7890A Series GC Site Preparation Checklist

Thank you for purchasing an Agilent **instrument**. To get you started and to assure a successful and timely installation of your 7890 GC, please refer to this site prep checklist.

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 or Pre-Installation 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.

Dimensions and Weight

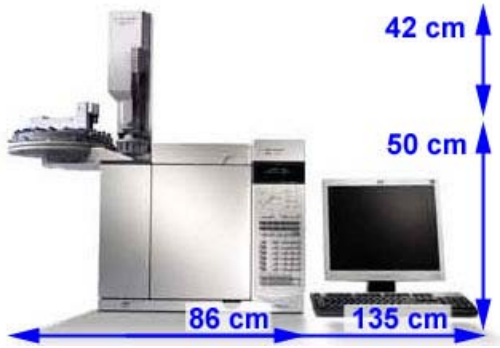
Identify the laboratory bench space before your system arrives based on the table below.

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.

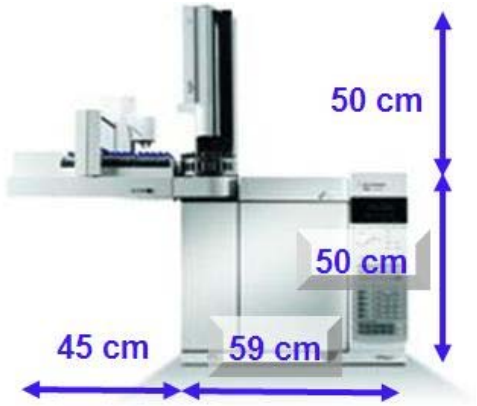
Special Notes

1. Allow at least 21 cm clearance between back of GC and wall to dissipate heated air. See picture below. A simple system that includes a GC and a computer requires about 86 cm of bench space.
2. Avoid bench space with overhanging shelves. A G4513A or G2613/G2913A automatic liquid sampler will add to the height of the instrument as shown below.
3. G1888A Headspace, 5975 GCMS and QQQ MS are installed to the left of the 7890 and the 7697 Headspace is installed to the right - refer to the specific site prep documents for exact measurements.

Component	Height (cm)	Width (cm)	Depth (cm)	Weight (kg)
G3440A Agilent 7890A GC	50 to 58	59	54	50
G3440A with 3rd detector	50 to 58	68	54	57
G2913A 7683 Auto-injector	42 above GC	12	12	3.1
G2614A 7683 Tray	20	30 Left of GC	34	3.0
G4513A 7693 Auto-injector	50 above GC			
G4514A 7693 Tray		45 Left of GC	2 cm in front of GC	45 Left of GC



7890 GC with 7683 ALS System



7890 GC with 7693 ALS System

Conversions: 1 kg = 2.2 pounds; 1 cm = 0.39 inches.

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 vibrations.
2. The site's ambient temperature conditions must be stable for optimum performance.
3. The maximum additional heat dissipation from this new equipment is 7681 BTU / hour or 8,103,455 joules /hour for the standard oven and 10,071 BTU /hour or 10,624,905 joules / hour for the fast oven . This measurement represents the heat given off when all heated zones are set for maximum temperatures.
4. For storage or shipping, the allowable temperature range is -40 to 70°C and the allowable humidity range is 5-95%, non-condensing. After exposing the GC to extremes of temperature or humidity, allow 2 hours for it to return to the recommended ranges.

Instrument Description	Operating temp range °C	Operating humidity range (%)	Maximum altitude (m)
G3440A Agilent 7890A GC, Recommended	15 to 35	50 to 60, non-condensing	up to 2,000
G3440A Agilent 7890A GC, Full range	0 to 50	Up to 31°C, 5 to 80 At 40°C, 5 to 50	4,615.38

Conversions: 1 meter = 3.28 feet
1 BTU = 1055 Joules

Heat Dissipation

Your facilities manager may wish to know the amount of heat that the system creates to understands its contribution to the overall room ventilation requirements.

The following table may help you calculate the additional BTU's of heat dissipation from this new equipment. Maximums represent the heat given off when heated zones are set for maximum temperatures.

