



## 7820A GC Site Preparation Checklist

Thank you for purchasing an Agilent instrument. 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.

For additional information about our solutions, please visit our web site at <http://www.chem.agilent.com/en-US/Pages/HomePage.aspx>

### Customer Responsibilities

Make sure your site meets the following **prior to the installation date using the checklist below.**  
**For details, see specific sections within this document, including:**

- the necessary **laboratory or bench space is available.**
- the **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
- please consult **Other/Special Requirements** section below for other product-specific information
- For more details, please consult the product-specific Site Prep 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 it's 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. Allow at least 20 cm clearance between back of GC and wall to dissipate heated air. A simple system that includes a GC and a computer requires at least 106 cm of bench space.
2. Avoid bench space with overhanging shelves. Automatic liquid sampler will add to the height of the instrument as shown below.
3. G1888A Headspace, 5975 GCMS are installed to the left of the 7820 and the 7697 Headspace is installed to the right - refer to the specific site prep documents for exact measurements.

Instrument Description	Weight		Height		Depth		Width	
	Kg	lbs	cm	in	cm	in	cm	in
Agilent 7820A GC (G4350A or G4350B)	50	110	49	19.1	51	19.9	56	21.8
Agilent 7820A GC +7693A Auto-injector	54	118.8	49+45	36.6	52	20.3	56	21.8





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7820 GC with 7693 ALS 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 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 for the standard and 5120 BTU/hour for the 100V option. 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 50°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.

Table with 4 columns: Instrument Description, Operating temp range °C, Operating humidity range (%), Maximum altitude (m). Rows include Agilent 7820A GC, Recommended and Agilent 7820A GC, Full range.

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 generates in order to establish 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. Refer to the "Heat Dissipation" section of the "Agilent GC, GC/MS, and ALS Site Preparation Guide" for more detail.

Table with 2 columns: Oven type, Heat dissipation. Row: Standard oven ramp, 7681 BTU / hour maximum

Venting the Oven - Oven Heat Deflector Part Number G1530-80650

Below is a picture that shows the back view of an installed 7890 GC - with the Oven Heat Deflector installed. The exhaust duct is 10 cm (4 inches) in diameter and adds 14 cm (5.5 inches) to the back of the GC.

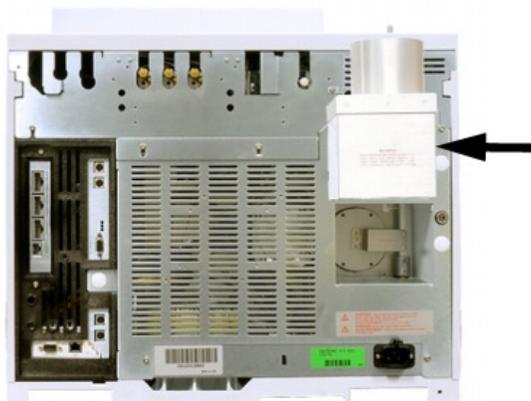


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The connecting duct should provide unrestricted flow for the oven air and be as short and straight as possible.

With the exhaust deflector installed the exhaust is about 65 CFM (ft<sup>3</sup>/min /1.840 m<sup>3</sup>/min). Without the deflector, the exhaust rate is about 99 CFM (ft<sup>3</sup>/min /2.8 m<sup>3</sup>/min).

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



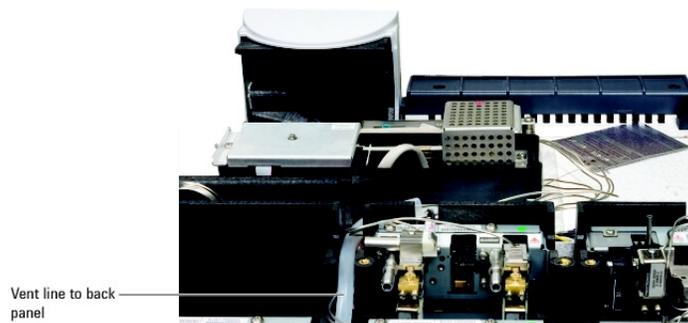
**Venting the uECD, TCD or Split-Splitless Inlet Vent gas flows to a Fume Hood or venting manifold**

If using a micro Electron Capture Detector, or if using hydrogen carrier gas that will be uncombusted, you must either safely vent the exhaust gas, or operate the GC inside a fume hood.

For example, if using hydrogen carrier gas with a thermal conductivity detector (TCD) the GC would vent uncombusted hydrogen from the detector and from the inlet split and septum purge vents.

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 a 7890 GC with the micro Electron Capture Detector vent tube exiting the back of the instrument.





