

Agilent 5977C Series MSD

Laboratory Operator Quick Reference Guide



Ion Source Cleaning

Scheduled Maintenance

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.

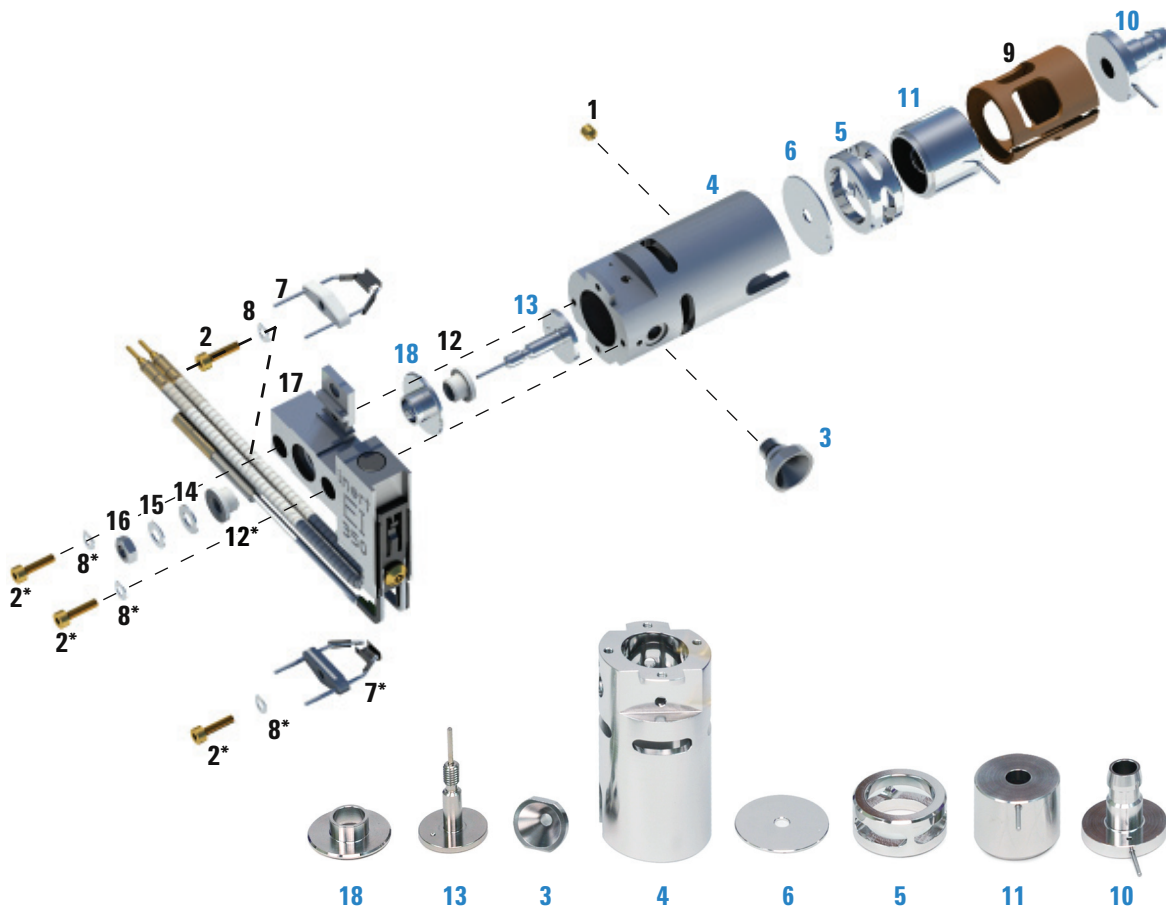
CAUTION

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.

