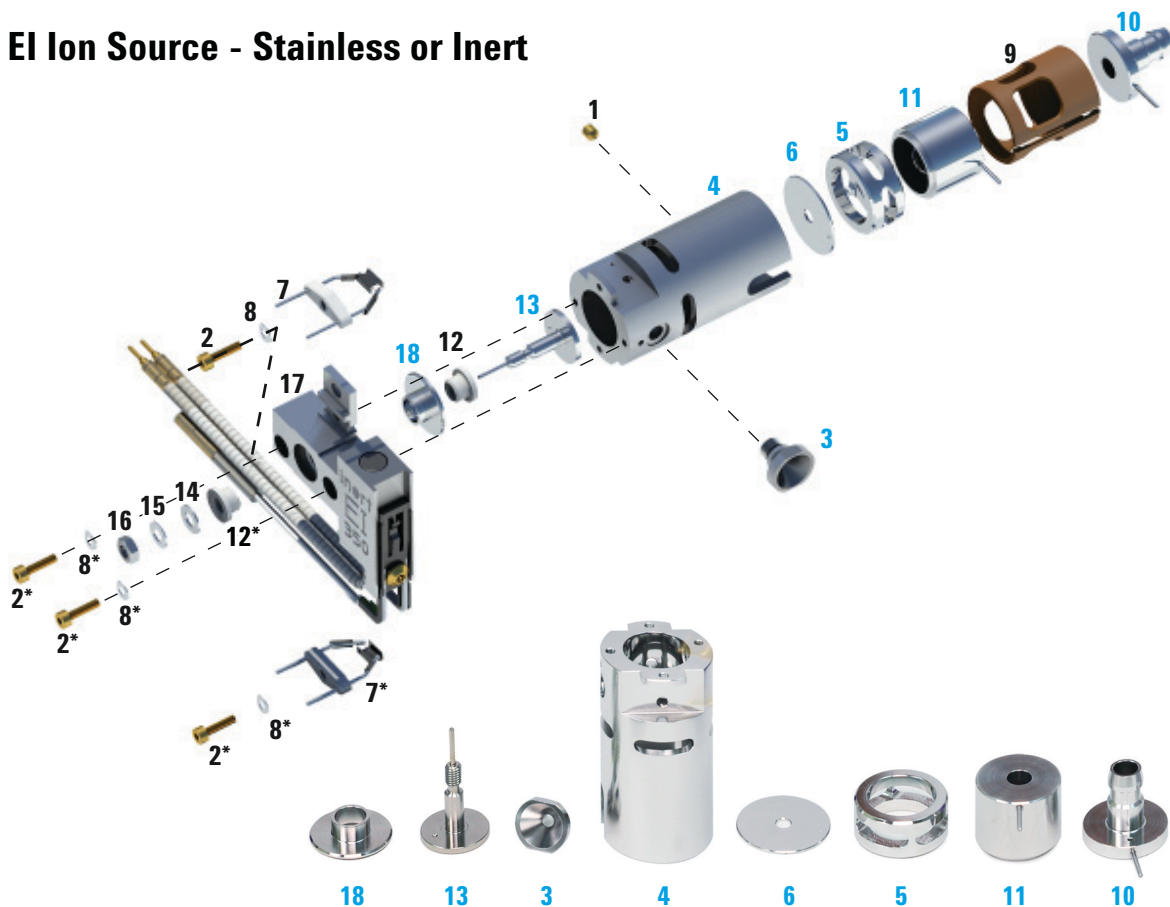
CAUTION

If insulators are dirty, clean them with a cotton swab dampened with reagent-grade methanol. If that does not clean the insulators, replace them. Do not abrasively or ultrasonically clean the insulators.

CAUTION

The filaments, source heater assembly, and insulators cannot be cleaned ultrasonically. Replace these components if major contamination occurs.

