

Agilent CrossLab Start Up Services

8890A/B Gas Chromatograph Site Preparation Checklist



Introduction

Thank you for purchasing an instrument from Agilent. 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.

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

Important Customer Web Links

- To access Agilent training and education, visit <https://www.agilent.com/en/training-events/events/agilent-education> 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://community.agilent.com/technical/consumables/w/wiki/4953/agilent-collection-of-columns-supplies-and-standards-resources>. Some of the topics include:
 - Columns, Supplies, Sample Prep, and Containment
 - Chemical Standards
 - Service and Support



- 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>.



- **Need to place a service call?** <https://explore.agilent.com/repairs-done-right>.



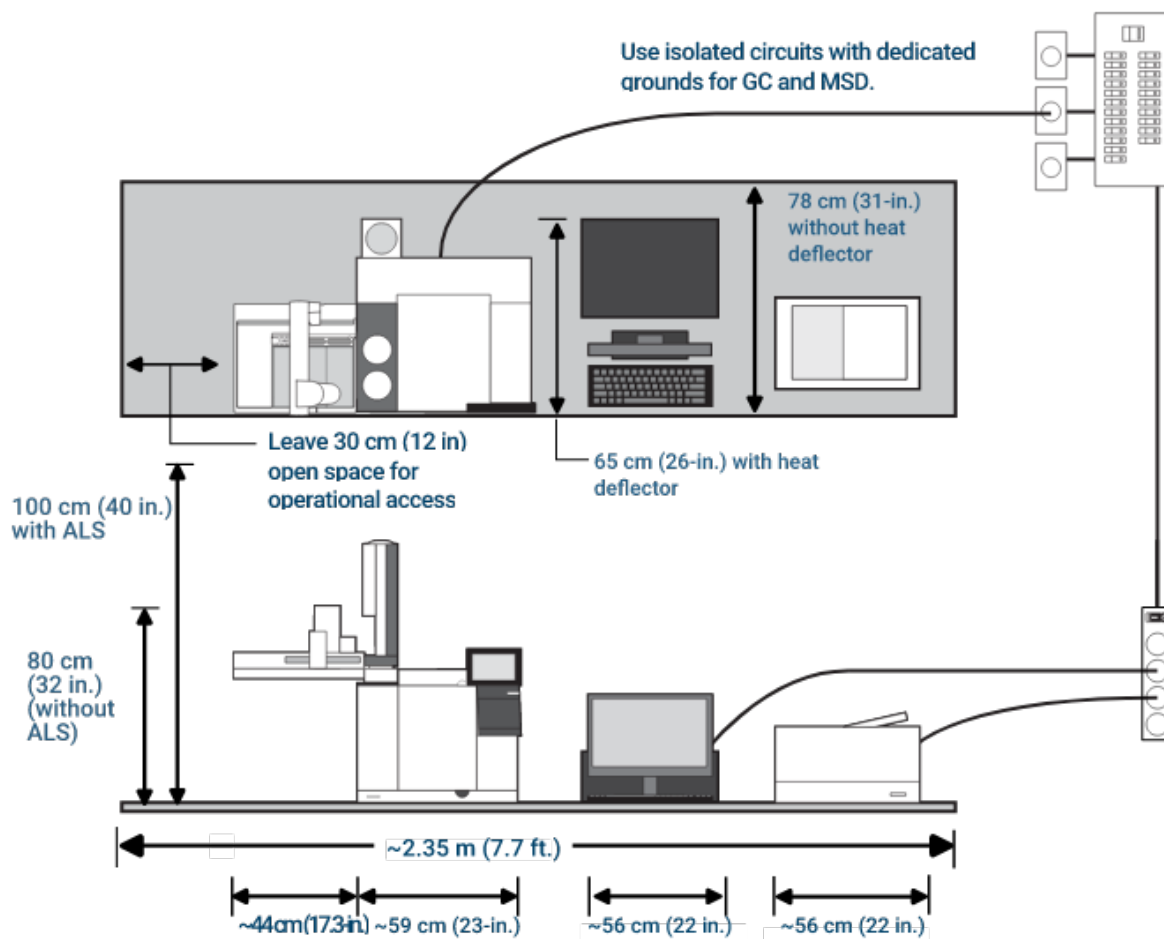
Site Preparation

Complete site preparation details and requirements can be found in the instrument's site preparation guide. Find this guide on Agilent's web site by searching for the instrument model and "site preparation guide," or use the QR code shown below.



