

6500 Series Q-TOF LC/MS Systems – Site Preparation Checklist

Thank you for purchasing an Agilent **system**. To get you started and to assure a successful and timely installation, please refer to this specification or set of requirements.

Correct site preparation is the key first step in ensuring that your instruments and software systems operate reliably over an extended lifetime. This document is an **information guide AND checklist** prepared for you that outlines the supplies, consumables, space and utility requirements for your equipment for your site.

Customer Responsibilities

Make sure your site meets the following prior specifications before the installation date. For details, see specific sections within this checklist, including:

- The necessary laboratory or bench space is available
- The environmental conditions for the lab as well as laboratory gases and plumbing
- The power requirements related to the product (e.g., number & location of electrical outlets)
- The required operating supplies necessary for the product and installation
- Please consult Other Requirements section below for other product-specific information
- For more details, please consult the product-specific Site Preparation Manual

If Agilent is delivering installation and familiarization services, users of the instrument should be present throughout these services; otherwise, they will miss important operational, maintenance and safety information.

Important Customer Information

1. If you have questions or problems in providing anything described as a Customer Responsibilities above, please contact your local Agilent or partner support/service organization for assistance prior to delivery. In addition, Agilent and/or its partners reserve the right to reschedule the installation dependent upon the readiness of your laboratory.
2. Should your site not be ready for whatever reasons, please contact Agilent as soon as possible to re-arrange any services that have been purchased.
3. Other optional services such as additional training, operational qualification (OQ) and consultation for user-specific applications may also be provided at the time of installation when ordered with the system, but should be contracted separately.

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Dimensions and Weight

Identify the laboratory bench space before your system arrives based on the table below.

Pay special attention to the **total height and total weight requirements for all system components you have ordered and avoid bench space with overhanging shelves**. Also pay special attention to the total weight of the modules you have ordered to ensure your laboratory bench can support this weight.

Special Notes

1. The modular dimensions and weight allow the instrument to be placed on almost any laboratory bench. The instrument requires a space of at least 8.0 cm (3.1 inches) on both sides, and approximately 15 cm (~6 inches) at the rear for the circulation of air, vacuum pump hose, and room for electrical connections.
2. If the bench is to support a complete Agilent Technologies 1200 Series HPLC system and an Agilent 6500 Series Q-TOF LC/MS System, make sure that the bench is designed to carry the total weight of all the modules.
3. For G6545, G6549, G6550, and G6560 Q-TOF LC/MS Systems, the maximum height of the bench or table shall not exceed 91 cm (32 inches) where the height of the ceiling is 2.7 m (9 ft).
4. Agilent Field Support Engineers are not allowed to install the G6545, G6549, G6550, or G6560 Q-TOF LC/MS in labs where the ceiling tile(s) must be removed or modified to accommodate the height of the flight tube. Removal or modification of ceiling tiles violates fire safety codes in certain geographies.
5. For G6550 iFunnel Q-TOF LC/MS Systems, two oil free rough pumps are shipped with the instrument.

Instrument Description	Weight		Height		Depth		Width	
	kg	lbs	cm	in	cm	in	cm	in
G6530 Accurate-Mass Q-TOF	169	372	129.5	51	76.2	30	121.9	48
G6545 UHD Accurate-Mass Q-TOF	170	375	193	76	76.2	30	121.9	48
G6549 AdvanceBio Q-TOF	170	375	193	76	76.2	30	121.9	48
G6550 iFunnel Q-TOF LC/MS	175	385	193	76	76.2	30	137.8	54.3
G6560 Ion Mobility Q-TOF	278	613	186.7	73.5	76.2	30	254	100
Agilent TS800 Dry Pump (each) – Does not include foreline filter	32	71	39.1	15.4	56.7	22.3	30	11.8
Agilent MS40+ and exhaust tubing	33	73	22.8	9.2	41.8	16.5	29.7	11.7