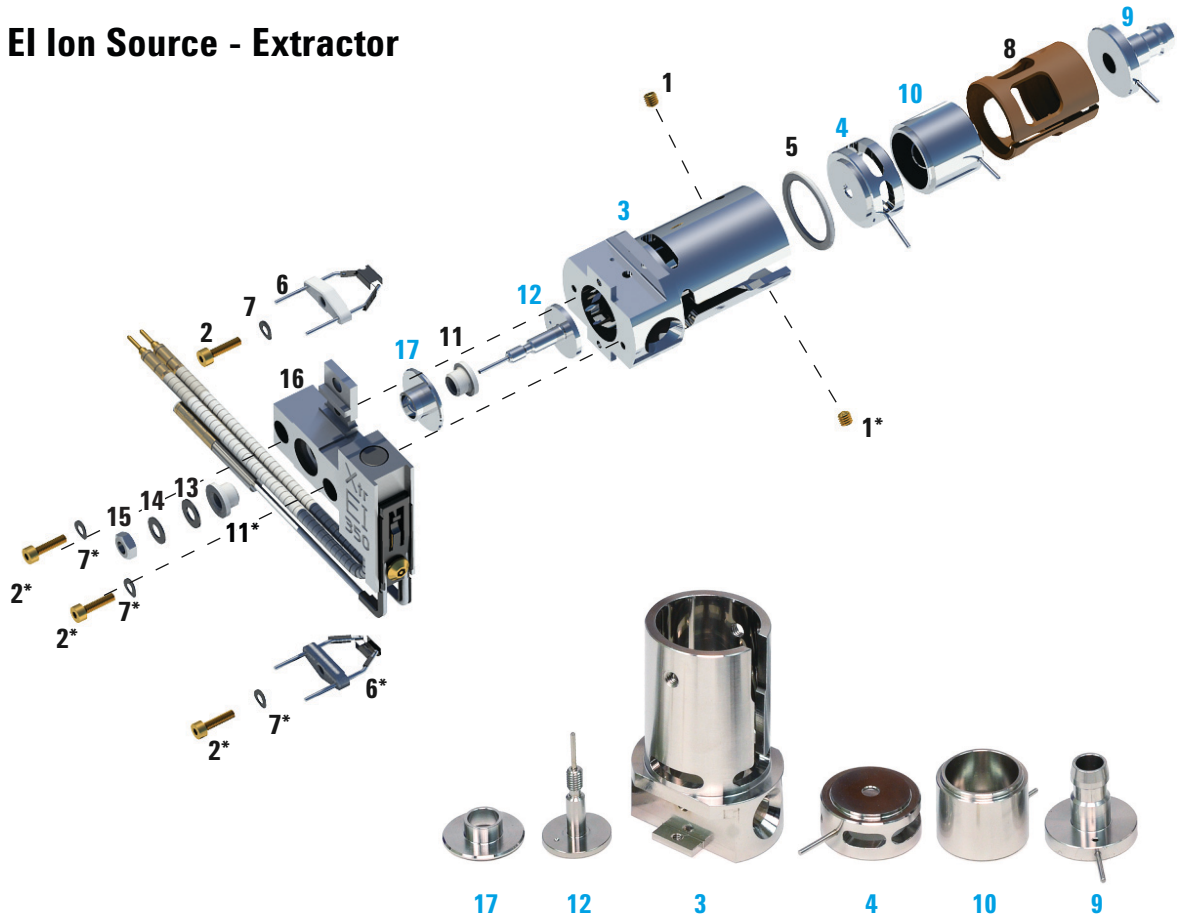
EI Ion Source - Stainless or Inert



Clean the parts highlighted in blue.

- | | | | | | |
|---|-----------------------|----|--------------------|----|------------------------------|
| 1 | Gold plated set screw | 7 | 4-turn filament | 13 | Repeller |
| 2 | Gold plated screw | 8 | Spring washer | 14 | Flat washer |
| 3 | Interface socket | 9 | Lens insulator | 15 | Belleville spring washer |
| 4 | Source body | 10 | Entrance lens | 16 | Repeller nut |
| 5 | Drawout cylinder | 11 | Ion focus lens | 17 | Source heater block assembly |
| 6 | Drawout plate | 12 | Repeller insulator | 18 | Repeller block insert |