Typical System Summary

Typical GC System - 8890B GC with computer and printer.



Typical weight: 84 kg (186 lb)

Maximum power consumption: ~3,950 VA (13,478 btu/hr)

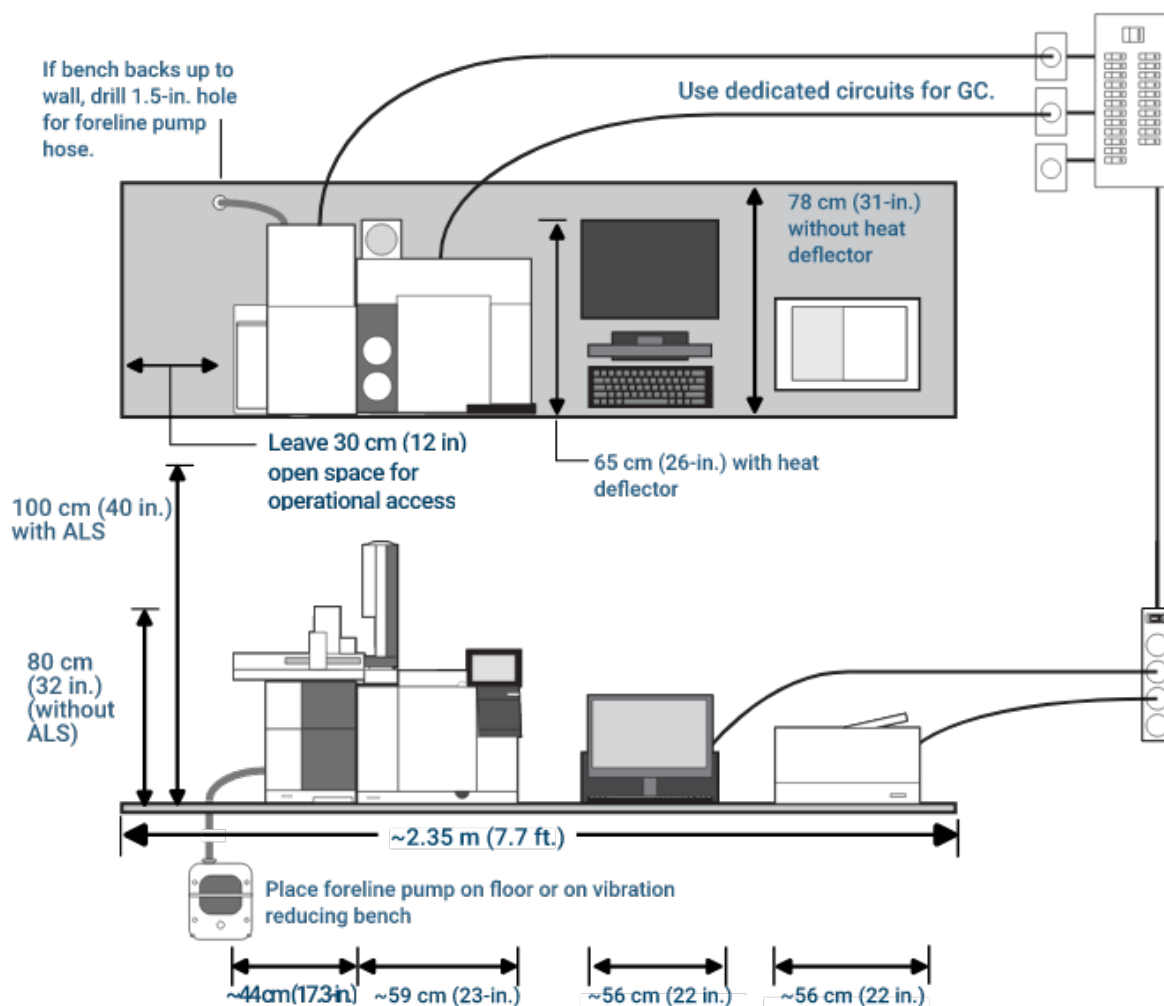
Application	Gas*	Purity	Supply Pressure (psi)†
Carrier	Helium	99.9995	50 - 80
	Hydrogen	99.9995	50 - 80
	Nitrogen	99.9995	50 - 80
Detectors			
TCD	Helium	99.9995	50 - 80
FID, NPD, FPD, TCD	Hydrogen	99.9995	50 - 80
ECD, FID, FPD, NPD, TCD	Nitrogen	99.9995	50 - 80
FID, NPD, FPD	Air	Zero grade	50 - 80