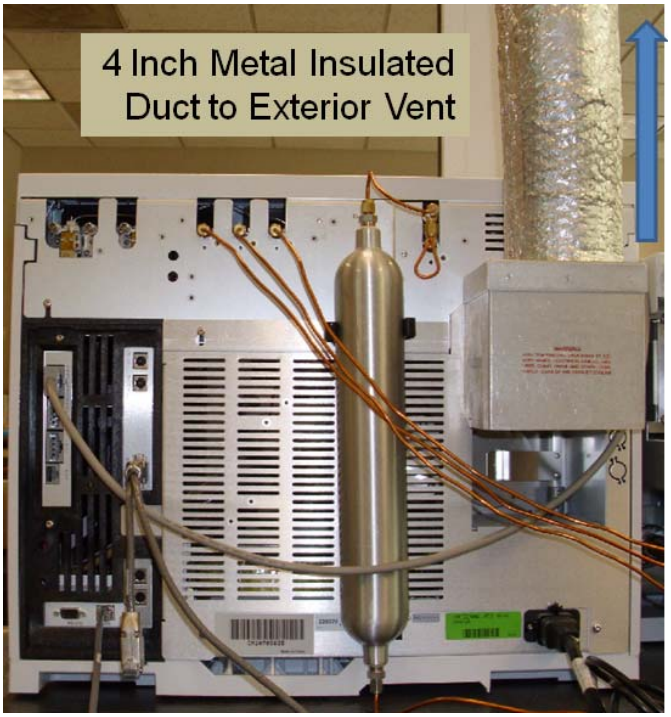
Oven type	Heat dissipation
Standard oven ramp	7681 BTU / hour maximum
Fast oven ramp (options 002 and 003)	10,071 BTU / hour maximum

Special Notes

1. An Oven Exhaust Deflector kit is available for attaching 10-cm (4 in) diameter exhaust duct to exhaust the hot air. This adds about 13 cm to the back of the GC - Order option 306 or part number G1530-80650.
2. For GCs with the exhaust deflector option 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).

Venting the Oven

Below is a picture that shows the back view of an installed 7890 GC - with the Oven Heat Deflector vented into a 4 inch (10 cm) diameter metal, insulated duct. The duct should provide unrestricted flow for the oven air and be as short and straight as possible.



Power Consumption

Special Notes

1. The number and type of electrical outlets depends on the size and complexity of your system. A GC system with a computer, monitor, printer, and HUB/Switch requires 5 outlets.
2. The outlet for the GC must be dedicated to the GC with a dedicated ground.
3. Power line conditioners should not be used with the G3440A Agilent 7890A GC.
4. The GC will have a label next to the power cord connector that lists the line voltage requirements.

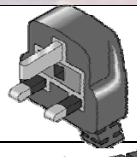
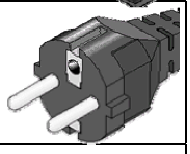
Line Voltage
Frequency
Power

5. The GC power consumption and requirements depend on the type of oven that you ordered and the country the unit is shipping to. Fast oven options 002 and 003 require a dedicated 15 Amp service.

NOTE: It is important to measure the line voltage at the receptacle for the GC to insure compatibility with the power configuration of the GC.

Oven Type	Line Voltage	Frequency (Hz)	Maximum Continuous Power Consumption (VA)	Power Outlet Current Rating
Standard	Americas Only: 120VAC Single phase (-10%/+10%)	48-63	2250	20 Amp - Dedicated
Fast	Worldwide except Japan 220/230/240(opt 002) VAC single/split phase (-10%/+10%)	48-63	2950	15 Amp - Dedicated
Standard	Only available in: Denmark, Switzerland, China, Chile, Argentina 220/230/240 VAC single/split phase (-10%/+10%)	48-63	2250	10 Amp - Dedicated
Fast	Americas only: Option 003 - Specifically for 208 VAC (193-231 VAC)	48-63	2950	15 Amp - Dedicated
Fast	Japan only: 200 split phase (-10%/+10%)	48-63	2950	15 Amp - Dedicated

