

Agilent 6230B Series TOF LC-MS System – Installation Checklist

Thank you for purchasing an Agilent **instrument** solution. This checklist is used by the installing engineer to ensure that the instrument and associated systems are correctly installed, upgraded and functioning as designed in your facility. This checklist will be completed at the end of the service and provided to you as a record of the installation.

Customer Information

- The customer should ensure that the installation site is prepared in accordance with the specifications contained in the relevant Site Preparation Guide.
- The customer should provide the necessary operating supplies and consumables upon request of the engineer.
- A customer representative should be available during the installation.
- **Do not open the shipping containers until an Agilent representative is present to verify the contents of each carton.**
- Retain shipping containers and material until installation is complete and performance is verified.

Service Engineer's Responsibilities

- Only complete/printout pages that relate to the system being installed.
- 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 Service Review section together with the customer.
- If more than one source is present, installation verification is performed only with the Dual Spray ESI source or Agilent Jet Stream Technology. Additional sources have separate installation requirements.

Additional Instruction Notes

- **The primary reference that for the installation details is:**
Agilent 6200 Series Time-of-Flight LC/MS System Installation Guide (G3335-90209).
- Typical installation time for a 6200 Series TOF LC/MS system is 8 hours.
NOTE: The typical installation does not include system pump down time. The instrument should be installed and given time to pump down before performing the installation verification procedure.
- Please note that the LC modules that have to be installed with this LC/MS System have separate documents which should be completed.
- 'Agilent 6200 Series Time-of-Flight LC/MS System Installation Guide' (Part Number G3335-90209) will be referred to as 'Installation Guide' in this checklist.

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System Information

- Check this box if an instrument configuration report is attached instead of completing the table.

Instrument System Name & I.D.	
Instrument System Site and Location	
List system component product numbers	List the serial numbers of each component
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.

Bundled Computer Hardware Information

- Section NOT Applicable

Description of computer, network component, or peripheral	Product number	Serial number
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
5.	5.	5.

Task #1 General Preparation

- Carefully examine all containers for external signs of damage. If damage is discovered, immediately

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contact the carrier and the Agilent Service District Manager.

- Verify the condition and completeness of shipment. For discrepancies, use the table below.

Product or part description	Observation	Action

- Discuss any specific questions or concerns with the customer prior to starting.
- Discuss any configuration options with the customer prior to starting.
- Check for required service note applicability and firmware updates if connecting to instruments.
- Check that customer-supplied PC hardware meets minimum requirements e.g. Site Preparation Tool <http://www.chem.agilent.com/en-US/Support/Downloads/Utilities/SWSitePrepTool/Pages/Default.aspx>
- If applicable, locate appropriate license authorization codes and/or license certificates and verify against sales order.
- Upgrades only – Ensure with customer that instrument control settings, data, methods etc have been properly backedup prior to starting any installation procedures.
- Using a Voltmeter, ensure the electrical power supply Voltage is between 200-240 VAC. Refer to Site Preparation Guide for detailed requirements for the power configuration.

Task #2 Install G6230B TOF Base Unit

- Remove all the cardboard shipping box and straps that secure the TOF mainframe to the shipping pallet and the protective plastic bag.
- Using two people as at minimum, place the TOF base unit on a stable bench or table.
Note: ensure adequate space is available to operate & maintain the instrument.
- Remove the flight tube collar, top, front, right, left and back instrument cosmetic covers.
Note: do not remove the Plexiglass™ cover on the flight tube manifold until the flight assembly is ready to be installed.
- Unpack and set up the Agilent MS40+ foreline pump, Installation Guide, Section 1, Step 3.
- Confirm MS40+ pump is filled with SW60 (part number 6040-1361) foreline pump oil.
- Confirm the mist filter is installed on MS40+ foreline pump.
- Connect foreline pump exhaust tubing to exhaust adaptor to house exhaust.
Note: In order to prevent back streaming of volatile contaminants, the vacuum pump exhaust should not be connected to source exhaust. If on the same exhaust system, the vacuum exhaust port must

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be downstream of the source exhaust port.