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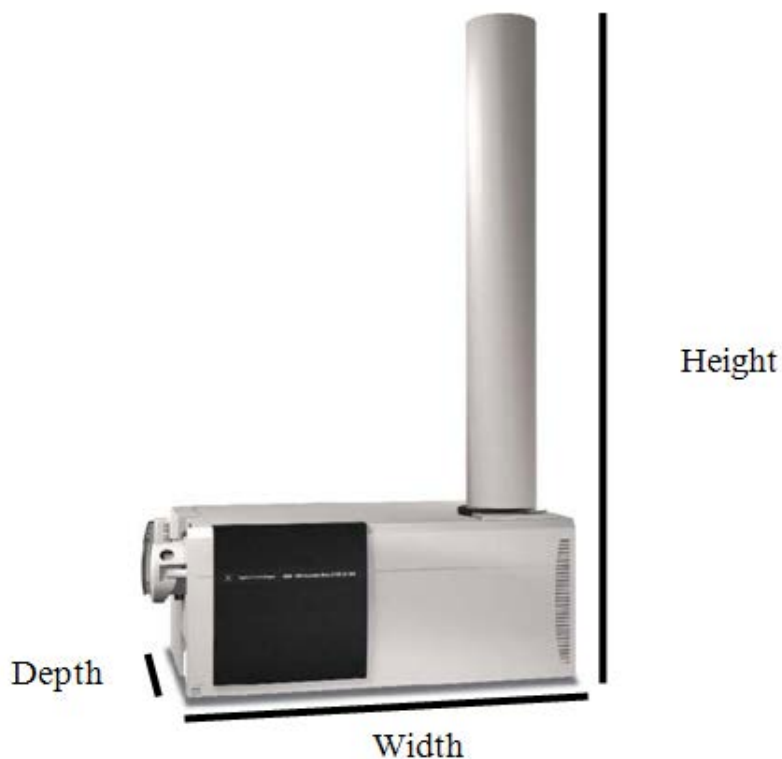
G3251B Dual Spray ESI Source	1.7	3.8	17	6.8	9.5	3.7	18	7.1
G1947C APCI Source	1.8	4.1	23	9.2	13.0	5.1	18	7.1
G1978B Multimode Source	2.3	5.1	23	9.2	13.0	5.1	18	7.1
G3215A MassSpec Bench (included with 6560)	90	200	78.7	31	91.4	36	121	48
IM MassSpec Bench Extension (included with 6560)	68	150	78.7	31	91.4	36	121	48

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Figure 1
G6530 Accurate-Mass Q-TOF
LC/MS System



Figure 2
G6540, G6545 UHD Accurate-
Mass or G6550 iFunnel Q-TOF
LC/MS System, G6549
AdvanceBio Q-TOF



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Figure 3
G6560 Ion Mobility Q-TOF
LC/MS System



Environmental Conditions

Operating your instrument within the recommended temperature ranges insures optimum instrument performance and lifetime.

Special Notes

1. Performance can be affected by sources of heat & cold e.g. direct sunlight, heating/cooling from air conditioning outlets, drafts and/or vibration.
2. The site's ambient temperature conditions must be stable for optimum performance of the system's modules as specified in the "Environmental Specifications" section of the Site Preparation Manual. Temperature changes of 3°C from calibration temperature are required to achieve best possible baseline stability. Higher variations will result in higher signal drift and wander of the baseline.
3. For all 6500 Series Q-TOF LC/MS Systems, the bench or supporting surface must be vibration free.
4. The supporting surface must be structurally sufficient to maintain a flat surface even with the load of the instrument on it.
5. The following table may help you calculate the additional BTUs of heat dissipation from this new equipment. Maximums represent the heat given off when heated zones are set for maximum temperatures. Approximately 2,047 BTU/hr are removed with the ion source exhaust.

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Instrument Description	Operating temp range °C (F)	Operating humidity range (%)	Heat Dissipation (BTU/hr)
G6530 Accurate-Mass Q-TOF LC/MS G6545 UHD Accurate-Mass Q-TOF LC/MS G6549 AdvanceBio Q-TOF LC/MS (includes the rough pump and source)	15°C to 35°C (59°F to 95°F) at constant temperature (variations < 3 °C from calibration temperature).	20-85% non-condensing	4,500 BTU/hr with D-ESI source 9,640 BTU/hr with D-AJS source
G6550 iFunnel Q-TOF LC/MS (includes two rough pumps and source)	15°C to 35°C (59°F to 95°F) at constant temperature (variations < 3°C from calibration temperature).	20-85% non-condensing	15.524 BTU/hr
G6560 Ion Mobility Q-TOF LC/MS (includes the rough pumps and source)	15°C to 35°C (59°F to 95°F) at constant temperature (variations < 3°C from calibration temperature).	20-85% non-condensing	15.524 BTU/hr



Exhaust Venting Requirements

The 6500 Series Q-TOF LC/MS System foreline pump exhaust and spray chamber exhaust must be vented outside of the laboratory environment. Exhaust vent system should not be part of an environmental control system that recirculates air inside of a building. Exhaust venting requirements need to comply with all local environmental and safety codes.

1. A 6 meter (20ft.) length of 1/2 inch i.d. PVC/vinyl tubing is included for venting the foreline pump exhaust and ion source (ESI, APCI, Multimode, APPI) or Agilent Jet Stream Technology exhaust. This is sufficient for two three meter (10-foot lengths).
2. The foreline pump exhaust and the ion source exhaust **cannot share the same piece of exhaust tubing**. Separate 1/2 inch hose barbs are required to connect the tubing to the exhaust vent. If both exhaust tubes are being connected to a common exhaust system, the source exhaust tube must be upstream of the foreline pump exhaust.

