Agilent Technologies

5977 Series MSD
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 (delete this line if a Site Prep Guide does not exist).
- ☐ 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.
- ☐ When using hydrogen (H_2) as the carrier gas or fuel gas, be aware that hydrogen gas can flow into the GC oven and create an explosion hazard. Therefore, be sure that the supply is turned off until all connections are made and ensure that the inlet and detector column fittings are either connected to a column or capped at all times when hydrogen gas is supplied to the instrument.
  Hydrogen is flammable. Leaks, when confined in an enclosed space, may create a fire or explosion hazard. In any application using hydrogen, leak test all connections, lines, and valves before operating the instrument. Always turn off the hydrogen supply at its source before working on the instrument.

Please refer to the Hydrogen Safety Guide which is shipped with the Instrument.

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.

5977 Series MSD

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. This does not include the automated sampling devices which could be used on the system.
2. Please note: the length of the vacuum hose is 130cm or about 4.24 feet from the high vacuum pump to the foreline pump, while the length of the foreline pump power cord is 2M or about 6.6 feet.
3. A table must be large enough to support the mainframe and the size of the base.
4. The dimensions and weight of the instrument needs to be placed on a laboratory bench that is at least 54 cm (21.5") deep. The instrument requires a space of at least 40.0 cm (16 inches) on both sides, and approximately 30 cm (~ 12 inches) at the rear for the circulation of air, vacuum pump hose, and room for electrical connections.
5. If the bench is to support a complete Agilent Technologies 5977 Series GC/MS system make sure that the bench is designed to carry the total weight of all the components.

DESCRIPTION	Weight		Height		Depth		Width	
	kg	lbs	cm	in	cm	in	cm	in
GC/MS – **Diffusion Pump**	39	85	41	16	54	21.3	30	11.8
GC/MS – **Turbo Pump**	41	90	41	16	54	21.3	30	11.8
GC/MS – **Turbo Pump CI**	46	100	41	16	54	21.3	30	11.8
Pfeiffer DUO 2.5 – Foreline Pump	10.5	23.2	20.2	8	33.6	13.3	12.7	5
IDP3 – Dry Pump	9.5	21	18.1	7.1	35.9	14.1	12.7	5
MVP-070-3	16.4	36.2	19.8	7.8	32.5	12.8	23.8	9.4
MVP-070-3C	14.3	31.5	19.8	7.8	32.5	12.8	24.2	9.5
GC	Please, refer to the GC Site Preparation Documentation							
Workstation PC system (monitor, CPU, printer)	50	112	54	21.3	54	21.3	54	21.3

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 of the system's modules as specified in the "Environmental Specifications" section of the Site Preparation Manual. Temperature changes of 3°C from calibration temperature are required to achieve best possible baseline stability. Higher variations will result in higher signal drift and wander of the baseline.

3. The bench or supporting surface must be vibration free.

4. 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.

Instrument Description	Operating temp range °C (F)	Operating humidity range (%)	Heat Dissipation (BTU)
5977 Series GC/MS	15 to 35 °C (59 to 95 °F)	20% - 80%	3000 BTU / hour including GC/MSD interface
GC	Please, refer to the GC Site Preparation Documentation		

Exhaust Venting Requirements

The 5977 Series GC/MS System foreline pump exhaust is recommended to be vented outside of the laboratory environment. Exhaust vent system should not be part of an environmental control system that recirculates air inside of a building. Exhaust venting requirements need to comply with all local environmental and safety codes. If the exhaust is non-toxic then an oil mist filter should be used on the foreline pump exhaust.

1. A 6 meter (20ft.) length (cut to length for the location of the instrument) of 1/2 inch i.d. PVC/vinyl tubing is recommended for venting the foreline pump exhaust. This is sufficient for two three meter (10-foot lengths).
2. The foreline pump exhaust should not be shared with exhaust tubing from another instrument. Separate ½ inch hose barbs are required to connect the tubing to the exhaust vent.

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)
5977 GC/MS	120VAC (-10% / + 5%) 50/60 Hz ± 5%	1100VA (400VA for foreline pump only)
	200VAC (-10% / + 5%) 50/60 Hz ± 5%	1100VA (400VA for foreline pump only)
	220-240VAC (-10% / + 5%) 50/60 Hz ± 5%	1100VA (400VA for foreline pump only)
ChemStation PC system (monitor, CPU, printer)	120VAC (-10% / + 5%), 50/60 Hz ± 5%	1000VA
	200-240VAC (-10% / + 5%), 50/60 Hz ± 5%	1000VA

2. Use correct power cord.

Part Number	Line Voltage Power Cords
8120-1369	Power Cord, Australia/NZ, C13, 10 amp
8120-1689	Power Cord, Europe, C13, 10 amp
8120-2104	Power Cord, Switzerland, C13, 10 amp
8120-3997	Power Cord, DK/Greenland, C13, 10 amp
8120-4211	Power Cord, India/S Africa, C13, 10 amp

8120-5182	Power Cord, Israel, C13, 10 amp
8120-1378	Power Cord C13 125V 10A 5-15P 498G US
8120-6869	Power Cord, Argentina, C13 250V 10A RA/3
8120-6978	Power Cord, Chile, C13, 10 amp
8120-8705	Power Cord, GB/HK/SG/MY, C13, 10 amp
8121-0723	Power Cord, China, C13, 10 A, 250V
8121-1226	Power Cord, Europe + S Korea C13, 10A, 250V
G2025-60189	Power Cord, 200V Japan, 16 amp
8121-1809	Power Cord, Brazil, C13, 250V Max
8121-1638	Power cord - Cambodia
8120-0674	Power cord - Thailand and Philippines