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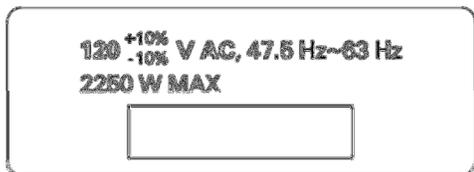
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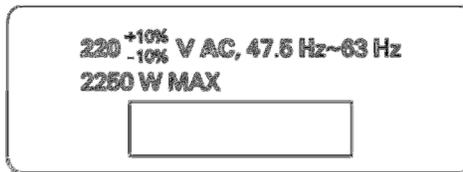
Power Consumption

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 Agilent 7820A 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.

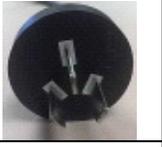
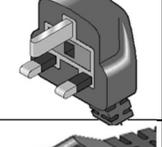
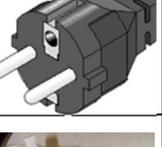
NOTE: It is important to measure the line voltage at the receptacle for the GC to insure compatibility with the power configuration of the GC.

Instrument Description	Line Voltage & Frequency (V, Hz)	Maximum Power Consumption (VA)	Maximum Power Consumption (W)
7820A GC (100V)	100V single phase (-10% / +10%), 48-63Hz	1500VA	1500W
7820A GC (other voltage)	120/200/220/230/ 240V single phase (-10% / +10%), 48-63Hz	2250VA	2250W
Data system PC (monitor, CPU, printer)	100/120/200-240 (-10% / +5%)	1000VA	1000W



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**Common 7820 Power Cords**

PART #	DESCRIPTION	Wall Termination	Length	Picture
8120-6894	US 120V 20 amp, 12 AWG	NEMA 5-20P	4.5m	
8121-0723	China C13, 10 A	GB 1002	2.5m	
8121-0070	China C19, 15 amp	GB 1002	4.5m	
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	
8120-6360	Taiwan South America 20 amp, 12 AWG	NEMA 6-20P	2.5m	



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**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) and Purged packed (PP) are calibrated for Helium, Hydrogen, Nitrogen, and Argon methane 5%.

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



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### Gas Supply Pressures

#### Special Notes:

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 psi	35-100 psi			45-100 psi
Air	55-100 psi	55-100 psi			100-120 psi
Make up	55-100 psi				
Reference			55-100 psi		

#### Inlets and Pneumatic Control channels

The minimum supply pressure for inlet modules and PCM 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	PPIP	PCM
Carrier max	120 psi	120 psi	120 psi



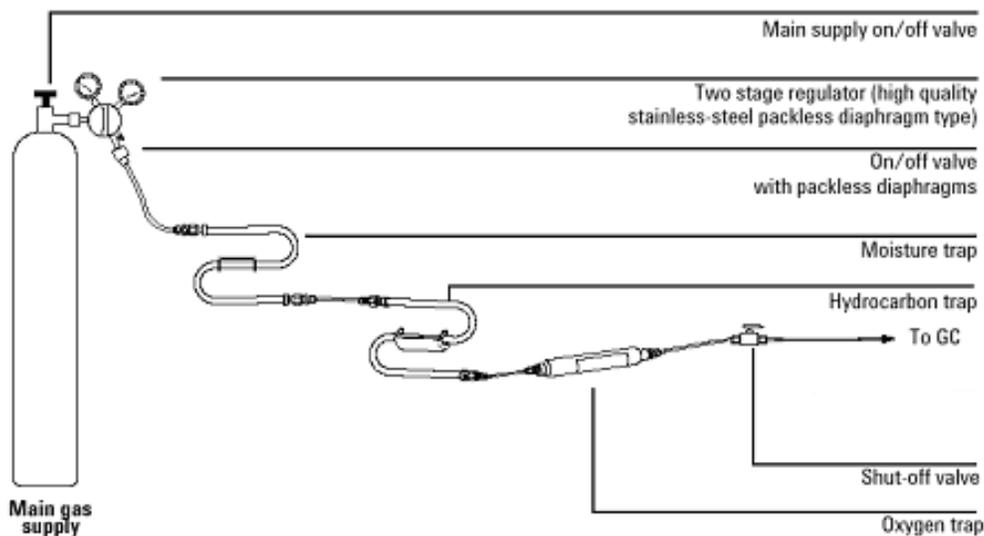
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### Gas Plumbing and Supplies

#### 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 7820 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 psi (8.6 Bar)	5183-4641
Hydrogen, Argon/Methane	350	0-125 psi (8.6 Bar)	5183-4642
Oxygen	540	0-125 psi (8.6 Bar)	5183-4643
Helium, Argon, Nitrogen	580	0-125 psi (8.6 Bar)	5183-4644
Air	590	0-125 psi (8.6 Bar)	5183-4645



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**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
PTFE 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**

Internal Valco® rotary Valve actuation requires a separate pressurized, dry air at 55 psi.

**7820A GC****Site Preparation Checklist****Other Requirements**

Your Agilent 7820A GC comes with an analytical column: 19091J-413 (HP5, 30 meter, 0.32mm x 0.25 $\mu$ m). 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.



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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. 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>
- Need technical support, FAQs? – <http://www.agilent.com/chem/techsupp>
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