

## 5975 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.

### 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.**

- Note: The 5975C VL MSD Series refers to the 5975C MSD (G3170A); 5975C inert MSD (G3171A); 5975C inert XL (G3172A); and 5975C inert XL EI/CI MSD (G3174A).

### 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. A simple system that includes a GC, an automatic liquid sampler, and a computer would require about 153 cm or 5 feet of bench space, add an addition 41cm for a LaserJet printer (195cm or about 6.5 feet); access to the MSD could require moving the instrument so an additional (30cm or 1 foot) should be available. A total of 244 cm or 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. Allow at least 20 cm clearance between back of GC and wall to dissipate air.
2. 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. The use of a Dry foreline pump requires the exhaust to be plumbed to an exhaust hood or exhaust line. During the installation and familiarization it is okay to use the silencer, but while running samples other than the installation checkout sample it is recommended the exhaust of the pump goes to an exhaust hood or exhaust line..

Instrument Description	Weight		Height		Depth		Width	
	Kg	lbs	cm	in	cm	in	cm	in
Diffusion Pump	39	85	40.8	16	54	21.25	29.8	11.75
Standard Turbo Pump	39	85	40.8	16	54	21.25	29.8	11.75
Performance Turbo Pump	41	90	40.6	16	54	21.25	29.8	11.75
Performance CI/EI Turbo Pump	46	100	40.6	16	54	21.25	29.8	11.75
6890/7890	50	112	54	21.3	54	21.3	54.5	21.4
6850	23	51	50	19.7	54	21.3	29	11.4



5975 with 6890N



7890A



5975 with 6850

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**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 heat dissipation maximum represent the heat given off when heated zones are set for maximum temperatures.
4. For the 6890N, 6850, 7890A, and most 5975C units the maximum operating altitude is 4,615.38 m. For the 5975C VL MSD, the maximum operating altitude is 2,300 m.

Instrument Description	Operating temp range °C (F)	Operating humidity range (%)	Heat Dissipation (BTU/hr)
6890N, 6850, or 7890A Operating	20 to 27(68 to 80)	50 – 60%	Standard - 7,681 Fast - 10,071
6890N, 6850, or 7890A Storage	5 to 40 (41 to 104)	5% - 95%	
5975C Series Operating	15 to 35 (59 to 95)	20% - 80%	3000
5975C Series Storage	-20 to 70 (-4 to 158)	5% - 95%	

**Exhaust Venting Requirements for the GCMS**

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

For the GC with the deflector (outlet diameter 10cm – 4in) installed the exhaust is about 65 CuFt/min (1.840CuM/min), without deflector 99 CuFeet/min (2.8M3).

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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. 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. Americas 240V requires 15 amp dedicated line.
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 6890/7890 GCs.

Instrument Description (number of outlets)	Line Voltage & Frequency (V, Hz)	Maximum Power Consumption (VA)	Power Outlet Current Rating
5975C Series MSD (1)	120 (-10% +5%), 50/60 ±5%	1100 - total 400 - foreline pump	15 Amp
	220-240 (-10% +5%), 50/60 ±5%		
	200 (-10% +5%), 50/60 ±5%		
ChemStation PC system: monitor, CPU, printer (3-5)	120 (-10% +5%), 50/60 ±5%	1000	15 Amp
	220-240 (-10% +5%), 50/60 ±5%		
6890 or 7890A, standard oven (1)	Americas: 120 VAC single phase (-10% +5%), 48-66 Hz	2250	18.8 Amp
	220/230/240 single/split phase (-10% +5%), 48-66 Hz		10.2 / 9.8 / 9.4 Amp
6890 or 7890A, fast oven (1)	Japan: 200V split phase (-10% +5%), 48-66 Hz	2950	14.8
	220/230/240 single/split phase (-10% +5%), 48-66 Hz		13.4 / 12.8 / 12.3
6850, standard oven (1)	Americas: 120 VAC single phase (-10% +10%), 48-66 Hz	1440	15 Amp
	Japan 100 single phase (-10% +10%), 48-66 Hz	1440	15 Amp
6850, fast oven (1)	Americas: 120V single phase (-10% +10%), 48-66 Hz	2000	20 Amp
	Europe 220/230/240 single/split phase(-10% +10%), 48-66 Hz	2000	10 Amp

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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), 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 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
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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**5975C Series Carrier and Reagent Gas Purity**

Carrier and reagent gas	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


**Gas Supply Pressures and Gas Flow Limitations**

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.

**Special Notes**

1. 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).
2. Never use liquid thread sealer to connect fittings. Never use chlorinated solvents to clean tubing or fittings.
3. 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		

**5975 Series MSD Site Preparation Checklist**
**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

**5975C Series Gas Flow Limitations**

Feature	G3170A	G3171A	G3172A	G3174A
High Vacuum pump	Diffusion Pump	Standard turbo	Performance turbo	Performance turbo, EI/PCI/NCI
Optimal gas flow ml/min ❶	1.0	1.0	1.0 to 2.0	1.0 to 2.0
Maximum recommended gas flow, ml/min	2.0	2.0	4.0	4.0
Maximum gas flow, ml/min ❷	2.4	2.4	6.5	4.0
Max column id	0.32mm (30m)	0.32mm (30m)	0.53mm (30m)	0.53mm (30m)

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

❷ Expect degradation of spectral performance and sensitivity

**5975C Series Carrier and Reagent Gas Pressure**

Carrier and reagent gas	Typical pressure range (psi)	Typical flow (ml/min)
Helium (required)	50 to 80	20 to 50 (column and split flow)
Hydrogen (optional) ❶	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

❶ 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.

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**Tools and Supplies**

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.

**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

**MSD Maintenance Supplies**

Description	Part number
Abrasive paper, 30 µm	5061-5896
Alumina powder 1kg sample	8660-0791
Cloths, clean (package of 300)	05980-60051
Cloths, cleaning (package of 300)	9310-4828
Cotton swabs (package of 100)	5080-5400
Foreline pump oil, P3	6040-0621
Gloves, clean, large	8650-0030
Gloves, clean, small	8650-0029
Grease, Apiezon L, high vacuum	6040-0289



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**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
Injection port	0.27-mm id, 90% Vespel 10% graphite, for 0.10-mm id columns	5062-3518
	0.37-mm id, 90% Vespel 10% graphite, for 0.20-mm id columns	5062-3516
	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

**Miscellaneous Parts and Samples**

Description	Part number
Electron multiplier horn	05971-80103
Electron multiplier horn for the Triple Axis Detector	G3170-80103
Filament assembly (EI)	G2590-60053
Filament assembly (CI)	G1099-80053
Foreline pump oil (1 liter)	6040-0621
Foreline exhaust oil mist trap	G1099-80039
Octafluoronaphthalene (OFN), 1 pg/ul	5188-5348
Octafluoronaphthalene (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
Sample, evaluation A, hydrocarbons	05970-60045

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## Document Control Logs

### Revision Log

Revision	Date	Reason For Update
1.1	30-May-2011	Migrated content of revision 1.0 into new format. Reviewed by Dave McKenica, product support engineer.

### Approval Log

Revision	Approver	Title of Approver
1.1	Don Gage	Product support engineer