- Connect the vacuum tubing of the foreline pump hose to the TOF.
- Connect the spray chamber exhaust tube to the drain bottle 1" fitting, Installation Guide, Section 1, Step 4
- Connect the Dry Gas Supply as follows, Installation Guide, Section 1 Step 4:
- Option NOT Applicable**
 - Drying Gas Supply for G6230B with a Dual Agilent Jet Stream installations:
 - Confirm gas regulator pressure is set between 85 and 100 psi, recommended setting 6.5 bar (95 psi).
 - Confirm installation of the **dual** RMSN-4 gas filters according to Installation Guide, Section 1, Step 2, for Dual-AJS.
- Option NOT Applicable**
 - Drying Gas Supply for G6230B with an Agilent Dual ESI Source (Option # 200):
 - Confirm gas regulator pressure is set between 85 and 100 psi, recommended setting 6.5 bar (95 psi).
 - Confirm installaion of **single** RMSN-4 gas filter according to Installation Guide, Section 1, Step 2, for Dual-ESI
- Connect foreline pump power cord to the TOF electrical power outlet.

Note: the MS40+ foreline pump wil not start until the 6230B TOF is turned on.
- Install the MCP Detector Baffle, Installation Guide, Section 1, Step 5.

Note: handle the baffle as an ultra-clean part.
- Confirm the black plastic cap has be removed from the MCP.

Task #3: Install Flight Tube Assembly

WARNING: Never vent or purge the flight tube with pressurized gas. A pressurized flight tube can result in high-speed projectiles that can cause serious injury or death.

- Unpack flight assembly
- Remove the four bolts retaining the Plexiglass™ shipping cover in place.

Note: leave the Plexiglass™ cover in place to prevent dust from contaminating the detector.
- Carefully open the shipping insert retainer vent valve to equilibrate the internal and ambient pressure.
- Remove the shipping insert retainer.
- Using two people, position flight assembly on the TOF manifold.

Engage the two alignment pins on the base of the flight tube. Carefully tilt the flight assembly into the upright position.
- Secure the flight assembly with four 6-mm bolts. These bolts should be installed very securely.
- Confirm the Mid and Back Mirror high voltage cables are connected.

Note: ensure to expell any trapped air from the high voltage connection.

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Option NOT Applicable

- Optional Step: If the G1947B APCI source has been ordered, install the APCI power supply and corona needle control cable into the Auxiliary module.

Option NOT Applicable

- Optional Step: If the G1978B Multimode source has been ordered, install the APCI power supply, Multimode High Voltage control board, High Voltage control cable, Multimode reversing electrode control cable, and corona needle control cable into the Auxiliary module.

- Re-install the electromagnetic interference (EMI) covers and the instrument cosmetic covers.

Task #4: Prepare tuning mix and reference mass solutions

Note: failure to dilute the tune mix will result in poor mass accuracy results.

- Prepare the tuning mix according to the installed source, Installation Guide, Section 1 step 7.
 - Add to CDS Bottle B.
- Prepare the reference mass solution according to the installed source, Section 1 Step 8.
 - Add to CDS Bottle A.

Task #5: Install Dual ESI (G3251B) on systems with Option 200

Section NOT Applicable.

Note: if more than one source is present, installation verification is performed only with the Dual ESI source. Additional sources do not have sensitivity specifications.

- Install the Dual AJS source on the desolvation assembly according to Installation Guide, Section 1, Step 9.
- Ensure ESI-L Tuning Mix (p/n G1969-85000) is diluted according to the Installation Guide Section 1 Step 7, for Dual ESI.
- Ensure Reference Mass Solution is prepared according to the Installation Guide Section 1 Step 8, for Dual ESI.

Task #6 Install G3251B Dual Agilent Jet Stream Source on G6230B

Section NOT Applicable.

Note: If more than one source is present, installation verification is performed only with the Dual ESI source or Agilent Jet Stream Technology. Additional sources do not have sensitivity specifications.

- Install the Dual AJS source on the desolvation assembly according to Installation Guide, Section 1, Step 9.
- Ensure ESI-L Tuning Mix (p/n G1969-85000) is diluted according to the Installation Guide Section 1 Step 7, for Dual AJS.
- Ensure Reference Mass Solution is prepared according to the Installation Guide Section 1 Step 8, for Dual AJS.

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Task #7 Pump Down the TOF Instrument

- Plug in the instrument into the electrical power supply, Install Guide, section 1 step 10.
- Turn on the TOF using the power switch to automatically start the pump down.
Note: the detector will be conditioned when the instrument is under vacuum, refer to Section 1, Step 14.

Task #8: Install LC System on G6230B

- Install the LC Instrument according to the Agilent LC instrument section of the Installation Guide (G3335-90209), Section 1, Step 11.
- Check PC network card configuration.
- Verify the default LC IP address:
 - TCP/IPv4: 192.168.254.11
 - Subnet: 255.255.255.0
 - Gateway: Leave the Default Gateway blank

Task #9: Install the PC and any Peripherals

- Set up the computer system according to the Installation Guide, Section 2, Step 1.
- Unpack and set up the computer, monitor, printer and LAN hub.
- Section NOT Applicable.**
 - Install the printer.
- Prepare for software installation
 - Run Windows Update, if the computer is connect to internet.
 - Ensure Windows Update is complete, then restart the computer before continuing.