Common 7890 Power Cords

PART #	DESCRIPTION	Wall Termination	Length	Picture
8120-6894	US 120V 20 amp, 12 AWG	NEMA 5-20P	4.5m	
8121-0075	US, 240V 15 amp, 14 AWG	NEMA L6-15P	2.5m	
8120-6360	Taiwan South America 20 amp, 12 AWG	NEMA 6-20P	2.5m	
8121-0710	India South Africa 15 amp	AS 3112 PLUG	4.5m	
8120-6903	Japan 20 amp	NEMA L6-20	4.5m	
8120-8619	Australia 16 amp	AS 3112 PLUG	2.5m	
8120-8620	UK, Hong Kong Singapore, Malaysia 13 amp	BS89/13	2.5m	
8120-8621	Europe Korea 16 amp	CEE/7/V11	2.5m	
8120-8622	Swiss Denmark 16 amp	SWISS/DENMARK 1302	2.5m	
8121-0161	Israel 16 amp, 16 AWG	ISRAELI SI32	2.5m	
8121-0070	China 15 amp	GB 1002	4.5m	

Gas Selection

Special Notes

1. Agilent recommends a carrier and detector gas purity of 99.9995% or better. Air for flame detectors should be zero grade. Agilent also recommends using traps to remove hydrocarbons, water, and oxygen.
2. When used with capillary columns, GC detectors require a separate makeup gas for optimum sensitivity. This table lists gas recommendations for capillary columns and the preferred makeup gas types.
3. The inlet electronic pressure control (EPC) modules are calibrated for up to 4 carrier gases: Split/Splitless capillary (SS), Purged packed (PP), Programmable temperature vaporization (PTV), Multi-Mode (MM), and cool on-column (COC) are calibrated for Helium, Hydrogen, Nitrogen, and Argon methane 5%.
   Volatiles inlet VI is calibrated for only Helium and Hydrogen.

Detector	Carrier gas	Make up 1st choice	Make up 2nd choice	Purge or reference
Electron capture	Hydrogen Helium Nitrogen Argon/methane	Argon/methane 5% Argon/methane 5% Nitrogen Argon/methane 5%	Nitrogen Nitrogen Argon/methane 5% Nitrogen	Anode purge must be same as makeup
Flame ionization	Hydrogen Helium Nitrogen	Nitrogen Nitrogen Nitrogen	Helium Helium Helium	Hydrogen and air for detector
Flame photometric	Hydrogen Helium Nitrogen Argon	Nitrogen Nitrogen Nitrogen Nitrogen	None	Hydrogen and air for detector
Mass selective	Hydrogen Helium	None	None	
Nitrogen phosphorous	Helium Nitrogen	Nitrogen Nitrogen	Helium Helium	Hydrogen and air for detector
Thermal conductivity	Hydrogen Helium Nitrogen	Must be same as carrier and reference	Must be same as carrier and reference	Reference must be same as carrier and makeup

Gas Supply Pressures

Special Notes

1. The following tables list minimum and maximum pressures in psi for each electronic pneumatic control module (EPC). These requirements are for the input to the EPC module located at the back of the gas chromatograph. Conversions: 1 psi = 6.8947 kPa = 0.068947 Bar = 0.068 ATM.

Detectors

	FID	NPD	TCD	ECD	FPD
Hydrogen	35-100	35-100			45-100
Air	55-100	55-100			100-120
Make up	55-100	55-100	55-100	55-100	55-100
Reference			55-100		

Auxiliary EPC and Pneumatic Control channels

The minimum supply pressure for AUX and PCM modules is 20 psi greater than pressure used in your method. For example, if you need a pressure of 20 psi for the method, the supply pressure must be at least 40 psi.