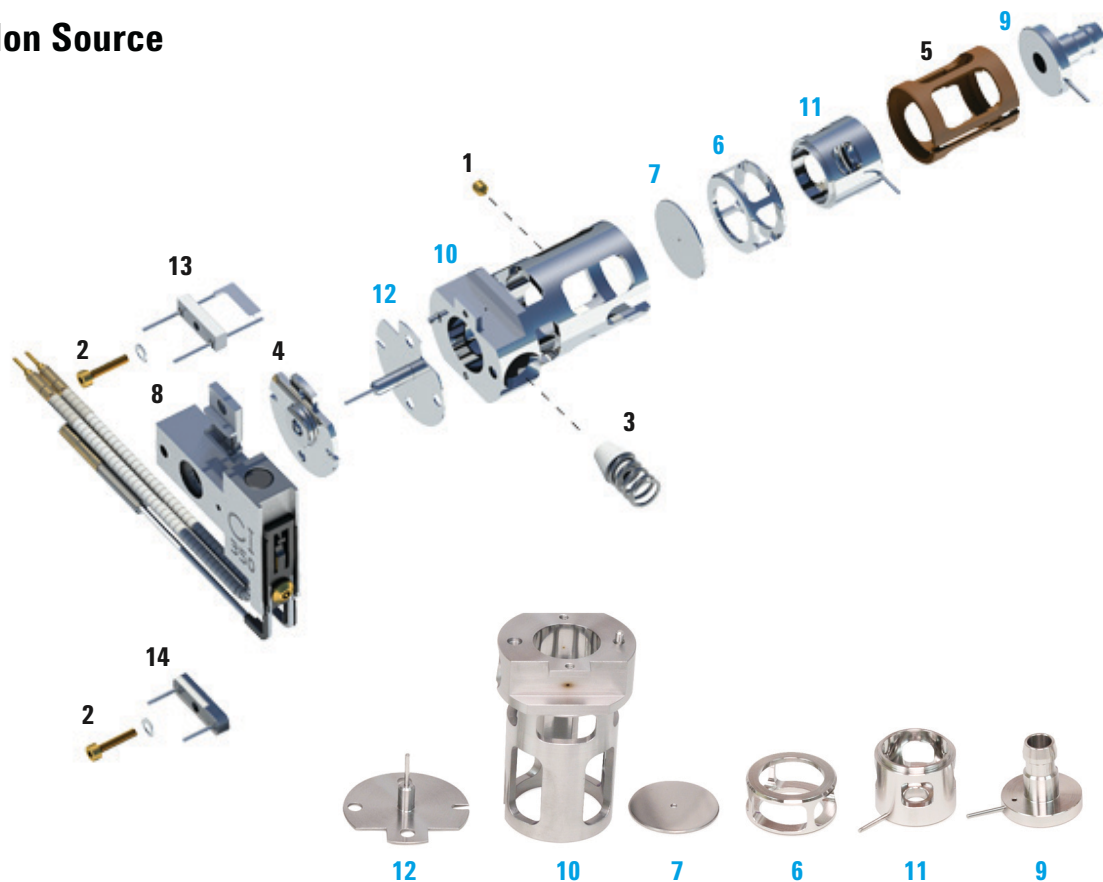
El Ion Source - Extractor



Clean the parts highlighted in blue.

- | | | | | | |
|---|--------------------------|----|--------------------|----|------------------------------|
| 1 | Set screws | 7 | Spring washer | 13 | Flat washer |
| 2 | Screws | 8 | Lens insulator | 14 | Belleville spring washer |
| 3 | Source body | 9 | Entrance lens | 15 | Repeller nut |
| 4 | Extractor lens | 10 | Ion focus lens | 16 | Source heater block assembly |
| 5 | Extractor lens insulator | 11 | Repeller insulator | 17 | Repeller block insert |
| 6 | Filaments | 12 | Repeller | | |

Cl Ion Source



Clean the parts highlighted in blue.

