Agilent 6400 Series Triple Quad LC/MS –
Preventive Maintenance Checklist
Interim

Agilent Technologies

Agilent Preventive Maintenance provides factory recommended service for your analytical systems to assure reliable operation and the accuracy of your results. Delivered by highly-trained and certified service engineers using genuine Agilent parts and supplies, Agilent Preventive Maintenance provides everything you need to reduce unplanned downtime and keep your systems operating at their peak.

For more information about Agilent Technologies services please visit our web site using the following URL http://www.chem.agilent.com/en-us/products/services/pages/default.aspx

Customer Information

- Customers should provide all necessary operating supplies upon request of the engineer.
- A customer representative should be available to the engineer while performing the preventive maintenance procedures.
- Any parts, not included in the Parts Lists section of this document, are not part of the recommended Preventive Maintenance service, nor are they included in the price of this service.
- If a system requires the use of additional or special procedures and/or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional costs.

Service Engineer's Responsibilities

Only complete/printout pages that relate to the system or module being serviced.
Complete empty fields with the relevant information
Complete the relevant checkboxes in the checklist using a "X" or tick mark "✓" in the checkbox.
Complete Not Applicable check boxes to indicate services not delivered, as needed
Complete the PM service in the order of the tasks listed.
Complete the Service Review section together with the customer

Additional Instruction Notes

Additional parts for the Triple Quad and Sources (not included in the PM kit):

6040-0834 Rough pump fluid (Inland 45 for Edwards), 1L **OR**
6040-1361 Rough pump fluid (SW60 for MS40+), 1L

The following required parts are supplied with the instrument in the shipping kit:

8660-0827 Abrasive cloth, 4000 grit
05980-60051 Lint-free cloth, 1 pk
5080-5400 Cotton swabs, 1 pk
5190-1401 Alconox

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System Information

Instrument System Name/I.D:	Instrument Location:
Record the list of system component product numbers below.	**List the serial numbers of the components present in the system below.**
1.	**1.**
2.	**2.**
3.	**3.**
4.	**4.**
5.	**5.**
6.	**6.**
7.	**7.**
8.	**8.**
9.	**9.**
10.	**10.**

Guidance:

- ❑ Check box if instrument configuration report is attached instead of completing the table above.

Preparation

- ❑ Discuss any specific issues with the customer prior to starting.
- ❑ Review the instrument logbook.
- ❑ Save instrument control settings before starting the procedure.
- ❑ Perform general inspection of system for cleanliness
- ❑ Check for proper installation of safety-related parts, assemblies , sensors etc
- ❑ Check for required firmware updates and verify with customers if they would like it installed.
- ❑ Review customer maintenance records and exclude maintenance on recently serviced items.
- ❑ Review the recent autotune report. This will give a starting point for evaluating spectral peaks, baseline noise, peak shape, mass assignments and resolution.

6400 Series QQQ

- ❑ **Section NOT Applicable**
- ❑ Record current vacuum readings:
  - ❑ Rough Vacuum: _____
  - ❑ High Vacuum: _____

- ❑ Check manually that you have tune peaks in positive and negative mode.
- ❑ Vent the instrument.
- ❑ Perform general system inspection:
  - ❑ Inspect vacuum hoses, pump exhaust tubing and power cords for excessive wear
  - ❑ Look for any obvious external damage or problems.
  - ❑ Note any obvious external damage or problems.

- ❑ Clean air intake on LC/MS cabinet (inside access door & above the power module).
- ❑ Verify system line voltage meets instrument specifications:
  - ❑ Measured voltage: _____
- ❑ Drain and replace rough pump fluid (6040-0834 for Edwards Rough Pumps or 6040-1361 for MS40).
- ❑ Tighten the four bolts on the rough pump that hold the oil box to the pump body. This will help eliminate rough pump oil leaks.
  - ❑ Replace mist filter element (1535-4970) for Edward Rough Pumps or
  - ❑ **Section NOT Applicable**
- ❑ Remove the ion transport capillary from the desolvation assembly. Clean the capillary. Follow the documented capillary cleaning procedure using Alconox in solution no longer than 15 minutes.
  - ❑ Follow the documented high pressure ion funnel cleaining procedure using isopropanol for 6490.
  - ❑ **Section NOT Applicable**
- ❑ Inspect the plated ends of the ion transport capillary. Note any physical damage or wear.

- ❑ Remove spray shield, end plate, and capillary cap. Clean the parts.
- ❑ Reinstall the spray shield, end plate, capillary and capillary cap.

API-Electrospray with Agilent Jet Stream Technology (for 6460/6490)

Perform source maintenance on currently installed source only.

- ❑ **Section NOT Applicable**
- ❑ Perform general inspection of API-Electrospray with Agilent Jet Stream Technology
  - ❑ Inspect Vented Standoffs for chemical deposits or physical damage.
  - ❑ Inspect nebulizer and needle for physical damage (i.e. dents or corrosion).
  - ❑ Note any obvious external damage or problems.

- ❑ Remove mesh assembly and clean with abrasive cloth, followed by wiping with a lint-free cloth with methanol. Clean standoffs with lint-free cloth with methanol. Reinstall mesh assembly

- ❑ Clean all other interior surfaces of the spray chamber, including the window, with a lint-free cloth with methanol.

G1948B API-Electrospray Source

Perform source maintenance on currently installed source only.