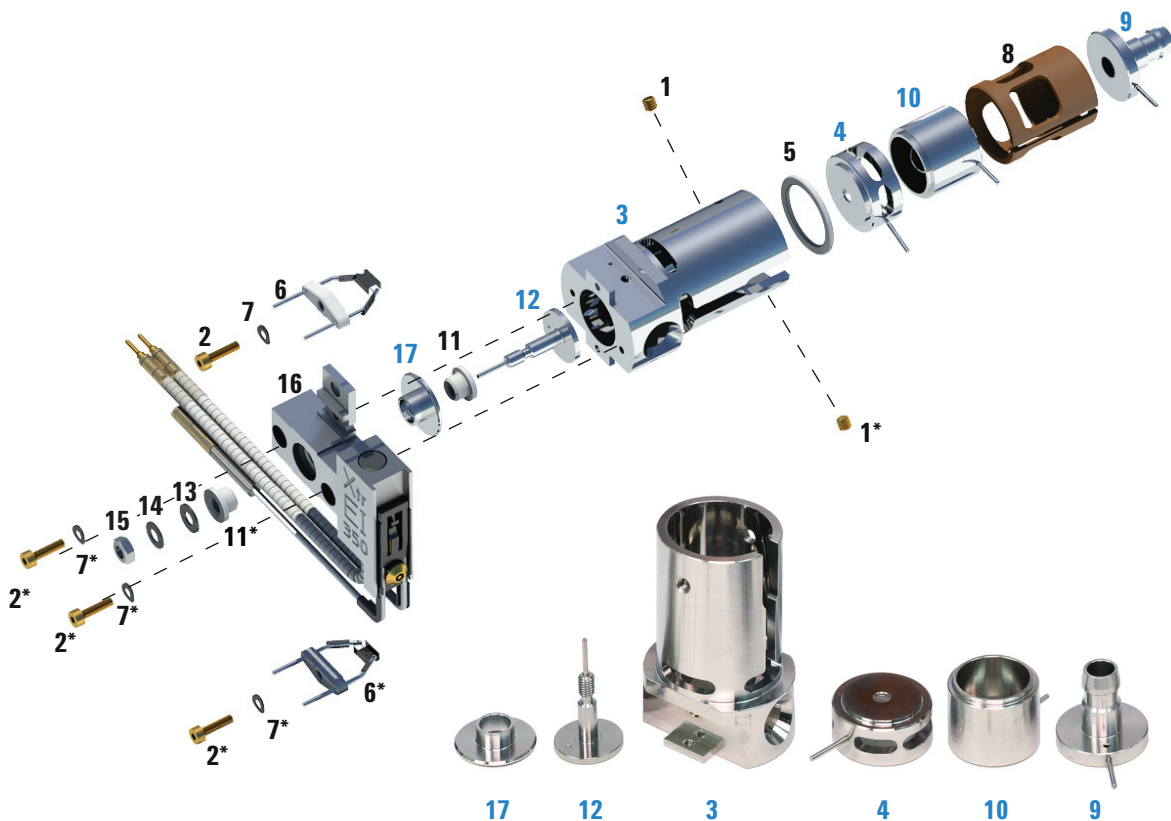
El Ion Source - Stainless or Inert



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 |

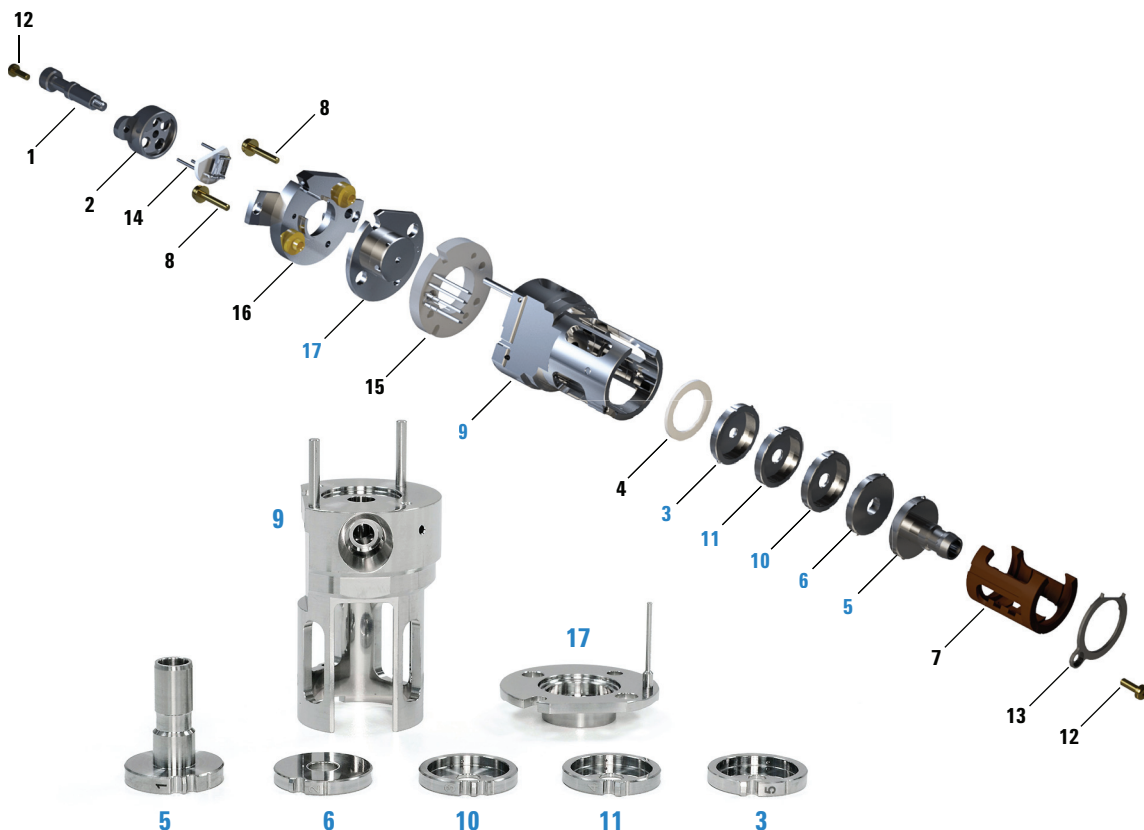
El Ion Source - Extractor



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 | | |

EI HES Source

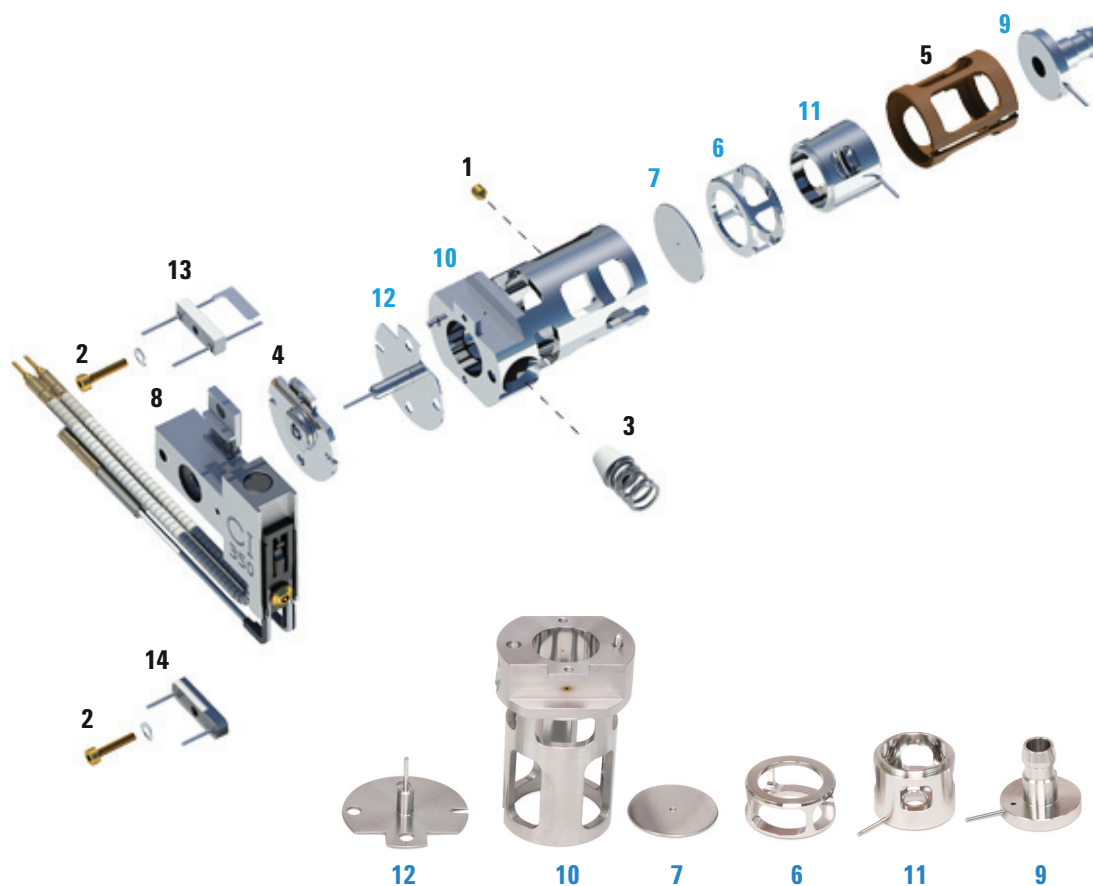


Clean the parts highlighted in blue.

- | | | |
|-----------------------------------|--------------------------------|----------------------------------|
| 1 Source finger grip | 7 Lens insulator/holder | 13 Locking ring lens insulator |
| 2 Filament block | 8 M2 × 0.4 screw × 12 mm screw | 14 High efficiency dual filament |
| 3 Extractor lens (5)* | 9 Source body | 15 Ring heater/sensor assembly |
| 4 Ceramic insulator for extractor | 10 Post extractor lens 2 (3)* | 16 Source mount 1.5 mm |
| 5 Entrance lens (1)* | 11 Post extractor lens 1 (4)* | 17 Repeller assembly |
| 6 Ion focus lens (2)* | 12 M2 × 6 mm screw | |

* The number in parenthesis is the number engraved on the lens

CI Ion Source



Clean the parts highlighted in blue.

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

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 oil mist 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.

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