- | | | | | | |
|---|-----------------------|----|---------------------------------|----|-------------------|
| 1 | Set screw | 6 | Cl drawout cylinder | 11 | Cl ion focus lens |
| 2 | Filament screw | 7 | Cl drawout plate | 12 | Cl repeller |
| 3 | Cl interface tip seal | 8 | Cl source heater block assembly | 13 | Cl filament |
| 4 | Cl repeller insulator | 9 | Entrance lens | 14 | Dummy filament |
| 5 | Cl lens insulator | 10 | Cl source body | | |

Operating the MSD from the GC control panel

To change MSD temperatures from the GC control panel

- 1 Press **MS/Aux Det** to display the 5977B MSD menu.
- 2 Press the down arrow to scroll to **Quad temp, Source temp** or **Transfer line**.
- 3 Use GC keypad to enter the desired temperature.
- 4 Press **Enter** to apply the changes.

To view MSD vacuum pressure and Turbo speed/Foreline Pressure from the GC control panel

- 1 Press **MS/Aux Det** to display the 5977B MSD menu.
- 2 Press the down arrow to scroll to **HiVac Pressure**, or **Turbo Speed % of full//Foreline Pressure**.

To vent the MSD from the GC control panel

- 1 With the MSD pumped down, press **MS/Aux Det** to bring up the 5977B MSD menu.
- 2 Press the down arrow to scroll to **Start MSD Vent?**. (Press **Off/No** to cancel the vent cycle and pump down the MS).
- 3 Press **ON/Yes** to start the venting cycle.
- 4 When prompted open the vent valve.

To pump down the MSD from the GC control panel

- 1 With the MSD vented, close the vent valve.
- 2 Press the **Power on** button on the front of the MSD.
- 3 Press lightly on the side board to ensure a correct seal. Press on the metal box on the side board.
- 4 Press **MS/Aux Det** to bring up the 5977B MSD menu.
- 5 Press the down arrow to scroll to **Start MSD Pumpdown?**.
- 6 Press **ON/Yes** to start the pump down cycle.

To view the firmware version of the MSD from the GC control panel

- 1 Press **MS/Aux Det** to bring up the 5977B MSD menu.
- 2 Press the down arrow to scroll to **Firmware**.

To view the serial number of the MSD from the GC control panel

- 1 Press **MS/Aux Det** to bring up the 5977B MSD menu.
- 2 Press the down arrow to scroll to **Serial#**.

To configure the network settings for the MSD from the GC control panel

- 1 Press **Config**, and then press **MS/Aux Det** to bring up the CONFIGURE MS DETECTOR menu.
- 2 To configure the **IP:** parameter, use the GC keypad to enter the new IP address for the MSD, then press **Enter** to complete the entry.
- 3 Wait for the GC to display the new IP address. Reboot the MSD or proceed to the gateway address with the down arrow button
- 4 Press the down arrow to scroll to **GW:** and use the GC keypad to enter the new gateway address for the LAN and press **Enter** to complete the entry.
- 5 Press the down arrow to scroll to **SW:** and use the GC keypad to enter the new subnet mask for the LAN and press **Enter** to complete the entry.
- 6 Reboot the MSD. (See below)

To reboot the MSD from the GC control panel

- 1 Press **Config**, and then press **MS/Aux Det** to bring up the CONFIGURE MS DETECTOR menu.
- 2 Press the down arrow to scroll to **Request MSD Reboot?**.
- 3 Press **On/Yes** to reboot the MSD and wait for the MSD to complete this cycle before trying to access it. The LED turns red until the reboot cycle is completed.



Scheduled maintenance

Task	Every week	Every 6 months	Every year	As needed
Tune the MSD				X
Check the foreline pump oil level	X			
Check the calibration vial(s)		X		
Replace the foreline pump oil*		X		
Replace the diffusion pump fluid			X	
Check the dry foreline pump				X
Change the dry foreline pump tip seal			X	
Change the foreline pump exhaust filter				X
Clean the ion source				X
Check the carrier gas trap(s) on the GC and MSD				X
Replace the worn out parts				X
Lubricate sideplate or vent valve O-rings†				X
Replace CI Reagent gas supply				X
Replace GC gas supplies				X

* Every 3 months for CI MSDs using ammonia reagent gas.

† Vacuum seals other than the side plate O-ring and vent valve O-ring do not need to be lubricated. Lubricating other seals can interfere with their correct function.