- ❑ **Section NOT Applicable**
- ❑ Perform general inspection of API-Electrospray source:
  - ❑ Inspect Vented Standoffs for chemical deposits or physical damage.
  - ❑ Inspect nebulizer and needle for physical damage (i.e. dents or corrosion).
  - ❑ Note any obvious external damage or problems.

- ❑ Remove mesh assembly and clean with abrasive cloth, followed by wiping with a lint-free cloth with methanol. Clean standoffs with lint-free cloth with methanol. Reinstall mesh assembly
- ❑ Clean all other interior surfaces of the spray chamber, including the window, with a lint-free cloth with methanol.

G1947B APCI Source

Perform source maintenance on currently installed source only.

- ❑ **Section NOT Applicable**
- ❑ Perform general inspection of APCI source:
  - ❑ Inspect corona needle holder for oxidation or physical damage (i.e. springs on needle holder).
  - ❑ Inspect needle receptacle for oxidation or physical damage (i.e. cracks inside source)
  - ❑ Inspect nebulizer and needle for physical damage (i.e. damaged tip or corrosion).
  - ❑ Note any obvious external damage or problems.

- ❑ Adjust nebulizer needle (G1946-60190) properly.
- ❑ Using the grey abrasive cloth, abrasively clean the bottom of the vaporizer can, and then wipe with a lint-free cloth with methanol.
- ❑ Clean all other interior surfaces of the spray chamber, including the window, with a lint-free cloth with methanol.

G1978B Multimode Source

Perform source maintenance on currently installed source only.

- ❑ **Section NOT Applicable**
- ❑ Perform general inspection:
  - ❑ Inspect corona needle holder for oxidation or physical damage (i.e. springs on needle holder).

- ❑ Inspect needle receptacle for oxidation or physical damage (i.e. cracks inside source)
- ❑ Inspect nebulizer and needle for physical damage (i.e. damaged tip or corrosion).
- ❑ Note any obvious external damage or problems.

- ❑ Clean all other interior surfaces of the spray chamber, including the window, with a lint-free cloth with methanol.

G1953A Nitrogen Generator

- ❑ **Section NOT Applicable**
- ❑ If location is 208 V (Americas), confirm "booster" transformer has been or to be installed. Install as necessary before pumpdown.
- ❑ Confirm customer has been contacted by Nitrogen Generator manufacturer for their Preventive Maintenance.

Restore Instrument

- ❑ Pump the system down.
- ❑ Record current vacuum readings:
  - ❑ Rough Vacuum: _____
  - ❑ High Vacuum: _____
- ❑ Verify that all temperatures, pressures, and gas flows reach tune file set points.
- ❑ Verify that all temperatures, pressures, and gas flows reach tune file set points
- ❑ Check manually that you have tune peaks in positive and negative mode. Generate tune reports in positive and negative mode.
- ❑ Add results to PM documentation.

Note: The purpose of generating tune reports after planned maintenance is to verify that the system is functional in positive and negative modes. Autotune should NOT be performed at this time.

An Autotune should be run after the system has been allowed to thermally equilibrate for at least 11 hours following a system vent. During this time, it is not unusual for the instrument to exhibit mass assignment shifts, poor peak shapes and/or poor resolution.

Guidance:

If the PM service is performed prior to a qualification service, then use the qualification procedure as a guide for final instrument set up and checkout.

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Service Review

- ❑ Attach available reports/printouts of all tests to this documentation.
- ❑ Record the PM service activity in the customer's instrument records/logbook
- ❑ Update/reset instrument maintenance counters as appropriate
- ❑ Affix the PM sticker to the system or instrument logbook based on the customer's request.
- ❑ Complete the Service Review Comments section below if there are additional comments
- ❑ Review the service and any test results with the customer.
- ❑ If the Instrument firmware was updated, record the details of the change in the Service Engineer's Comments box below or if necessary, in the customer's IQ records.

6400 Series Triple Quad LC/MS Test Results Table:

Test Description	Expected Test Result	Actual Test Result
Autotune Report prior to PM		
Autotune Report after to PM	Pass	

6400 Series Triple Quad LC/MS Parts List Table:

- ❑ **Section NOT Applicable**

Part Description	Part Number	Product/Model # where used	Quantity Consumed
LCMS PM kit	5190-1443		
Rough pump fluid (Inland 45 for Edwards), 1L	6040-0834		
Rough pump fluid (SW60 for MS40+),	6040-1361		
Universal Nitrogen gas filter	RMSN-4		
Nitrogen gas filter,	RMSN-2		
Nebulizer needle kit, new ES	G1958-60136		
Nebulizer needle kit (or G2427A), MMI pre 2008	G1946-60136		
Nebulizer needle kit (or G2428A), APCI	G1946-60190		
Corona needle	G1947-20029		

Service Engineer Comments (optional):

If there are any specific points you wish to note as part of delivering the PM service including any follow-up activities, specific observations made or other items of interest for the customer, please write in this box.

Other Important Customer Web Links

How to get information on your product: Literature Library - http://www.agilent.com/chem/library
Need to know more? - www.agilent.com/chem/education
Need technical support? - www.agilent.com/chem/techsupp
Need supplies? - www.agilent.com/chem/supplies

Service Completion

Service Request number…… Date service completed……

Agilent Signature…… Customer Signature……

Total no. of pages for this document: …….

