Agilent CrossLab Start Up Services

Agilent 7000E & 7010C Series Tandem Quad 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.

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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 (ie, 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.

  When using hydrogen (H_2) as the carrier gas or fuel gas, be aware that hydrogen gas can flow into the GC oven and create an explosion hazard. Therefore, be sure that the supply is turned off until all connections are made and ensure that the inlet and detector column fittings are either connected to a column or capped at all times when hydrogen gas is supplied to the instrument.

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Hydrogen is flammable. Leaks, when confined in an enclosed space, may create a fire or explosion hazard. In any application using hydrogen, leak test all connections, lines, and valves before operating the instrument. Always turn off the hydrogen supply at its source before working on the instrument.

GC to MS communication (ie. eLVDS) must be installed and configured when possible when running hydrogen carrier.

Please refer to the Hydrogen Safety Guide which is shipped with the instrument.

Note: Checkout specifications are performed by Agilent using helium carrier gas for all products, except for a purchase of G7010CA #011, 7000E HydroInert system. Please have helium available at installation.

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

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Site Preparation

7000 and 7010 Tandem Quad System



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

- This does not include the automated sampling devices which could be used on the system.

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- Please note: the length of the vacuum hose is 130 cm or about 4.24 feet from the high vacuum pump to the foreline pump, while the length of the foreline pump power cord is 2 m or about 6.5 feet. For optimal vacuum performance, the lengths cannot be increased
- A table must be large enough to support the mainframe and the size of the base.
- The dimensions and weight of the instrument needs to be placed on a laboratory bench that is at least 101 cm (40 inches) deep. The instrument requires a space of at least 40.0 cm (16 inches) on both sides, and approximately 30 cm (~ 12 inches) at the rear for the circulation of air, vacuum pump hose, and room for electrical connections.

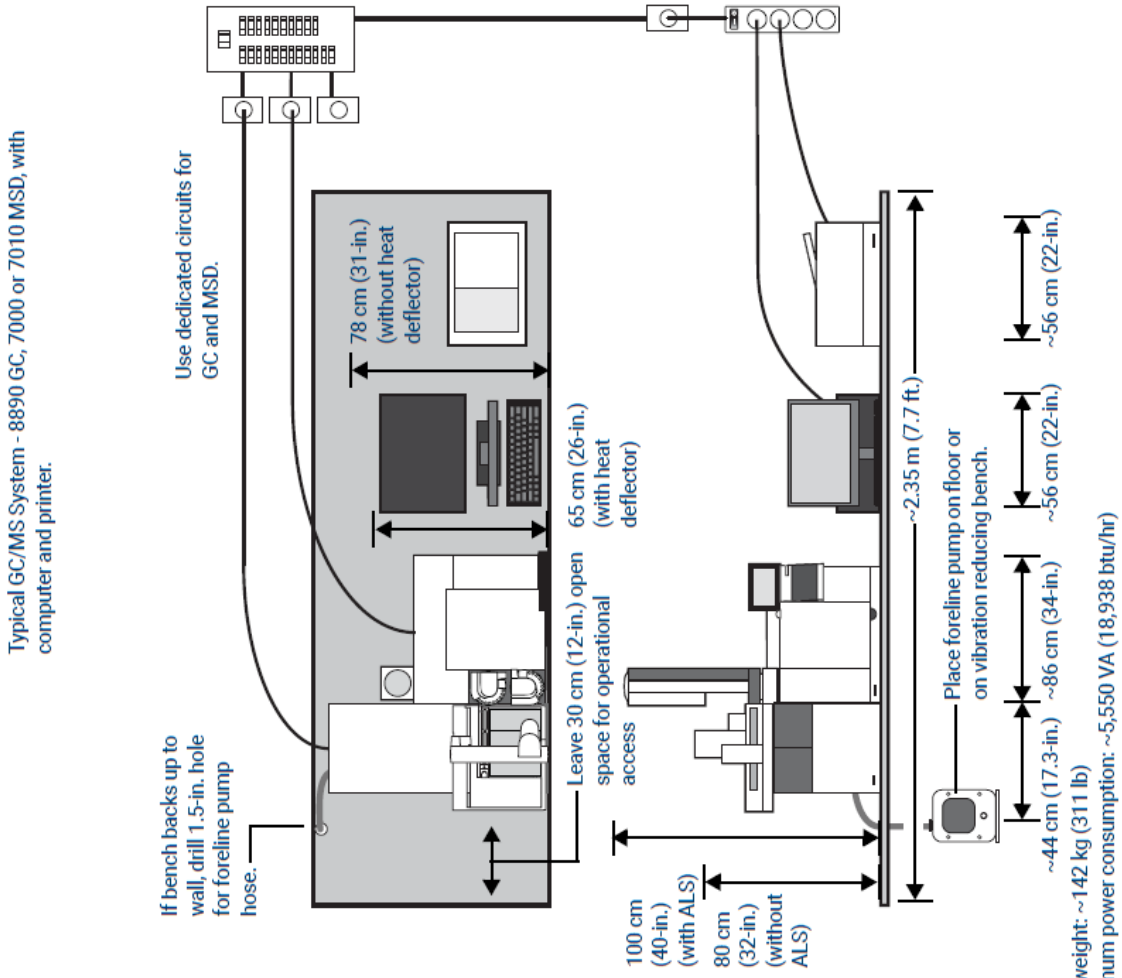
The following table provides dimensions and weight requirements.

