



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.
- ☐ 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 **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 20 cm clearance between back of GC and wall to dissipate air.
- 2 A simple system includes a GC, an automatic liquid sampler, and a computer would require about 153 cm (5 feet) of bench space, add an addition 41 cm for a LaserJet printer (195 cm, 6.5 feet); access to the MSD could require moving the instrument so an additional (30cm, 1 foot) should be available on the left side. A total of 244 cm (8 feet) of bench space should be available for a full GCMS system. Some repairs to the MSD or to the GC will require access to the back of the instrument so access to the rear or back of the system will be required.
- 3 The length of the vacuum hose is 130 cm (4.24 feet) from the high vacuum pump to the foreline pump, while the length of the foreline pump power cord is 2 m (6.6 feet).

Instrument Description	Weight		Height		Depth		Width	
	Kg	lbs	cm	in	cm	in	cm	in
El SplitFlow Turbo Pump	59	130	43.3	17	86.4	34	34.8	13.75
El/CI SplitFlow Turbo Pump	64	140	46	18	86	34	36	14
7890A	50	112	54	21.3	54.5	21.4	54	21.3

Conversions: 1 kg = 2.2 lbs (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 For the 7890 GC Series and the 7000 GC-XXX Series the maximum operating altitude is 4615.38 m.

**7000 GCMS QQQ
Site Preparation Checklist**

Product	Operating temp range °C (F)	Operating humidity range (%)
7890 Series Operation	20 – 27	50 – 60
7890 Series Storage	5 – 40	5 – 95
7000 GCMS-QQQ Series Operation	15 – 35 (59 – 95)	40 – 80
7000 GCMS-QQQ Series Storage	-20 – 70 (-4 – 158)	0 – 95

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

Oven type	7890 Series	7000 GC-MS QQQ Series
Standard oven ramp	7681 BTU/hour maximum	3000 BTU/hour including GC/MSD interface
Fast oven ramp (options 002 and 003)	10071 BTU/hour maximum	3000 BTU/hour including GC/MSD interface

Exhaust Venting Requirements for the GCMS

For the MS vent external to building via ambient-pressure vent system, within 460 cm (15 feet) of both GC split vent and MSD foreline pump or vent to fume hood. An exhaust vent system is not part of environmental control system of a building that recirculates air. Exhaust venting need to comply with all local environmental and safety codes.

For the GC with the deflector (outlet diameter 10 cm – 4 in) installed the exhaust is about 1.84 m³/min (65 CuFt/min), without deflector 2.8 m³/min (99 CuFt/min).



Power Consumption

Table 1 Power Consumption

Product Description	Outlets required	Line voltage (V AC)	Frequency (Hz)	Current rating (A)	Maximum continuous power consumption (VA)
7000 GCMS-QQQ Series MSD	1	120 (-10% /+5%)	50/60 ±5%	15	1100 (400 for foreline pump only)
		220-240 (-10% /+5%)			
		200 (-10% /+5%)			
Workstation PC system: monitor, CPU, printer	3 to 5	120 (1)(-10% /+5%)	50/60 ±5%	15	1000
		200 - 240 (-10% /+5%)			
7890, standard oven	1	Americas: 120 (3) single phase (-10% / +5%)	48-66	18.8	2250
	7890, standard oven	220/230/240 single/split phase (-10% /+5%)		10.2 / 9.8 / 9.4	2250
7890, fast oven	Japan: 200 split phase (-10% /+5%)	14.8	2950		
7890, fast oven	220/230 /240 (4) (5) single/split phase (-10% /+5%)	13.4 / 12.8 / 12.3	2950		



Special Notes

- 1 The number and type of electrical outlets depends on the size and complexity of your system. The MSD power consumption and requirements depends on the country the unit is shipping to. The electrical outlet for the unit should have a dedicated ground.
- 2 If a computer system is supplied with your instrument, be sure to account for those electrical outlets; requires up to 5 additional outlets.
- 3 Americas 120V requires 20 amp dedicated line, the plug is a NP5. Americas 240V requires 15 amp dedicated line, the plug is L6-15.
- 4 Option 003, 208V fast oven, uses a 220V unit with operating range of 193 to 231V. Most labs have 4-wire service resulting in 208V at the wall receptacle. It is important to measure the line voltage at the receptacle for the GC.
- 5 Power line conditioners should not be used with 7890 GCs.



Gas Supply

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.

The following tables list minimum and maximum pressures in psi for inlets and detectors measured at the bulkhead fitting at the back of the 7890 Series GCs.

Table 2 7890 Series Inlets and Detectors

	FID	NPD	TCD	ECD	FPD	S/split less 150 psi	S/split less 100 psi	On-col umn	Purged packed	PTV
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							
Carrier max						170	120	120	120	120
Carrier min						20 psi above pressure used in method				



Conversions: 1 psi = 0.068947 bar = 6.8947 kPa = 0.068 ATM.