Task #10: Software Installation and Configuration

- Set up the computer system according to the Installation Guide, Section 2, Step 1.
- Ensure the computer network adaptor card has the following settings, Installation Guide, Section 2, Step 2:
 - IP: 192.168.254.1
 - Subnet: 255.255.255.0
 - Gateway: Leave the Default Gateway blank
- Ensure the following checkbox is **NOT** enabling (clear checkbox), , Installation Guide, Section 2, Step 2
'Allow the computer to turn off this device to save power,' see Figure 18.
- Run Windows Update, if the computer is connect to internet.
- Ensure Windows Update is complete, then restart the computer before continuing.

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Task #11: Software Installation

Note: Qualitative and Quantitative Analysis installation programs must be **Run as Administrator** for a complete installation.

- Install the Data Acquisition program and configure the system according to the Installation Guide, Section 2, Step 4.
- Install the Qualitative Analysis program according to the Installation Guide, Section 2, Step 5.
Note: the installation must be **Run as Administrator** for a complete installation.
- Install the Quantitative Analysis program, according to the Installation Guide, Section 2, Step 6.
Note: the installation must be **Run as Administrator** for a complete installation.

Section NOT Applicable.

Note: Excel is not required to generate standard MassHunter Qualitative Analysis or Quantitative Analysis reports. If MassHunter Qualitative or Quantitative custom reports are required, the customer must obtain Excel 2016 from Microsoft.

- Install Excel provided by Customer.
- Configure Excel for MassHunter.
- Install any available Service Packs for Data Acquisition using the **Run as Administrator**, see Installation Guide, Section 2, Step 8.
- Section NOT Applicable.**
 - Install Compliance programs (optional).
- Install Quantitative Analysis Reporting, using the **Run as Administrator**, see Installation Guide, Section 2, Step 9.
- Configure the TOF and the LC instrument using the the Device Configuration Tool, see Installation Guide, Section 2, Step 11.
Note: The LC IP address is 192.168.254.11
- Confirm the LC firmware revision, Installation Guide Section 2 Step 12.

Task #12: Pump down the TOF instrument and condition the high Voltage electronics

- Pump down the TOF instrument and condition the high Voltage electronics using TOF Diagnostic Tool. (The TOF IP **Connect** address is 192.168.254.12), Installation Guide, Section 2 Step 13.

Task #13: Installation Completion and Verification

- Condition the Agilent HPLC instrument, Installation Guide Section 3, Step 1.
- Prepare an **Initial** Auto Tune, Installation Guide Section 3, Step 2.
- Perform an initial Auto Tune according to the Installation Guide, Section 3, Step 3.

Use the Tune Mix solutions in the below table prepared according to the Installation Guide, Section 1, Step 7.

Note: Initial Auto Tunes are performed only in **Extended Dynamic Range**

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Tune Type	Dual AJS ESI Source	Dual ESI Source
Initial Positive Ion TOF Tune	1:10 diluted Tune Mix	Undiluted Tune Mix
Initial Negative Ion TOF Tune	1:40 diluted Tune Mix	Undiluted Tune Mix
Initial Positive Ion Polarity Switching Tune	Undiluted Tune Mix	Undiluted Tune Mix
Initial Negative Ion Polarity Switching Tune	Undiluted Tune Mix	Undiluted Tune Mix

- Save tuning information is stored in **Autotune.tun**
- Set up the instrument for verification, Installation Guide Section 3, Step 4.
- Start the TOF Mass Calibration and use the Tune Report.

The 6230B TOF Installation Specifications are (All Sources):

6230B TOF Mass Resolution Specifications	Mass Accuracy	Result
Greater than 10,000 at 118 m/z	Less than 1 ppm for all masses in high resolution mode	at 118 m/z
Greater than 22,000 at 1522 m/z		at 1522 m/z

- Prepare performance evaluations sample according to the Installation Guide, Section 3, Step 5.
- Copy or create the performance verification methods, see instructions in the Installation Guide, Section 3, Step 6.

Note: the method parameters can be verified in the Installation Guide, Reference Section 7.

