Agilent 7890 / 220 Ion Trap GCMS –
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:

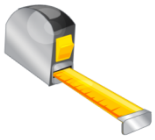
- ☐ the necessary **laboratory or bench space is available.**
- ☐ the **environmental conditions for the lab** as well as laboratory gases, tubing,
- ☐ the **power requirements** related to the product (e.g. **number & location** of electrical outlets)
- ☐ the **required operating supplies** necessary for the product and installation
- ☐ please consult **Other/Special Requirements** section below for other product-specific information
- ☐ **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.

Instrument Description	Weight		Height		Depth		Width	
	Kg	lbs	cm	in	cm	in	cm	in
G3440A Agilent 7890A GC	50	110	50 to 58	20 to 23	54	21	59	23
G2913A 7683 Auto-injector	3.1	6.8	42 above GC	17 above GC	12	5	12	5
G2614A 7683 Tray	3.0	6.6	20	8	34	13.4	30 Left of GC	12 left of GC
G4513A 7693 Auto-injector			50 above GC	20 above GC				
G4514A 7693 Tray					2 in front of GC	1 in front of GC	45 left of GC	18 left of GC
220 MS	23	51	49	19	64	25	25	10

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 foreline pump exhausts most compounds introduced into the MS along with oil vapor from the pump. Check that the ventilation system is suitable for the foreline pump. Consult local regulations
4. An Oven Exhaust Deflector kit is available for attaching 10-cm (4 in) 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.
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 /1.840 m3/min).

Instrument Description	Operating temp range °C (°F)	Operating humidity range (%)	Heat Dissipation (BTU/HR)
G3440A Agilent 7890A GC	15 to 35 °C (59 to 95 °F)	5 to 80	Std Oven Ramp 7,681 Fast Oven Ramp 10,071
220 MS	16 to 30 °C (61 to 86 °F)	20 to 80	Steady state 2,100 Startup 15,000

Power Consumption

Special Notes:

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

Instrument Description	Line Voltage & Frequency (V, Hz)	Maximum Power Consumption (VA)
GC with Standard Oven	Americas: 120 single phase, 48-63	2250
GC with Standard Oven	220/230/240 single/split phase, 48-63	2250
GC with Fast Oven	Japan 200 split phase, 48-63	2950
GC with Fast Oven	220/230/240 single/split phase, 48-63	2950
220 MS	100/120/200/240 50-60	1500

Supplies Customer to Provide

Special Notes:

1. For information on Agilent consumables, accessories and laboratory operating supplies, please visit http://www.chem.agilent.com/en-US/Products/consumables/Pages/default.aspx
2. GC Gas Supplies: 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 source. Make sure that your regulator has the appropriate sized adapter to end with a 1/8-inch Swagelok female connector. Agilent recommends a carrier and detector gas purity of 99.9995% or better.

Tank Regulators

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

Gas Type	CGA Number	Max Pressure	Part Number
Air	346	125 PSIG (8.6 Bar)	5183-4641
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
Air	590	125 PSIG (8.6 Bar)	5183-4645

Recommended Gas Supply Pressures

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

Gas	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	MM
Carrier max	170	120	120	120	120	120

Miscellaneous Gas Plumbing Information

- **Cryogenic cooling with Liquid N2** requires 1/4-inch insulated copper tubing – 25-30 PSI supply.
- **Cryogenic cooling with Liquid CO2** requires 1/8-inch heavy-walled, stainless steel tubing –750-1000 PSI supply – tank with dip tube.
- **Internal Valco® rotary Valve** actuation requires a separate pressurized, dry air at 55 psi.
- 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.

WARNING: Never use liquid thread sealer to connect fittings. Never use chlorinated solvents to clean tubing or fittings.

Gas purity and selection

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.
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.

Detector	Carrier gas	Make up 1st choice	Make up 2nd choice	Purge or reference
Mass selective	Hydrogen Helium	None	None	
Electron capture	Hydrogen Helium Nitrogen Argon/methane	Argon/methane Argon/methane Nitrogen Argon/methane	Nitrogen Nitrogen Argon/methane 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
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

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.

220 MS CI Reagent purity and selection – Liquid

Methanol is required reagent for performance verification in CI mode.

Reagent requirements	Purity	Comments
Methanol	99.9%	Reagent grade. Purge and trap grade recommended. Evaporation residue < .0001%.

220 MS CI Reagent purity and selection – Gas (optional)

Reagent requirements	Typical pressure	*Typical flow(ml/min)*
Methane	21 to 34 kPa (3 to 5 psi)	1 to 2
Isobutane	21 to 34 kPa (3 to 5 psi)	1 to 2
Ammonia	21 to 34 kPa (3 to 5 psi)	1 to 2

Other Considerations

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*** 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*** 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.

Tools and consumables that are provided with the instrument.

GC Items	Purpose
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
Inlet wrench	Replacing inlet septa and liners.
Std Checkout Column – CP8944	Column 30 meter x .25mm x .25um FT
Transferline alignment tool	Aligning Transferline with endcaps
Nut driver	Trap oven removal
Aluminum oxide, 600 grit – PN 392027600	Cleaning Trap
Applicator, cotton tipped, pkg. 100 – PN 8899999000	Cleaning Trap
O-rings for Transferline and Analyzer Assembly	Seals for vacuum components

Useful tools and consumables that are not provided with the instrument.

GC Item	Purpose
ECD/TCD Detector plug, 5060-9055	Inlet pressure decay test.
1/8-inch Ball Valve, 0100-2144	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
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	Ensures consistently air-tight vial closure no matter who does the crimping.

This table lists consumables that you may wish to order. First time GC/MS users should consider adding the following supplies to maintain their system and prevent interruptions in the use of their system. Please refer to the Agilent Consumables and Supplies Catalog for part numbers and recommended maintenance periods. Useful tools and consumables that are not provided with the instrument.

Consumable	Part Number
Gas Filter Replacement	CP17973
Gate conductor	393055201
Gate	393055101
Wavy washer	1492000900
Assembly, multiplier	393031501
Assembly, filament disk with wires	393060191
DS-42 oil mist eliminator	393847701
Premium Foreline pump oil	9499390M001
O-ring, turbo pump to manifold	2820043800
Quad-ring, viton manifold	393010914
Quad-ring, viton transfer line	393010918

GC/MS Calibration compound, FC-43	392035300

Non-Agilent computer or software

Agilent hardware, recommended computers, and software are thoroughly tested for compatibility and reliable operation. Your company may have selected other suppliers for parts of your system. This list summarizes some of the key requirements for computers and software.

The following Agilent software products are thoroughly tested and compatible:

- MSWS Version 7.0
- Mass Hunter Software
  - Qualification B.04.00
  - Quanification B.04.00 SP3
- G1035C Wiley 9th/NIST 08 Mass Spectral Database

These software packages require the following:

- Windows 7 Professional (32-bit only)
- Windows XP Professional SP2
- Windows XP Professional SP3

For MassHunter software requirements see the Mass Hunter Site Prep

The following minimum computer requirements are recommended:

- Intel® Core™2 Duo Processor (or higher)
- Video screen supporting 1280 x 1024 x 256 resolution or greater.
- 32-bit color is recommended.
- 2 GB RAM (or more)
- 100 GB Disk (or larger)
- CD/DVD-ROM drive
- Windows 7 or Windows XP Professional SP2/SP3

Document Control Logs

Revision Log:

Revision	Date	Reason For Update
A.01.00	11-Apr-2011	First Release

Approval Log:

Revision	Approver(s)	Title of Approver
A.01.01	Don Gage	Product Support manager