Special Notes

- 1 If you have not requested option 305, 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.
- 2 Cryogenic cooling with Liquid N₂ requires 1/4-inch insulated copper tubing.
- 3 Cryogenic cooling with Liquid CO₂ requires 1/8-inch heavy-walled, stainless steel tubing.
- 4 Valve actuation requires a separate pressurized, dry air at 3.792 bar (55 psi).
- 5 Never use liquid thread sealer to connect fittings. Never use chlorinated solvents to clean tubing or fittings.
- 6 Cryo cooling of the oven is not possible with CO₂ due to the fitting configuration and the N₂ fitting will need to be changed to a 90 deg fitting so that the instruments will connect properly.

Gas Flow Limitations

Feature	7000
High Vacuum pump	El SplitFlow turbo
Optimal gas flow ml/min ¹	1.0
Maximum recommended gas flow, ml/min	2.0
Maximum gas flow, ml/min ²	2.4
Max column id	0.32 mm (30 m)

¹ Total gas flow into the MSD: column flow plus reagent gas flow (if applicable)

² Expect degradation of spectral performance and sensitivity

Table 3 7000 GC/MS QQQ Series Carrier and Collision Gases

Carrier and Collision gas requirements	Typical pressure range (psi)	Typical flow (ml/min)
Helium (required for carrier and Collision cell)	50 to 80	20 – 50
Hydrogen (optional) ¹	50 to 80	20 – 50
Nitrogen (required for Collision Cell)	15 to 25	1 – 2

¹ 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



Gas Selection

Special Notes

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.

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

5975C Series Carrier and Reagent Gas Purity

Table 4 Carrier and reagent gas

Carrier and reagent gas requirements	Purity	Note
Helium (Carrier and Collision)	99.9995%	hydrocarbon free
Hydrogen (Carrier)	99.9995%	SFC Grade
Nitrogen (Collision)	99.999%	Research or SFC grade



Tools and Supplies

Your GCMS-QQQ 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.

Basic Tools

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.
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
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
Cloths	Used to keep surfaces clean and parts clean
Gloves	Used to reduce contamination on parts GC and MS

MSD Maintenance Supplies

Description	Part number
Abrasive paper, 30 µm	5061-5896
Alumina powder sample	393706201
Cloths, clean (package of 300)	05980-60051
Cloths, cleaning (package of 300)	9310-4828
Cotton swabs (package of 100)	5080-5400

**7000 GCMS QQQ
Site Preparation Checklist**

Description	Part number
Foreline pump oil, inland 45	6040-0834
Gloves, clean, large	8650-0030
Gloves, clean, small	8650-0029
Grease, Apiezon L, high vacuum	6040-0289

Ferrules

Where used	Description	Part number
Leak testing	Blank, Graphite-Vespel	5181-3308
GC/MSD interface	0.3-mm id, 85% Vespel 15% graphite, for 0.10-mm id columns	5062-3507
	0.4-mm id, 85% Vespel 15% graphite, for 0.20-mm id and 0.25-mm id columns	5062-3508
	0.5-mm id, 85% Vespel 15% graphite, for 0.32-mm id columns	5062-3506
	0.8-mm id, 85% Vespel 15% graphite, for 0.53-mm id columns	5062-3538
	0.27-mm id, 90% Vespel 10% graphite, for 0.10-mm id columns	5062-3518
"> 5062-3516	Injection port	0.37-mm id, 90% Vespel 10% graphite, for 0.20-mm id columns
0.40-mm id, 90% Vespel 10% graphite, for 0.25-mm id columns		5181-3323
0.47-mm id, 90% Vespel 10% graphite, for 0.32-mm id columns		5062-3514
0.74-mm id, for 0.53-mm id columns		5062-3512

Miscellaneous Parts and Samples

Description	Part number
Electron multiplier horn for the Triple Axis Detector	G3170-80103
Filament assembly (EI)	G7005-60061
Filament assembly (CI)	G7005-60072



Description	Part number
Foreline pump oil (1 liter)	6040-0621
Octafluoronaphtalene (OFN), 1 pg/ul	5188-5348
Octafluoronaphtalene (OFN), 100 fg/ul	5188-5347
10 fg/ul OFN GC/MS Checkout std 3 x 1 mL	5190-0585
1 pg/ul OFN _ 5pg/ BZP	393065201
100 pg/ul Benzophene in Isooctane	8500-5440
Perfluorotributylamine (PFTBA), certified (10 gram)	8500-0656
Perfluorotributylamine (PFTBA) sample kit	05971-60571
PFHT	5188-5357
Sample, evaluation A, hydrocarbons	05970-60045



Other Requirements

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>

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