Instrument verification methods:

Source Type	Sensitivity Method	Accuracy Method
6230B TOF Dual ESI only (Option # 200)	6224_Sensitivity.m	6224_Accuracy.m
6230B TOF Dual AJS	6230_Sensitivity.m	6230_Accuracy.m

- Verify TOF instrument sensitivity and mass accuracy in accordance with the Installation Guide, Section 3, Step 7.
- Process the acquired data in accordance with the Installation Guide, Section 3, Step 8
- Save the printed reports.
- Attach the reports to the Installation and Familiarization checklists.
- The 6230B TOF instrument must pass the following specifications.

6230B with Dual ESI source only (Option # 200)	Specification	Result
Signal to Noise, 1 pg Reserpine, MS Mode	>10 to 1	
Mass Accuracy 100 pg Reserpine MS Mode	< 1 ppm	

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6230B with Dual AJS	Specification	Result
Signal to Noise, 1 pg Reserpine, MS Mode	>50 to 1	
Mass Accuracy 20 pg Reserpine MS Mode	< 1 ppm	

Task #14: Installation and Verification of Other Sources

- Section NOT Applicable.**
- G1947B APCI Source verification:
 - Ensure the G1947B APCI source eablement kit is installed.
 - Install the G1947B APCI source according the Installation Guide, Section 4.
 - Verify the operation of the G1947B APCI source according the Installation Guide, Section 4.
 - Specifications:
 - Note:** There is NOT a sensitivety specification for this optional source.

6230B TOF Mass Resolution Specifications with G1947B APCI Source	Mass Accuracy	Result
Greater than 10,000 at 118 m/z	Less than 1 ppm for all masses in high resolution mode	at 118 m/z
Greater than 22,000 at 1522 m/z		at 1522 m/z

- Section NOT Applicable.**
- G1978B Multimode Source verification:
 - Ensure the G1978B Multimode source eablement kit is installed.
 - Install the G1978B Multimode source according the Installation Guide, Section 4.
 - Verify the operation of the G1978B Multimode source according the Installation Guide, Section 4.
 - Specifications:
 - Note:** There is NOT a sensitivety specification for this optional source.

6230B TOF Mass Resolution Specifications with G1978B Multimode Source	Mass Accuracy	Result
Greater than 10,000 at 118 m/z	Less than 1 ppm for all masses in high resolution mode	at 118 m/z
Greater than 22,000 at 1522 m/z		at 1522 m/z

- Section NOT Applicable.**
- G1971B APPI Source verification:
 - Ensure the G1971B APPI source eablement kit is installed.
 - Install the G1971B APPI source according the Installation Guide, Section 4.
 - Verify the operation of the G1971B APPI source according the Installation Guide, Section 4

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- Specifications:

Note: There is NOT a sensitivity specification for this optional source.

6230B TOF Mass Resolution Specifications G1971B APPI source	Mass Accuracy	Result
Greater than 10,000 at 118 m/z	Less than 1 ppm for all masses in high resolution mode	at 118 m/z
Greater than 22,000 at 1522 m/z		at 1522 m/z

- Section NOT Applicable.**

- HPLC-Chip/MS Cube interface:

- Install the HPLC-Chip/MS Cube Interface according to the Interface Guide.

- Prepare the HSA peptides samples according to the *HPLC-Chip/MS Cube Interface Verification*, Installation Guide, Section 4, Step 1.

- Verify the Verify TOF LC/MS sensitivity and mass accuracy with the HPLC-Chip/MS Cube Interface according to the *HPLC-Chip/MS Cube Interface Verification*, Installation Guide, Section 4, Step 1.

- Specifications:

Note: There is NOT a sensitivity specification for this optional interface.

6230B TOF Mass Resolution Specifications with HPLC-Chip/MS Cube Interface	Mass Accuracy	Result
Greater than 10,000 at 118 m/z	Less than 1 ppm for all masses in high resolution mode	at 118 m/z
Greater than 22,000 at 1522 m/z		at 1522 m/z

Service Review

- Attach available reports/printouts to this documentation.
- Record the time/date of installation or upgrade completion in the customer's records/logbook.
- Complete the Service Engineer Comments section below if there are additional comments.
- Review the installation with the customer.
- Explain Agilent warranty for instruments.
- Explain how to use manuals, guides, online help.
- Explain how to get self-help, FAQs from the web.
- Explain how to log an instrument service call, support services available.
- Advise customer of additional instrument training options.
- 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.

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If there are any specific points you wish to note as part of performing the installation 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, FAQs? - www.agilent.com/chem/techsupp
- Need supplies? - www.agilent.com/chem/supplies

Service Completion

Service request number _____ Date service completed _____

Agilent signature _____ Customer signature _____

Number of pages in this document _____

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