- If the bench is to support a complete Agilent 7000 or 7010 system, make sure that the bench is designed to carry the total weight of all the components.
- 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
Tandem Quad EI or HES (on the bench)	59	130	47	18.5	86	34	35	14
Tandem Quad EI/CI or HES/CI (on the bench)	63.5	140	47	18.5	86	34	35	14
Tandem Quad shipping container	90	198	75	29.5	69	27.5	113	44.5
RV5 - Foreline Pump - Wet	25	55	26.7	10.5	43	16.9	15.8	6.2
IDP-10 - Foreline Pump - Dry	24.7	54.5	29.7	11.7	42.0	16.5	26.0	10.2
IDP-10 - Foreline Pump - Dry Shipping container	28.1	62	45.7	18	40.6	16	70	24
Workstation PC system (monitor, CPU, printer)	50	112	54	21.3	54	21.3	54	21.3
System shipping container (varies)	175	385	91	36	96	38	130	51

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Equipment Positioning on the Bench



Application	Gas*	Purity	Supply Pressure (psi)†
Carrier	Helium	99.9995	50 - 80
	Hydrogen	99.9995	50 - 80
	Nitrogen	99.9995	50 - 80
Detectors			
TCD	Helium	99.9995	50 - 80
FID, NPD, FPD, TCD	Hydrogen	99.9995	50 - 80
ECD, FID, FPD, NPD, TCD	Nitrogen	99.9995	50 - 80
FID, NPD, FPD	Air	Zero grade	50 - 80

* Use 1/8-in Swagelok gas connections

† 1 psi = 6.89 kPa

Cryo Cooling (Liquid)	Tubing	Supply Pressure (psi)*
CO_2	1/8-inch stainless tubing	700-900
N_2	1/4-inch insulated tubing	20-25

* 1 psi = 6.89 kPa

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Environmental Conditions

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

Special notes

- Performance can be affected by sources of heat & cold, e.g. direct sunlight, heating/cooling from air conditioning outlets, drafts and/or vibrations.
- The bench or supporting surface must be vibration free.
- 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 less than 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.

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.

Instrument Description	Operating Temperature Range °C (F)	Operating Humidity Range %
Tandem Quad GC GC/MS	15 to 35˚C (59 to 95 F)	20% - 80%
GC	Please refer to the GC Site Preparation documentation	

Exhaust Venting Requirements

The foreline pump exhaust is recommended to 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. If the exhaust is non-toxic then an oil mist filter should be used on the foreline pump exhaust.

- An oil mist filter is provided. A fitting is provided (G1960-20003) and 20' of 1/2" tubing (G3170-60100) are available from Agilent.com
- The foreline pump exhaust should not be shared with exhaust tubing from another instrument. Separate 1/2" inch hose barbs are required to connect the tubing to the exhaust vent.

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Power Consumption

Special notes

- If a computer system is supplied with your instrument, be sure to account for those electrical outlets.

Instrument Description	Line Voltage and Frequency V, Hz	Maximum Power Consumption VA	Maximum Power Consumption W
Tandem Quad GC GC/MS	120 VAC (- 10% / + 5%) 50/60 Hz ± 5%	1000 VA (900 VA, foreline pump only)	
	200 VAC (- 10% / + 5%) 50/60 Hz ± 5%		
Workstation PC system (dual monitor, CPU, optional printer)	120 VAC (- 10% / + 5%) 50/60 Hz ± 5%	1000 VA	
	200 - 240 VAC (- 10% / + 5%) 50/60 Hz ± 5%		

- Use correct power cord

Part Number	Line Voltage Power Cords for the GC Tandem Quad
8120-6360	Power Cord, Taiwan/S America, C19, 20A
8120-6903	Power Cord, Japan, C19, 20 amp
8120-8619	Power Cord, Australia, C19, 16 amp
8120-8620	Power Cord, GB/HK/SG/MY, C19, 13 amp
8120-8622	Power Cord, Swiss/DK, C19, 16 amp
8121-0070	Power Cord, China, C19, 15 amp, Fast
8121-0161	Power Cord, Israel, C19, 16 Amp
8121-0675	Power Cord, Argentina, C19, 16 amp
8121-0710	Power Cord, India/S.Africa, C19, 15 Amp
8121-1222	Power Cord, Europe + S Korea, C19, 15A,250V
8121-1301	Power Cord, Thai 220V, 15 A, 1.8M, C19
8121-1787	Power Cord, Brazil, C19, 250V Max
8121-0075	Power Cord, US 240V, C19, 15 amp
8120-6894	Power Cord, US 125V, C19, 20 amp

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Part Number	Line Voltage Power Cords for the Switch (C7)
8120-6313	Power Cord, US, C7, 125V,2.5A, 1-15P Plug
8120-8336	Power Cord, Japan, 2- wire, C7,125V,7A
8120-8337	Power Cord, Australia, 2 wire
8120-8340	Power Cord, Europlug, C7, 250V Max, 2.5A
8120-8346	Power Cord, China, 2 wire
8120-8420	Power Cord Korea
8120-8421	Power Cord India / South Africa
8120-8452	Power Cord South America
8120-8719	Power Cord, UK
8120-8367	Power-Cord OPT-950 2-COND 1.8-M-LG

Part Number	Line Voltage Power Cords for the CPU/Monitor/Printer (C13)
8120-0674	Power cord - Thailand and Philippines
8120-1369	Power Cord, Australia/NZ, C13, 10 amp
8120-2104	Power Cord, Switzerland, C13, 10 amp
8120-3997	Power Cord, DK/Greenland, C13, 10 amp
8120-4211	Power Cord, India/S Africa, C13, 10 amp
8120-5182	Power Cord, Israel, C13, 10 amp
8120-6869	Power Cord, Argentina, C13 250V 10A RA/3
8120-6978	Power Cord, Chile, C13, 10 amp
8120-8705	Power Cord, GB/HK/SG/MY, C13, 10 amp
8121-0723	Power Cord, China, C13, 10 A, 250V
8121-1226	Power Cord, Europe+S Korea C13, 10A, 250V
8121-1635	Power cord - Taiwan
8121-1638	Power cord - Cambodia
8121-1809	Power Cord, Brazil, C13, 250V Max
8120-1378	Power Cord C13 125V 10A 5-15P 498G US
8120-4753	Power Cord, Japan, C13, 125V

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Required Operating Supplies by Customer for Installation

Special notes

- For information on Agilent consumables, accessories, and laboratory operating supplies, please visit: https://www.agilent.com/en/products

Item Description (including Dimensions etc.)	Vendor's Part Number (if applicable)	Recommended Quantity
Analytical Table	www.onepointesolutions.com	1
H-31" D-40" W-96"	www.ChemTops.com	
Quiet Cover for foreline pumps, coasters		
Computer Table (if table is same depth then they can be placed next to each other)	www.onepointesolutions.com	1
H-31" D-36" W-36"	www.ChemTops.com	
Monitor support rack and keyboard rack, coasters		
Table is just large enough to hold GC TQ and GC	Mass Spec Bench, G3215A	1

Special Requirements and Other Considerations

Gases are supplied by tanks, internal distribution system, or gas generators. Tank supplies require two staged, pressure regulation.

To connect tubing to the supply, it must have one 1/8-inch Swagelok female connector for each gas.

Make sure that your regulator has the appropriately sized adapter to end with a 1/8-inch Swagelok female connector. (The URL of Swagelok's web site is http://www.swagelock.com to help assist is finding connectors.) Recommended that two (2) step regulators be used with 1/8" size outlets.

- Purity specification given is the minimum acceptable purity. Major contaminants can be water, oxygen, or air.
- 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.
- Never use liquid thread sealer to connect fittings. Teflon tape is only required on NPT threaded fittings and should never be used on Swagelok style fittings.

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Tandem Quad Gas Flow Guidelines

High Vacuum Pump	Split-Flow Turbo
Source	All
Carrier Gas Optimal gas flow mL/min (a)	1.0 – 1.5
Carrier Gas Maximum recommended gas flow, mL/min	2.0
Carrier Gas Maximum flow, mL/min (a,b)	2.4
Collision Cell gas Flow Rate (Nitrogen/Helium – via CC EPC module)	3 - 6 mL/min
Reagent Gas Flow (EI/CI or HES/CI application) 25 PSI upper limit, Methane (c)	1.0 – 2.0
Max column id	0.32 mm (30 m)

a Total gas flow into the MSD: column flow plus reagent gas flow, while acquiring data (if applicable).

b Expect degradation of spectral performance and sensitivity.

c Upper gas limits will vary depending upon the gas type being used.

Tandem Quad Series Carrier and Reagent Gases

Carrier and reagent gas requirements	Typical pressure range (psi)	Typical flow (ml/min)
Helium (required)	50 to 80	20 to 100 (column and split flow)
Hydrogen	50 to 80	20 to 50 (column and split flow)
Methane Reagent Gas (required for CI operation)	15 to 25	1 to 2
Isobutane reagent gas (optional)	15 to 25	1 to 2
Ammonia reagent gas (optional)	5 to 8	1 to 2
Carbon dioxide reagent gas (optional)	15 to 25	1 to 2

a Hydrogen gas can be used for the carrier gas but specifications are based on Helium as the carrier gas and please observe all hydrogen gas safety cautions.

Tandem Quad Series Collision Cell Gases

Carrier and reagent gas requirements	Typical pressure range (psi)	Typical flow (mL/min)
7000 Helium (required) via GC EPC CC Module (a)	50 to 80	2.25
7000 Nitrogen (required) via GC EPC CC Module (a)	50 to 80	1.5
7010 Helium (required) via GC EPC CC Module (a)	50 to 80	4.0
7010 Nitrogen (required) via GC EPC CC Module (a)	50 to 80	1.5

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a Optimal performance for 7010 is listed below, but if one uses the 7000 values then no changes with the collision cell energies will be required. Typically, the 7010 optimal values are 3 – 6 volts higher than the 7000 values.

Waste liquid and gas management

Agilent recommends that carrier and detector gases be 99.9995% pure. Air needs to be zero grade or better. Agilent also recommends using traps to remove hydrocarbons, water and oxygen.

Purity specification given is the minimum acceptable purity. Major contaminants can be water, oxygen, or air.

Pre-cleaned 1/8" copper tubing and 1/8-inch Swagelok® fittings are supplies as part of the ship kit.

Pre-cleaned 1/8" stainless-steel tubing and 1/8-inch Swagelok® fittings are supplies as part of the ship kit; CI instruments

Never use liquid thread sealer to connect fittings.

Tandem Quad Carrier and Reagent Gases Purity.

Carrier and reagent gas requirements	Purity	Note
Helium (Carrier)	99.9995%	Hydrocarbon free
Hydrogen (Carrier)	99.9995%	SFC Grade
Nitrogen (Collision Cell via GC EPC)	99.999%	Research or SFC grade
Methane Reagent Gas (required for CI operation)	99.999%	Research or SFC grade
Isobutane Reagent Gas (optional)	99.99%	Instrument grade
Ammonia Reagent Gas (optional)	99.9995%	Research or SFC grade
Carbon Dioxide Reagent Gas (optimal)	99.995%	SFC Grade

It is recommended that two (2) step regulators be used with 1/8" size outlets.

Tools

Your Agilent instrument comes with a few basic tools and consumables which are relevant to the specific configuration of your system.

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Tools (provided)

Your GC/MS comes with a few basic tools and consumables depending on the specific inlet and detector that you ordered. Here is a general list which one will get with the instruments or should have on-hand.

Tool or consumable	Used for
Inlet wrench	Replacing inlet septa and liners.
T10 and T20 Torx wrenches	Remove tray. Remove covers to access EPC modules, traps, and possible leaks.
Column cutter	Column installation
1/8-inch Tee, Swagelok, brass	Connect gas supplies
1/8-inch nuts & ferrules, Swagelok, brass	Connect gas supplies
1.5 mm and 2.0 mm hex driver	Source maintenance (disassembly)
Tool bag	Used to hold GC and MS tools
Q-Tips	Used to clean source parts
Lint-free cloths	Used to keep surfaces clean and parts clean
Gloves	Used to reduce contamination on parts GC and MS

Tools (recommended)

Description	Part number
MSD Maintenance supplies	
Abrasive paper, 30 µm	5061-5896
Alumina powder	393706201
Lint-free cloths, clean (package of 15)	05980-60051
Lint-free cloths, cleaning (package of 300)	9310-4828
Cotton swabs (package of 100)	5080-5400
Agilent AVF Platinum foreline pump oil, 1 quart	5191-5851

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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:

- A LAN connection for the Data Acquisition and Data Analysis PC is recommended to provide remote diagnostics capability for the Tandem Quad Series GC/MS System.
- 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.

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Site Preparation Verification

Service Request Number:	Date of Review:
Service Engineer Name:	Customer Name:
Service Engineer Signature:	Total number of pages in this document:

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