Output Source	Maximum
Agilent 6530, 6545, 6549 Q-TOF LC/MS single foreline pump	3.0 L/min

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Agilent 6550 iFunnel Q-TOF LC/MS	Foreline pump iFunnel pump	6 L/min 10 L/min
Agilent 6560 Ion Mobility Q-TOF LC/MS foreline pump		4 L/min
Ion Sources (ESI, APCI, Multimode, APPI, etc.) or Agilent Jet Stream Technology		Up to 40 L/min

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Power Consumption
Special Notes

1. If a computer system is supplied with your instrument, be sure to account for those electrical outlets.
2. Depending on the instrument type, one or two dedicated 15 Amp 200-240V AC power outlet is required for all 6500 Series Q-TOF LC/MS Systems. The 6500 Series Q-TOF LC/MS System should be located with 2.5 meters (8 feet) of this outlet. In addition, the computer system and printer require additional outlets. Please refer to the Site Preparation Manual for additional details.
3. Additional outlets are required for all Agilent 1260/1290 UHPLC modules. Please refer to the Site Preparation Checklist and Manuals for the 1260/1290 UHPLC modules for more detailed information.
4. The G6530, G6540, G6545 and G6560 require two 200-240 Vac outlets. The foreline pump shipped with these instruments **MUST** be plugged into the pump expander box. It is not to be plugged into the instrument AC board directly.

Instrument Description	Line Voltage & Frequency (V, Hz)	Maximum Power Consumption (VA)	Number of Outlets Required
G6530 Accurate-Mass Q-TOF with rough pump	200 to 240 Vac 50/60 Hz Power	2850 VA	2
G6545 UHD Accurate-Mass Q-TOF with rough pump	200 to 240 Vac 50/60 Hz Power	2850 VA	2
G6549 AdvanceBio Q-TOF with rough pump	200 to 240 Vac 50/60 Hz Power	2850 VA	2
G6550 iFunnel Q-TOF LC/MS with dual rough pumps	200 to 240 Vac 50/60 Hz Power	2850 VA - Mainframe 1900 VA - Rough Pumps	2
G6560 Ion Mobility Q-TOF LC/MS with rough pump	200 to 240 Vac 50/60 Hz Power	2850 VA (mainframe) 600 VA (IM)	2
1260 HPLC or 1290 UHPLC	100 to 240 Vac 50/60 Hz Power	800 - 1200 VA	4 to 6
6500 Series Q-TOF LC/MS Data System	100 to 240 Vac 50/60 Hz Power	1000 VA	4 to 6

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Recommended Configurations

Agilent recommends 2 standard stacking configurations for your new system. Please use these notes and the following pictures as examples for UHPLC Stack and Q-TOF bench configurations.

1. Stacking the entire Infinity II Series UHPLC stack or CTC Autosampler on top of the 6500 Series Q-TOF LC/MS is not recommended or supported. Vibrations from these modules can cause a loss of resolution in the 6500 Series Q-TOF LC/MS System.
2. A single-stack UHPLC configuration may be considered only if:
the height of the stack does not result in a safety problem
the UHPLC system does not include a G1330B thermostat module.
3. A multiple stack UHPLC configuration must be used if:
the stack of Infinity II modules is too high, resulting in a safety problem
the system includes a thermostatted sampler.
4. The thermostatted version of all samplers include the G1330B thermostat module. The thermostat module must be placed directly under the sampler to be thermostatted. It is recommended that the thermostat module is positioned as the bottom module of the stack, directly on the laboratory bench. Any stack containing a G1330B thermostat module needs at least 25 cm (10 inches) of space on either side to guarantee proper ventilation.

Configuration 1: Infinity II UHPLC Stack with G6530 Accurate-Mass Q-TOF LC/MS

Configuration 2: Infinity II UHPLC Stack with G6550 iFunnel Q-TOF LC/MS


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Required Operating Supplies: Solvents and Gases

Special Notes

- For information on Agilent consumables, accessories and laboratory operating supplies, please visit <http://www.chem.agilent.com/en-US/Products-Services/Columns-Sample-Preparation/Pages/default.aspx>
- Solvents minimum solvent purity: HPLC Grade Acetonitrile, Isopropanol, Methanol and Water, pesticide grade recommended.
- Gases are supplied by high pressure bottles, internal distribution system, or gas generators. High pressure bottles require two staged pressure regulation. **Please note that high pressure bottles are NOT suitable for supplying nitrogen for Drying Gas and Nebulizer requirements due to the high flow rates. High pressure bottles can only be used for collision cell gas requirements**
- To connect collision cell tubing to the supply, use the supplied one 1/8-inch Swagelok® female connector for each gas. Make sure that your regulator has the appropriate sized adapter to end with a 1/8-inch Swagelok female connector. Please make use of the SwageLok® web site is <http://www.swagelok.com> to help assist in finding connectors.
- The following table lists minimum and maximum pressures in psi for inlets measured at the bulkhead fitting at the gas manifold on the left side of the 6500 Series Q-TOF LC/MS Systems. Gas pressure conversions: 1 psi = 6.8947 kPa = 0.068947 Bar = 0.068 ATM