	AUX EPC	PCM 1	PCM 2 or PCM Aux
Maximum pressure	120	120	120 with Forward pressure control 50 with Back pressure control

Inlets

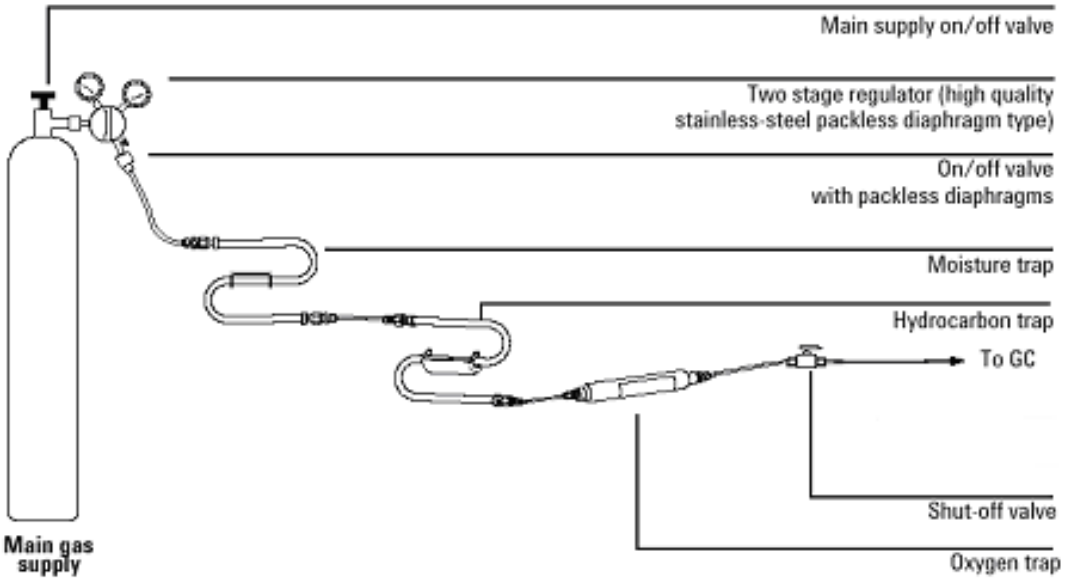
The minimum supply pressure for inlet modules is 20 psi greater than pressure used in your method. For example, if you need a pressure of 40 psi for the method, the supply pressure must be at least 60 psi.

	SSL 150	SSL 100	PCOC	PPIP	PTV	MMI
Carrier max	170	120	120	120	120	120

Gas Plumbing and Supplies

Special Notes

1. 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 appropriate sized adapter to end with a 1/8-inch Swagelok® female connector.
2. If your order did NOT include parts to connect the gas supply to your 7890 GC, you must supply pre-cleaned, 1/8-inch copper tubing and a variety of 1/8-inch Swagelok® fittings to connect the gas supply(s).
3. Never use liquid thread sealer to connect fittings. Never use chlorinated solvents to clean tubing or fittings.
4. Agilent also recommends using traps to remove water, hydrocarbons, and oxygen or a combination trap that removes all three.



Tank Regulator Table

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

Gas Type	CGA Number	Pressure Range	Part Number
Air	346	0-125 PSIG (8.6 Bar)	5183-4641
Hydrogen, Argon/Methane	350	0-125 PSIG (8.6 Bar)	5183-4642
Oxygen	540	0-125 PSIG (8.6 Bar)	5183-4643
Helium, Argon, Nitrogen	580	0-125 PSIG (8.6 Bar)	5183-4644
Air	590	0-125 PSIG (8.6 Bar)	5183-4645

Common Plumbing Supplies

Description	Part number
Moisture trap: preconditioned, metal casing, s-shaped. Contains Molecular Sieve 5A, 45/60 mesh, and 1/8 inch fittings.	5060-9084
Hydrocarbon trap: metal casing, s-shaped trap filled with 40/60 mesh activated charcoal and 1/8-inch fittings	5060-9096
Oxygen trap: glass, indicating, and 1/8-inch fittings.	IOT-2-HP
1/8 inch Ball Shutoff Valve for Carrier Gas Supplies (order 1 for each inlet system)	0100-2144
1/8 inch Copper Tubing - pre-washed - 50 feet	5180-4196
Big Universal Trap, 1/8-inch fittings. (Removes hydrocarbons, water, and oxygen. Purged with Helium)	RMSH-2
Teflon™ tape (Never use liquid thread sealer to connect fittings.)	0460-1266
MPC Plumbing Kit: One 1/8-inch Swagelok brass TEE; Two 1/8-inch Swagelok brass nut and ferrule sets; Two 1/8-inch ball shutoff valves; Twelve feet of 1/8-inch copper tubing.	G1290-60515

Miscellaneous Gas Plumbing Information

1. Cryogenic cooling with Liquid N2 requires 1/4-inch insulated copper tubing – 25-30 PSI supply.
2. Cryogenic cooling with Liquid CO2 requires 1/8-inch heavy-walled, stainless steel tubing – 750-1000 PSI supply – tank with dip tube..
3. Internal Valco® rotary Valve actuation requires a separate pressurized, dry air at 55 psi.
4. If you have not requested option 305 (pre-plumbed GC), you must supply pre-cleaned, 1/8-inch copper tubing and a variety of 1/8-inch Swagelok® fittings to connect the GC to inlet and detector gas supplies.

Other Requirements

Your Agilent 7890A GC comes with an analytical column: 19091J-413 (HP5, 30 meter, 0.32mm x 0.25µm). Our checkout standards are designed to work with this column. In many cases, you will need to select a different column for your application. Refer to http://www.chem.agilent.com/cag/cabu/gccolchoose.htm for information on column selection. Refer to http://www.chem.agilent.com/cag/cabu/gcreflib.htm for topics including: guard columns, retention gaps, conditioning, and method development.

Your GC comes with a few basic tools and consumables depending on the specific inlet and detector that you ordered. Here is a general list of what you will get with your instrument.

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.
¼-inch nut driver	FID jet replacement.
FID flow measuring insert	FID troubleshooting.
Ceramic wafer column cutter	Column installation.
1/8-inch Tee, Swagelok, brass	Connect gas supplies
1/8-inch nuts & ferrules, Swagelok, brass	Connect gas supplies
Inlet septa appropriate for type	Injection port seal
Inlet insert or liner	Injection port

This table lists other useful tools that do not come with your GC.

Tool	Used for
ECD/TCD Detector plug, 5060-9055	Inlet pressure decay test.
1/8-inch Ball Valve, 0100-2144	Isolating Inlets/Instruments and for the Inlet pressure decay test. One per inlet.
Digital flow meter	Verifying flows, checking for leaks and plugs.
Electronic gas leak detector	Pin pointing gas leaks. Safety checks when using Hydrogen.
Column cutters	Cutting columns
T10 and T20 Torx drivers	Remove tray. Remove covers to access EPC modules, traps, and possible leaks.
1/8-inch tubing cutter (wire cutter type)	Cut gas supply tubing
Assorted wrenches: ¼, 3/8, 7/16, 9/16	Gas supply and plumbing fittings.
Electronic vial crimper	Assure consistently air tight vial closure no matter who does the crimping.

First time GC users should consider adding the following supplies to maintain their system. Please refer to the Agilent Consumables and Supplies Catalog for part numbers and recommended maintenance periods or visit http://www.chem.agilent.com/en-US/Products/consumables/Pages/default.aspx

Tool or supply	Used for
Inlet supplies	Septa, o-rings, liners, adapter, and seals
Inlet PM kits	Kits with individual parts needed to maintain an inlet.
Pneumatic supplies	Gases, traps, o-rings, seals, Swagelok® fittings
Column supplies	Nuts, ferrules, adapters, guard columns, retention gaps
Detector supplies	Jets, beads, liners, adapters, cleaning kits
Application supplies	Standards, columns, syringes
Sampler supplies	Vials, caps, electronic crimpers, and syringes.

Autosampler Hardware

If you previously purchased samplers and would like to use these on your new GC, the samplers may need firmware updates. Sampler models that are compatible include: G2613A, G2614A, G2615A, G2913A, G1289B, G1290B, and G1888A.

This information is subject to change. For more details on software and hardware compatibility, please contact your sales representative.

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
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