Required Operating Supplies by Customer

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

Item Description (including dimensions etc)	**Vendor/Part Number** (if applicable)	**Recommended Quantity**
Analytical Table	www.onepointesolutions.com	1
H-31″ D-36″ W-72″	www.ChemTops.com	
Noise Chamber for foreline pumps, coasters		
Computer Table	www.onepointesolutions.com	1
H-31″ D-36″ W-36″	www.ChemTops.com	
Monitor support rack and Keyboard rack, coasters		
Table is just large enough to hold GC/MS and GC.	Mass Spec Bench, G3215A	2

Other/Special Requirements

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 URL of Swagelok's web site is http://www.swagelock.com to help assist is finding connectors.)

5977 GC/MS Series Gas Flow Limitations

Feature	5977 Series
High Vacuum Pump Type 1	Turbo
High Vacuum Pump Type 2	Diffusion
Carrier Gas Optimal gas flow ml/min (a)	1.0 – 1.5
Carrier Gas Max recommended gas flow, ml/min	2.0
Carrier Gas Max gas flow, ml/min (b)	2.4
Reagent Gas Flow (EI/CI – CI application) 25 PSI max	1.0 – 2.0
Max column id	0.32mm (30m)

a Total gas flow into the MSD: column flow plus reagent gas flow (if applicable).
b Expect degradation of spectral performance and sensitivity.

1. Purity specification given is the minimum acceptable purity. Major contaminates can be water, oxygen, or air.
2. Pre-cleaned 1/8" copper tubing and 1/8-inch Swagelok® fittings are supplied as part of the ship kit to connect the collision cell gas to the collision cell inlet fitting.
3. Never use liquid thread sealer to connect fittings.

5977 Series Gas Flow Limitations

High Vacuum Pump	Diffusion Pump	Performance turbo	Performance turbo	Performance turbo, EI/PCI/NCI	Performance turbo
Source	Standard	Standard	Extractor	Extractor / CI	HES
Optimal gas flow ml/min (a)	1.0	1.0 to 2.0	1.0 to 2.0	1.0 to 2.0	1.0 to 2.0
Maximum recommended gas flow, ml/min	2.0	4.0	4.0	4.0	4.0
Maximum gas flow, ml/min (b)	2.4	6.5	6.5	4.0	6.5
Max column id	0.32mm (30m)	0.53mm (30m)	0.53mm (30m)	0.53mm (30m)	0.53mm (30m)

a Total gas flow into the MSD: column flow plus reagent gas flow (if applicable)
b Expect degradation of spectral performance and sensitivity

5977 Series Carrier and Reagent Gases

Carrier and reagent gas requirements	Typical pressure range (psi)	Typical flow (ml/min)
Helium (required)	50 to 80	20 to 50 (column and split flow)
Hydrogen (optional) (a)	50 to 80	20 to 50 (column and split flow)
Methane reagent gas (required for CI operation)	15 to 25	1 to 2
Isobutane reagent gas (optional)	15 to 25	1 to 2
Ammonia reagent gas (optional)	5 to 8	1 to 2
Carbon dioxide reagent gas (optional)	15 to 20	1 to 2

a 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

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.

5977 Series Carrier and Reagent Gases Purity.

Carrier and reagent gas requirements	Purity	Note
Helium (Carrier)	99.9995%	hydrocarbon free
Hydrogen (Carrier)	99.9995%	SFC Grade
Methane reagent gas (required for CI operation)	99.999%	Research or SFC grade
Isobutane reagent gas (optional)	99.99%	Instrument grade
Ammonia reagent gas (optional)	99.9995%	Research or SFC grade
Carbon dioxide reagent gas (optional)	99.995%	SFC Grade

For both the GC and MSD it is recommend two (2) step regulators be used with 1/8" size outlets.

Remote Diagnostics

Easy access to diagnostic information and to the system operator helps our service engineers diagnose problems or share information. We recommend these features to help support your new system:

1. A LAN connection for the Data Acquisition and Data Analysis PC is recommended to provide remote diagnostics capability for the 5977 GC/MS System.

2. A phone line close to the instrument is strongly recommended for communication with the system operator.

Other considerations

Basic Tools

Your GC/MS 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.

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	Column Nut
1/8-inch Tee, Swagelok, brass	Connect gas supplies
1/8-inch nuts & ferrules, Swagelok, brass	Connect gas supplies
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	393706201
Cloths, clean (package of 300)	05980-60051
Cloths, cleaning (package of 300	9310-4828
Cotton swabs (package of 100)	5080-5400
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	
Blank, graphite-vespel	5181-3308
GC/MS 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
Miscellaneous parts and samples	
Filament assembly, EI	G7005-60053
Filament assembly, CI	G7005-80000
Foreline pump oil (1 liter)	6040-0621
Foreline exhaust oil mist trap	G1099-80039
Octafluoronapthalene (OFN), 100 fg/ul	5188-5347
Perfluorotributylamine (PFTBA), certified (10 gram)	8500-0656
Perfluorotributylamine (PFTBA) sample kit	05971-60571
PFDTD, CI Calibrant	8500-8510
PFHT	5188-5357
PFET	5190-0531
Sample, evaluation, hydrocarbons	05970-60045

Important Customer Web Links

For additional information about our solutions, please visit our web site:
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
Need supplies? – http://www.agilent.com/chem/supplies