Gas requirements	Minimum Purity	Typical inlet pressure range	Typical flow
Nitrogen for Drying Gas, Nebulizer Pressure (required) supplied by N ₂ gas generator, house nitrogen system, or liquid N ₂ Dewar. Nitrogen must be hydrocarbon free. See Note 1.	95.0 % or better	5.5 to 6.8 bar (80 to 100 psi)	Up to 18L/min (G6530 w/ D-ESI Source) Up to 30 L/min (G6530, G6545, G6549 w/ Dual AJS Source) Up to 60L/min (G6550 ONLY)
Nitrogen for Collision Cell (required) See Notes 1, 2, 3, and 4.	99.999%	0.7 to 2.0 bar (10 to 30 psi)	1 to 2 ml/min
Nitrogen for Drift Cell (required ONLY on 6560 IM-QTOF) See Notes 1, 3, 4, and 8	99.999%	5.5 to 6.8 bar (80 to 100 psi)	1 l/min
Argon for Collision Cell (optional) See Notes 1, 2, 3, and 4.	99.999%	0.7 to 2.0 bar (10 to 30 psi)	1 to 2 ml/min
Air for Nanodapter Applications - G6530, G6545, G6549, G6560 (Required for Low Background Mode) See Notes 4, 5, 6 and 7.	99.99%	8.0 bar (120 psi)	Up to 4 l/min

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Air for Nanodapter Applications - G6550 (Required for Low Background Mode) See Notes 4, 5, 6 and 7.	99.99%	8.0 bar (120 psi)	Up to 11 l/min
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1. Purity specification given is the minimum acceptable purity. Major contaminants can be water, oxygen, or air.
2. Nitrogen for the collision cell requires a separate supply from the Nitrogen used for Drying Gas. A separate pressure regulator is required. A high pressure bottle of Nitrogen is recommended for the collision cell gas supply.
3. Pre-cleaned 1/8" copper tubing and 1/8-inch Swagelok® fittings are supplied as part of the ship kit to connect the collision cell gas to the collision cell inlet fitting.
4. Never use liquid thread sealer to connect fittings.
5. **Air source must be hydrocarbon free.**
6. Inlet pressure for Air must equal the inlet pressure for the Nitrogen used for drying gas.
7. The air used for Low Background Mode must be supplied by a separate source other than the compressor used by the nitrogen generator. Increasing the flow from the compressor used with the nitrogen generator is not supported due to gas flow stability issues.
8. A separate drift gas connection is required for the system. This can be from the same supply for the collision cell, but requires a second regulator to provide the different pressure requirements.



Remote Diagnostics

Easy access to diagnostic information and to the system operator helps our service engineers diagnose problems or share information. We recommend these features to help support your new system:

1. A LAN connection for the Data Acquisition and Data Analysis PC is recommended to provide remote diagnostics capability for the 6500 Series Q-TOF LC/MS System and the Infinity II Series UHPLC.
2. A phone line close to the instrument is strongly recommended for communication with the system operator.

Important Customer Web Links

- For additional information about our solutions, please visit our web site at <http://www.chem.agilent.com/en-US/Pages/HomePage.aspx>
- Need to get information on your product?
Literature Library - <http://www.agilent.com/chem/library>
- Need to know more?
Customer Education - <http://www.agilent.com/chem/education>
- Need technical support, FAQs? - <http://www.agilent.com/chem/techsupp>
- Need supplies? - <http://www.agilent.com/chem/supplies>

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Document Control Logs

Revision Log

Revision	Date	Reason For Update
7.3	30-May-2011	Migrated content of revision 7.2 into new format. Reviewed by Rob Ley, product support engineer.
8.0	25-July-2011	Updated for 6550 release by Rob Ley
8.1	18-Dec-2012	Updated for 6530B, 6540B by Aaron Boice
9.0	30-Apr-2013	Removed older models, A. Boice
10.0	17-Feb-2014	Update for 6560
11.0	31-Jan-2015	Update for 6545, N.Eno

Approval Log

Revision	Approver	Title of Approver
7.3	Stephen Lee	Support engineering manager
8.0	Robert Ley	WW Q-TOF Product Support Engineer
8.1	Aaron Boice	WW Q-TOF Product Support Engineer
9.0	Robert Ley	Support Engineering Manager
10.0	Robert Ley	Support Engineering Manager
11.0	Robert Ley	Support Engineering Manager