* Use 1/8-in Swagelok gas connections

† 1 psi = 6.89 kPa

Cryo Cooling	Tubing	Supply Pressure (psi)*
CO2	1/8-inch stainless tubing	700 - 900
Liquid N2	1/4-inch insulated tubing	20 - 25

* 1 psi = 6.89 kPa

Typical GC System - 8890A/B GC, Single Quad MSD, with computer and printer.


Typical weight: 123 kg (271 lb)

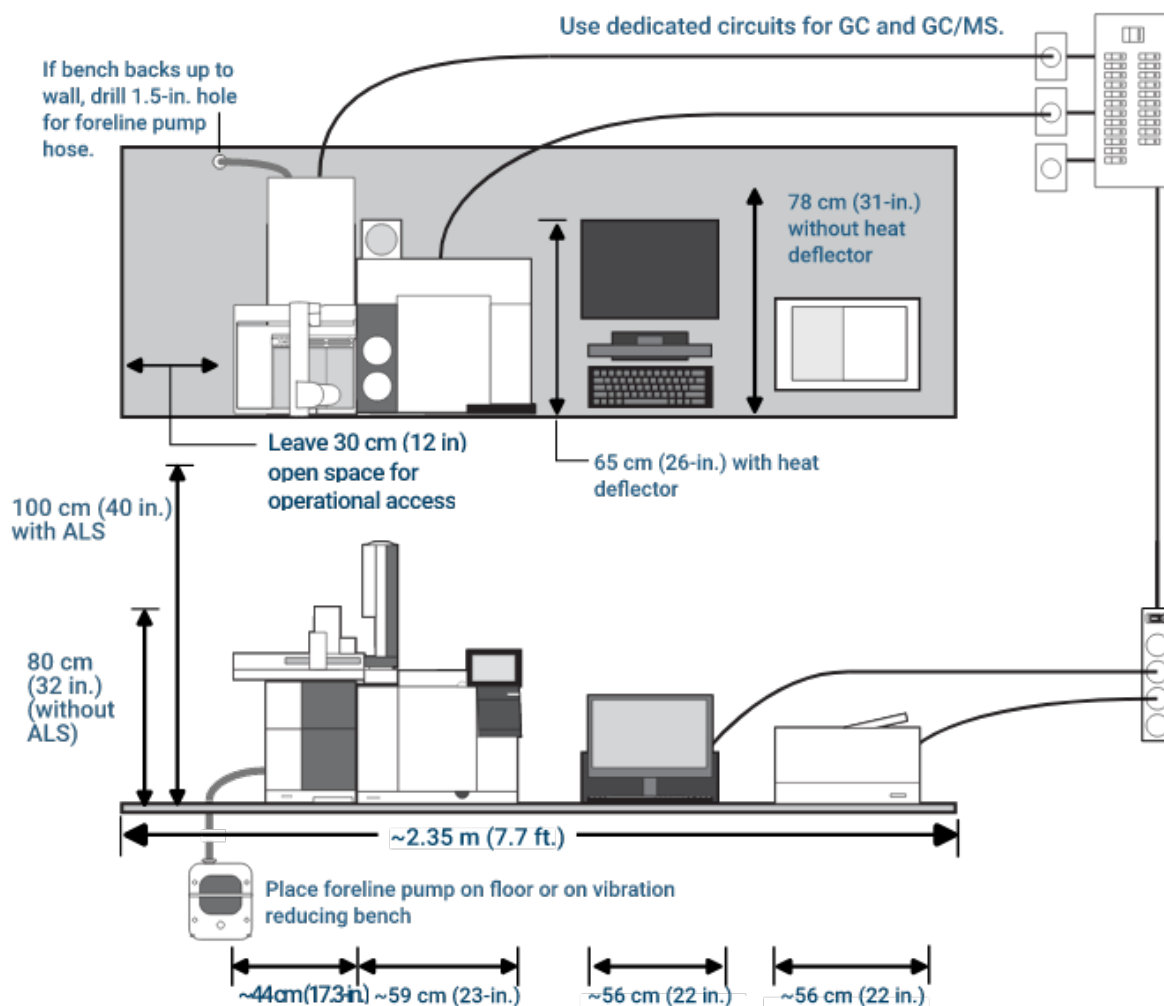
Maximum power consumption: ~5,050 VA (17,232 btu/hr)

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	Tubing	Supply Pressure (psi)*
CO2	1/8-inch stainless tubing	700 - 900
Liquid N2	1/4-inch insulated tubing	20 - 25

* 1 psi = 6.89 kPa

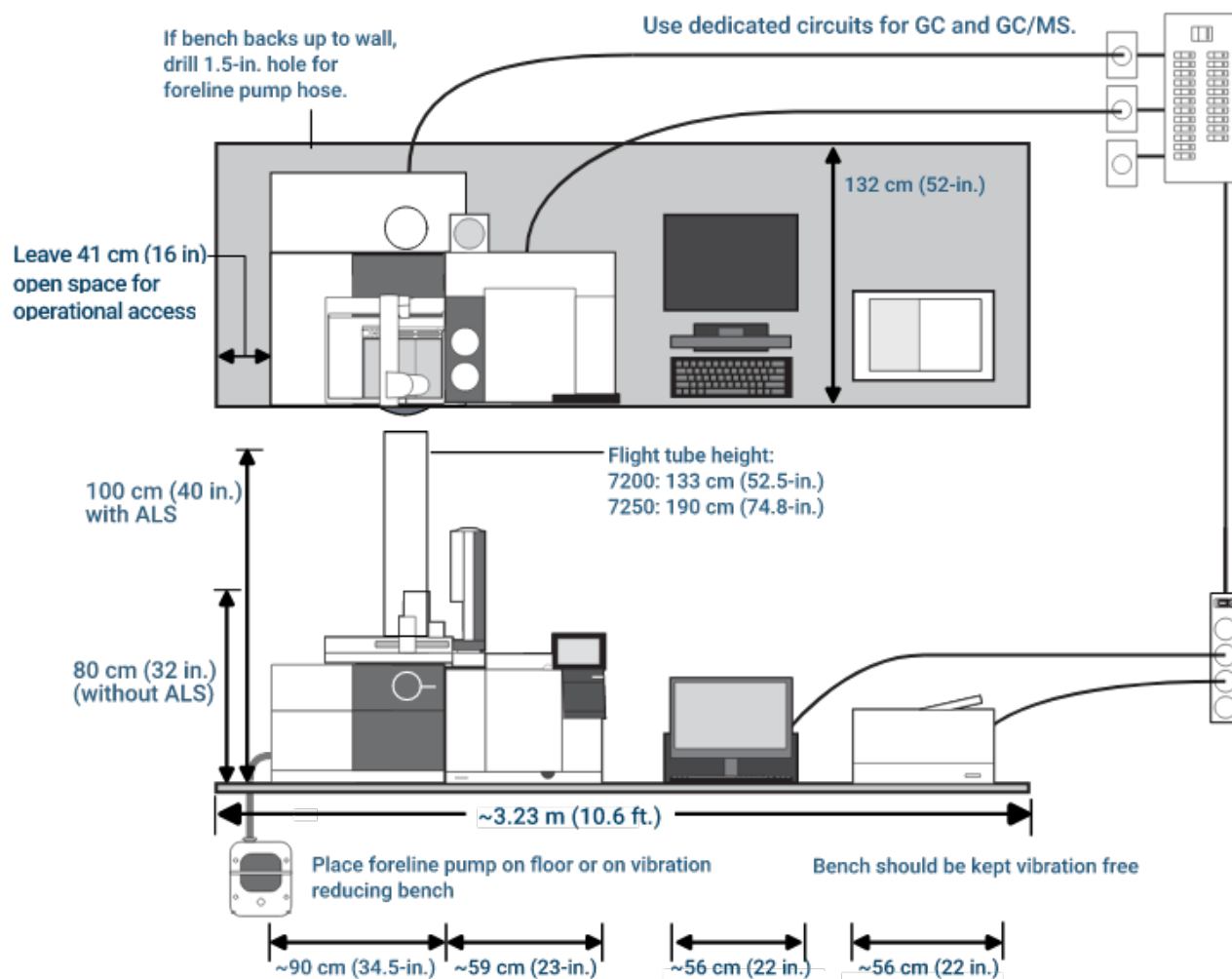
Typical GC System - 8890B GC, 7000 or 7010 MSD, with computer and printer.

Typical weight: 142 kg (311 lb)
Maximum power consumption: ~5,550 VA (18,938 btu/hr)

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	Tubing	Supply Pressure (psi)*
CO2	1/8-inch stainless tubing	700 - 900
Liquid N2	1/4-inch insulated tubing	20 - 25

* 1 psi = 6.89 kPa

Typical GC System - 8890B GC, 7200 or 7250 Q-TOF MS, with computer and printer.

Typical weight: 244 kg (536 lb)
Maximum power consumption: ~5,740 VA (19,620 btu/hr)

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	Tubing	Supply Pressure (psi)*
CO2	1/8-inch stainless tubing	700 - 900
Liquid N2	1/4-inch insulated tubing	20 - 25

* 1 psi = 6.89 kPa

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.

- ☐ Requires 30 cm (12-inch) open space above GC/ALS.
- ☐ Requires 27 cm (10.7-inch) open space in front of GC.
- ☐ Requires 25 cm (10-inch) clearance between back of instrument and wall to dissipate hot air and allow for routine maintenance.

Instrument description	Height	Width	Depth	Weight
8890 Series GC	50 cm (19.2-inch)	59 cm (23-inch)	54 cm (21-inch)	50 kg (112 lb)
8890 Series GC (with fourth detector)	50 cm (19.2-inch)	68 cm (27-inch)	54 cm (21-inch)	57 kg (125.4 lb)

Environmental Conditions

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

- ☐ Performance can be affected by sources of heat and cold, such as direct sunlight, heating/cooling from air conditioning outlets, drafts and/or vibrations.
- ☐ The bench or supporting surface must be vibration free.
- ☐ The laboratory's ambient temperature conditions must be stable for optimum performance
- ☐ During normal operation of the GC with many detector and inlet types, some of the carrier gas and sample vents outside the instrument through the split vent, septum purge vent, and detector exhaust. If any sample components are toxic or noxious, or if hydrogen is used as the carrier gas or detector fuel gas, these exhausts must be vented to a fume hood.

Product	Condition	Temperature range	Humidity range	Maximum altitude
Standard oven ramp	Operation	15 to 35 °C	5 to 95%	4,615 m
Fast oven ramp (options 002 and 003)	Operation	15 to 35 °C	5 to 95%	4,615 m
All	Storage	–40 to 70 °C	5 to 95%	

Heat Dissipation

Your facilities manager may wish to know the amount of heat that the system generates in order to establish its contribution to the overall room ventilation requirements.

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.

Refer to the "Heat Dissipation" section of the Agilent 88xx GC, GC/MS, HS, and ALS Site Preparation Guide for more detail.

Instrument Description	Heat Dissipation
Standard oven ramp	7681 BTU/hour maximum (8103 kJ/h)
Fast oven ramp (options 002 and 003)	10,071 BTU/hour maximum (10,626 kJ/h)

Exhaust Venting Requirements

Allow at least 25 cm (10 in) clearance between back of GC and wall to dissipate heated air.

Installing the optional oven heat deflector reduces the required clearance to 14 cm (5.5 in).

Although the deflector adds 14 cm (5.5 inches) to the back of the GC, the GC can be installed closer to the wall because hot air is vented up and away from the GC/wall.

The following picture shows the back view of an installed 88xx GC with the Oven Heat Deflector installed. The exhaust duct exit is 10 cm (4 inches) in diameter.



The connecting duct should provide unrestricted flow for the oven air and be as short and straight as possible.

With the exhaust deflector installed the exhaust is about 65 CFM (ft³/min /1.840 m³/min). Without the deflector, the exhaust rate is about 99 CFM (ft³/min /2.8 m³/min).

Refer to the "Exhaust Venting" section of the Agilent 88xx GC, GC/MS, HS, and ALS Site Preparation Guide for more detail.

Power Requirements

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

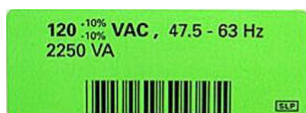
The GC requires a dedicated circuit with an isolated ground.

Table 1. Power requirements

Product	Oven type	Line voltage (VAC)	Frequency (Hz)	Power Rating (VA)	Current rating (amps)	Power outlet current rating
8890/8890B GC	Standard	Americas: 120 single phase (-10% / +10%)	50/60 ± 5%	2350	19.6	20 Amp Dedicated
8890/8890B GC	Standard	220/230/240 single/split phase (-10% / +10%)	50/60 ± 5%	2350	10.7/10.2/9.8	10 Amp Dedicated
8890/8890B GC	Fast	Japan 200 split phase (-10% / +10%)	50/60 ± 5%	2950	14.8	15 Amp Dedicated
8890/8890B GC	Fast	220/230/240 single/split phase (-10% / +10%)	50/60 ± 5%	2950	13.4/12.8/12.3	15 Amp Dedicated
All						
Data system PC (monitor, CPU, printer)		100/120 (-10% / +5%)	50/60 ± 5%	1000	10/8.3	15 Amp Dedicated
Data system PC (monitor, CPU, printer)		200/240 (-10% / +5%)	50/60 ± 5%	1000	4.1-5	10 Amp Dedicated

Notes

- The number and type of electrical outlets depends on the size and complexity of your system. For example, in addition to the dedicated outlet for the GC, a system with a computer, monitor, printer, and HUB/Switch requires 4 additional outlets on a separate circuit.
- The GC will have a label next to the power cord connector that describes the line voltage requirements.



**Line Voltage
Frequency
Power**



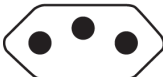
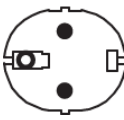
- Power line conditioners that contribute any power line distortion should not be used with the Agilent GC.

Refer to the "System Power Requirements" section of the Agilent 88xx GC, GC/MS, HS, and ALS Site Preparation Guide for more detail.

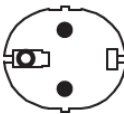
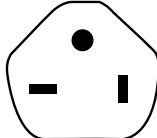
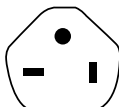
Common instrument power cord plugs

Table 2, "Power cords" [12] shows common Agilent power cord plugs.

Table 2. Power cords

Part number	Country	Voltage	Amps	Cable length (m)	GC connector type	Termination type	Plug
8121-3119	Argentina	220	16	2.5	C19	IRAM 2073	
8121-3115	Australia / New Zealand	230	10	2.5	C13	AS 3112	
8120-8619	Australia / New Zealand	230	15	2.5	C19	AS 3112	
8121-3321	Brazil	120/220	16	2.5	C19	NBR 14136 BR/3/20	
8121-1084	Chile/Italy	230/220	16	2.5	C19	CEI 23-50	
8121-1766	China	220	16	2.5	C19	GB 1002 GB 2099	
8121-0723	China	220	10	2.5	C13	GB 1002 GB 2099	
8120-8622	Denmark Switzerland †	230	16	2.5	C19	IEC60309	
8121-3112	Denmark	230	10	2.5	C13	SB 107-2-D1 DK2-5a	
8120-4416	Switzerland	230	10	2.5	C13	SEV 1011 SEV 6534/2	
8121-1222	Europe / Korea	220 / 230 / 240	16	2.5	C19	CEE 7/7	

8890A/B Gas Chromatograph Site Preparation Checklist

Part number	Country	Voltage	Amps	Cable length (m)	GC connector type	Termination type	Plug
8121-3121	Europe / Korea	220 / 230 / 240	10	2.5	C13	CEE 7/7	
8121-0710	South Africa	230	16	2.5	C19	SANS 164/1	
8121-3232	India	230	16	2.5	C19	IS 1293	
8121-0161	Israel	230	16	2.5	C19	SI 32	
8121-1763	Japan	100	15	2.5	C19	JIS C8303	
8121-2569	Japan	200	15	2.5	C19	NEMA L6-20 Japan	
8120-8620	United Kingdom, Hong Kong, Singapore, Malaysia	220/230	13	2.5	C19	BS1363/A SS145	
8121-3132	United States/South America (general)	120	20	2.5	C19	NEMA 5-20P	
8121-0075	United States / South America (unspecified)	240	15	2.5	C19	NEMA L6-15P	
8121-3132	Taiwan	110	20	2.5	C19	NEMA 5-20P	
8121-2989	Taiwan	220	15	2.5	C19	CNS 690	

Part number	Country	Voltage	Amps	Cable length (m)	GC connector type	Termination type	Plug
8121-1764	Thailand and Philippines	220	15	2.5	C19	NEMA 5-15	

† 8890B GC only

Venting the Micro-ECD, TCD or Split-Splitless Inlet Vent gas flows to a Fume Hood or venting manifold

- If using hydrogen carrier gas with either a micro Electron Capture (uECD) or Thermal Conductivity (TCD) Detector the GC will vent uncombusted hydrogen from the detector exit. In addition, if a Split/Splitless or Multimode Inlet is used, hydrogen will dissipate from both the inlet split and septum purge vents. In both cases you must either safely vent the exhaust gas or operate the GC inside a fume hood.
- The uECD exhaust vents through a stainless-steel tube, connected to a length of large I.D. tubing that exits the back panel. This should be routed to a fume hood or appropriate venting system. Agilent Technologies recommends a vent line internal diameter of 6 mm (1/4-inch) or greater. With a line of this diameter, the length is not critical.
- **Make sure that the venting system does not put a direct negative pressure on the vent tube from the GC.**

Below is a picture that shows the back view of an 88xx GC with the micro Electron Capture Detector vent tube exiting the back of the instrument.



General Site Preparation Checklist

Use the following checklist to ensure that the site is properly prepared for GC system installation.

- ☐ Ensure that the appropriate installation hardware has been acquired.
- ☐ Ensure that system components are oriented so that they can be connected properly.
- ☐ Ensure that the location in which the GC system is being installed meets the requirements for environmental conditions.
- ☐ Prepare bench space for the GC system. Ensure that the bench has the size and weight capacity to accommodate the GC and associated components.

- ☐ If the system being installed includes an MSD, ensure that the bench allows for proper installation and connection of the fore-line pump.
- ☐ Ensure that appropriate venting is provided for the GC system.
- ☐ Ensure that a dedicated power circuit is available for each device in the system.
- ☐ Ensure that appropriate gas and reagent supplies are provided for the GC system.
- ☐ Ensure that appropriate gas plumbing is provided for the GC system.
- ☐ If the GC uses cryogenic cooling, ensure that appropriate cryogenic cooling supplies are provided for the GC.
- ☐ If the GC system being installed includes a data system, ensure that the PC meets the requirements necessary to properly support the GC system. For more information, see the site prep guide for your data system.
- ☐ If the GC being installed is to be connected to a site LAN, ensure that the appropriate cabling is available.

Special Notes

- For information on Agilent consumables, accessories, and laboratory operating supplies, see the Important Customer Web Links above.

Operating Supplies Required for Installation

Prior to installation, you must have sufficient and appropriate gas supplies, fittings, tubing, and filters on hand.

Available Kits for 88xx GC system installation:

Kit	Part Number	Contents
Recommended for GCs with FID, NPD, FPD		
GC Supply Gas Installation Kit with Gas Purifiers	19199N	Includes Gas Clean Filter system kit CP736530 (with 1 oxygen, 1 moisture, and 2 charcoal filters), 1/8-inch brass nuts and ferrules, copper tubing, 1/8-inch brass tees, tubing cutter, 1/8-inch brass caps, universal external split vent trap with replacement cartridges, and 1/8-inch ball valve.
Recommended for GCs with TCD/ECD, MS, and MSD		Includes 1/8-inch brass nuts and ferrules (20), copper tubing, 1/8-inch brass tees, tubing cutter, 1/8-inch brass caps, 7-mm nut driver, T-10 Torx driver, T-20 Torx driver, 4 open-end wrenches, and 1/8-inch ball valve.
GC Supply Gas Installation Kit	19199M	
Gas Clean carrier gas filter kit, 1/8-inch	CP17974	

Available GC Pressure regulators

All Agilent regulators are supplied with the 1/8-inch Swagelok female connector.

Table 3. Tank regulators

Gas type	CGA number	Max pressure	Part number
Air (Medical Grade)	346	125 psig (8.6 Bar)	5183-4641
Air (Zero Grade, for GC applications)	590	125 psig (8.6 Bar)	5183-4645
Hydrogen, Argon/Methane	350	125 psig (8.6 Bar)	5183-4642
Oxygen	540	125 psig (8.6 Bar)	5183-4643
Helium, Argon, Nitrogen	580	125 psig (8.6 Bar)	5183-4644

Considerations for Hydrogen Carrier Gas

Hydrogen Safety

- Be sure that the Hydrogen gas supply is turned off until all connections are made and ensure the inlet and detector column fittings are always either connected to a column or capped when hydrogen gas is supplied to the instrument.
- In any application using hydrogen, leak test all connections, lines, and valves before operating the instrument. Agilent highly recommends the G3388B Leak Detector or equivalent to safely check for leaks.

Supply tubing for Hydrogen Gas

- Agilent recommends using NEW, chromatographic quality copper or stainless-steel tubing and fittings when using hydrogen.
- Do not re-use old tubing when installing or switching to hydrogen carrier gas. Hydrogen gas tends to remove contaminants left on old tubing by previous gases (by helium, for example). These contaminants can appear in detector output as high background noise or hydrocarbon contamination for several weeks.
- Do not use old copper tubing with hydrogen gas. Old copper tubing can become brittle and create a safety hazard.

Hydrogen Gas Supplies

- Hydrogen can be supplied from a gas generator or from a cylinder.
- Agilent recommends use of a high-quality, properly maintained hydrogen gas generator. A high-quality generator can consistently produce purity > 99.9999%, and the generator can include built-in safety features such as limited flow rates, and auto-shutdown.
- If using a hydrogen gas cylinder, Agilent recommends use of Gas Clean Filters to purify the gas.
- Consider additional safety equipment as recommended by your company safety personnel.

Typical System Summary

Insert bench prep summary diagram/graphic here.

Signature Page

Service Engineer Comments (optional)

If there are any specific points you wish to note as part of performing this service review or other items of interest for the customer, please write in this box.

Service Verification

Service Order Number:
Date of Service Completion:
Customer Name:
Service Engineer Name:
Service Engineer Signature:
Total number of pages in this document: