

## Agilent CrossLab Start Up Services

# Agilent 6500 Series LC/QTOF Site Preparation Checklist

Thank you for purchasing an instrument from Agilent Technologies. CrossLab Start Up is focused on helping customers shorten the time it takes to start realizing the full value of their instrument investment.

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, space, and utility requirements for the system set up in your lab.

# Introduction

## Customer Information

- If you have questions or problems in providing anything described as part of *Customer Responsibilities* below, 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.
- Should your site not be ready for whatever reasons, please contact Agilent as soon as possible to re-schedule any services that have been purchased.
- 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.
- Please refer to the other peripheral products (i.e., samplers etc.) for site preparation requirements.

## Customer Responsibilities

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

- The necessary laboratory or bench space is available.
- The required environmental conditions for the lab as well as laboratory gases, tubing.
- The power requirements related to the product (e.g., Number & location of electrical outlets).
- The required operating supplies necessary for the product and installation.
- While Agilent is delivering Installation and Introduction services, users of the instrument should be present throughout these services; otherwise, they will miss important operational, maintenance and safety information.
- Please consult the Special Requirements and Other Considerations section below for other product-specific information
- For more details, please consult the product-specific site preparation or pre-installation manual.

## Important Customer Web Links

- To access Agilent training and education, visit <http://www.agilent.com/chem/training> to learn about training options, which include online, classroom and onsite delivery. A training specialist can work directly with you to help determine your best options.
- To access the Agilent Resource Center web page, visit <https://www.agilent.com/en-us/agilentresources>. The following information topics are available:
  - Sample Prep and Containment
  - Chemical Standards
  - Analysis
  - Service and Support
  - Application Workflows
- The Agilent Community is an excellent place to get answers, collaborate with others about applications and Agilent products, and find in-depth documents and videos relevant to Agilent technologies. Visit <https://community.agilent.com/welcome>
- Videos about specific preparation requirements for your instrument can be found by searching the Agilent YouTube channel at <https://www.youtube.com/user/agilent>
- Need to place a service call? [Flexible Repair Options | Agilent](#)

## Site Preparation

### 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.

The following table provides dimensions and weight requirements.

This product requires additional lifting assistance in order to be located in your lab due to its weight. Please discuss the arrangements for this activity with the service engineer prior to installation.

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
G6546 LC/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	294	648	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
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

Instrument Description	Weight		Height		Depth		Width	
	Kg	lbs.	cm	in	cm	in	cm	in
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

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

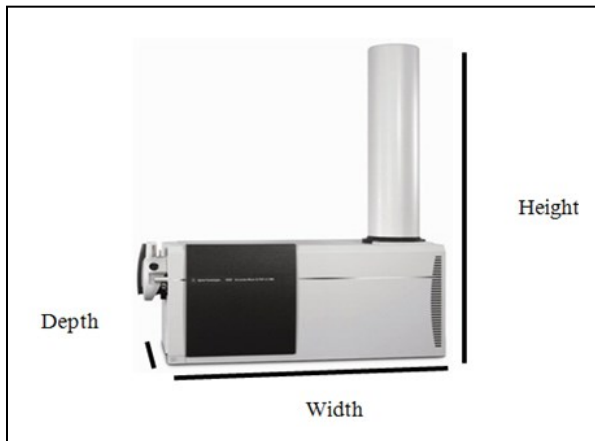


Figure 2 G6540, G6545 UHD Accurate-Mass, G6546 LC/Q-TOF or G6550 iFunnel Q-TOF LC/MS System, G6549 AdvanceBio Q-TOF

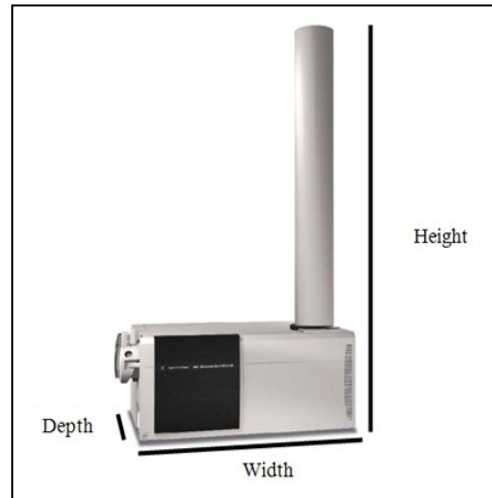
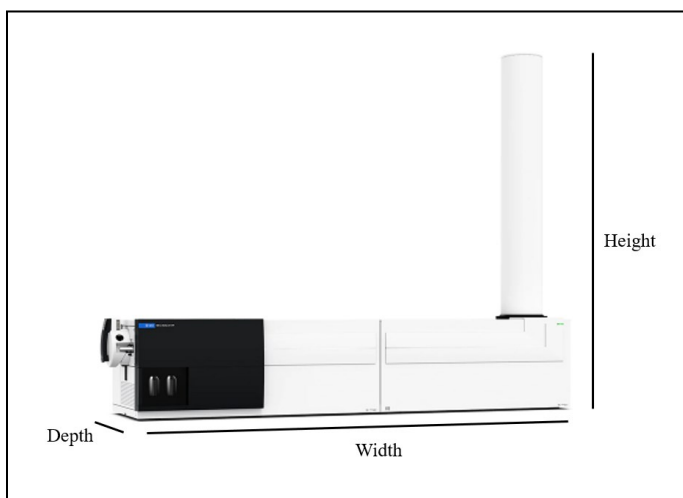


Figure 3 G6560 Ion Mobility Q-TOF LC/MS System



## Environmental Conditions

Operating your instrument within the recommended temperature ranges ensures 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 Agilent 6500 Series LC/QTOF is specified for operation under the following conditions:
  - a. Indoor use.
  - b. Constant temperature (< +/-3°C from calibration temperature).
  - c. Non-condensing, non-corrosive atmosphere.
5. Altitude: Not to exceed 3,300 m up to 35°C, not to exceed 3,700 m up to 30°C.
6. The supporting surface must be structurally sufficient to maintain a flat surface even with the load of the instrument on it.
7. 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.

Instrument Description	Operating Temperature 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 G6546 LC/Q-TOF 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.

1. Exhaust must be vented according to local Environmental Health and Safety regulations.
2. Exhaust gases contain traces of solvent, sample, and hydrocarbon pump fluid.
3. Venting Rate is commensurate with Nitrogen consumption rate.
4. Two independent, negative pressure vents must be available with one for each of the exhaust sources: foreline pump(s) and Spray Chamber. If only 1 vent is available, the exhaust line(s) from the foreline pump(s) required to extend beyond the exhaust line from the spray chamber.
5. If a negative pressure vent is not available, the length of the tubing from the foreline pump(s) and the drain bottle to the vent should each not exceed 460 cm (15 ft).
6. Exhaust tubing is 1/2" interior diameter (I.D.).
7. Failure to vent the foreline pump and spray chamber separately will void the warranty for the 6500 Series LC/QTOF. Agilent service representatives will not install an Agilent 6500 Series LC/QTOF until an adequate exhaust system is present and functioning.

Output Source	Maximum
Agilent 6530, 6545, 6546, 6549 Q-TOF LC/MS single foreline pump	3.0 L/min
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

## 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 within 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.
5. The LC/QTOF electrical outlets must have an isolated, noise-free electrical ground that is connected to the main earth ground for the facility. Noise-free typically mean Total Harmonic Distortion (THD) more than 3% is not acceptable
6. Mains supply voltage tolerances must be between +10% and -5% of nominal line voltage.
7. Electrical power for the 6500 Series QTOF LC/MS may be delivered in either single-phase or 208- Wye configuration:

Instrument Description	Line Voltage and Frequency V, Hz	Maximum Power Consumption VA/Watts	Number Outlets required
G6530 Accurate-Mass Q-TOF with rough pump	200 to 240 Vac 50/60 Hz Power	2850	2
G6545 UHD Accurate-Mass Q-TOF with rough pump	200 to 240 Vac 50/60 Hz Power	2850	2
G6546 LC/Q-TOF with rough pump	200 to 240 Vac 50/60 Hz Power	2850	2
G6549 AdvanceBio Q-TOF with rough pump	200 to 240 Vac 50/60 Hz Power	2850	2
G6550 iFunnel Q-TOF LC/MS with dual rough pumps	200 to 240 Vac 50/60 Hz Power	2850 - Mainframe 1900 - Rough Pumps	2
G6560 Ion Mobility Q-TOF LC/MS with rough pump	200 to 240 Vac 50/60 Hz Power	2850 (mainframe) 600 (IM)	2
1260 HPLC or 1290 UHPLC	100 to 240 Vac 50/60 Hz Power	800 - 1200	4 to 6
6500 Series Q-TOF LC/MS Data System	100 to 240 Vac 50/60 Hz Power	1000	4 to 6



## Required Operating Supplies by Customer for Installation

### Main Nitrogen Gas Supply Requirements

#### Special notes

1. Download the Essential Chromatography and Spectroscopy Supplies Catalogs for a complete overview about available supplies for your new and existing Agilent Instruments <https://www.agilent.com/en-us/products/lab-supplies>
2. Impurities from LN2 Dewar being oxygen only.
3. "Hydrocarbon free" means < 0.1 PPM hydrocarbons with the remaining gas being oxygen and trace argon.
4. Nitrogen Pressure as measured at the LC/MS inlet (not the supply side).
5. Minimum Nitrogen Flow is always required to prevent air from entering the instrument.
6. Main Nitrogen Supply fittings are 1/4" Swagelok.
7. 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

Gas requirements	Minimum Purity	Typical inlet pressure range	Typical flow
Nitrogen for Drying Gas, Nebulizer Pressure (required) supplied by N2 gas generator, house nitrogen system, or liquid N2 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,G6546,G6549 w/ Dual AJS Source) <b>Up to 60L/min (G6550 ONLY)</b>
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	99.998%	5.5 to 6.8 bar (80 to 100 psi)	1.5 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,G6546, 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
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

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.
6. A phone line close to the instrument is strongly recommended for communication with the system operator.

## Service Engineer Review (Optional)

### Service Engineer Comments

If the Service Engineer completed a review of the Site Preparation requirements with the customer, the Service Engineer should complete the following Comments section.

If there are any specific points that should be noted as part of performing the service review or other items of interest for the customer, please write in this box.

## Site Preparation Verification

Service Request Number:

Date of Review:

Service Engineer Name:

Customer Name:

Service Engineer Signature:

Total number of pages in this document: