Waters® SQ Detector
Waters® TQ Detector

Site Preparation Guide

Notice

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Introduction

This document describes the environmental conditions, power supplies and gas supplies that are required for the operation of the SQ and TQ Detectors. Operating the instrument in conformance with these conditions will enable the instrument to achieve its optimum performance.

Responsibilities

Warning: Observe Good Laboratory Practice (GLP) at all times, particularly when working with hazardous materials, and consult the safety representative for your organization regarding its protocols for handling such materials.

Warning: Safety glasses must be worn at all times when working with hazardous materials and pressured fluidics.

A Waters engineer will be responsible for installing and commissioning the system to ensure that the instrument is properly installed and operational. The laboratory must be prepared in advance to allow the engineer to carry out the installation efficiently. A site preparation checklist is included at the end of this document for you to fill in and return to Waters when the laboratory is ready.

Important: The installation of the system cannot begin until the checklist has been completed and returned to the mass spectrometer sales support representative at your local Waters office.

The installation time may vary, depending on the instrument options being installed. The site preparation checklist must be completed as accurately as possible to help minimize installation time.

A major aspect of the system installation is the implementation of tests designed to evaluate the instrument functionality under specific operating conditions. At the completion of each test, the actual test result obtained is entered in the Installation Checklist or Instrument Qualification Workbook, whichever is appropriate.

Important: A user who has been designated to be responsible for the normal use and upkeep of the instrument must be present during the installation.

The user must be present during the functionality tests at installation; this allows the user to be trained in the basic system operation. If there are foreseen periods when the intended user cannot be present, please notify us in advance; this will enable us to schedule the installation for a more convenient time.

If you have questions regarding the information in this document or any specific site problems, contact your local Waters sales representative. If necessary, we will arrange a site survey.

Storage

The following storage conditions are required prior to installation:

- Unopened shipping crates
- Crates stored away from heavy machinery such as compressors or generators, which generate excessive floor vibration
- Storage area temperature 0 to 40 °C (32 to 104 °F) and humidity <80%, non-condensing

Contact your local Waters representative if you need further advice regarding storage conditions.

Unpacking and moving

It is a warranty condition that the shipping crates are unpacked only when the Waters engineer is present. At the end of the installation, it is the customer's responsibility to dispose of the crates and packaging.

It is essential that the instrument is not bumped or jolted during unpacking or any subsequent transport. If the instrument needs to be transported across an uneven surface, the instrument must be carried on a forklift truck or trolley.

Doorways must be at least 600 mm (24 inch) wide. Elevators and corridors (including corners) must be sufficiently wide for maneuvering of the instrument. Special handling arrangements may be necessary if access to the laboratory is via a staircase.

Lifting equipment

Once unpacked, the instrument weights are approximately as shown in Table 1:

Table 1: Instrument weights

SQ Detector	58 kg (127 lbs)
TQ Detector	85.5 kg (189 lbs)
Data system (computer, monitor, and optional printer)	<50 kg (110 lbs)
Rotary pump*	40 kg (88 lbs)
Scroll pump*	32 kg (70 lbs)

***System includes *either* a rotary or scroll pump option.

Warning: The instrument must only be lifted using lifting equipment capable of raising the instrument's weight safely. The instrument must not be lifted manually.

Important: It is essential that you provide suitable equipment for lifting the instrument. The installation cannot be implemented unless this equipment is made available. The engineer will require assistance lifting and positioning the instrument.

A forklift truck or A-frame hoist is recommended for lifting and transporting the instrument. The instrument is fitted with a lifting harness, which must be used to lift the instrument from the shipping crate onto the bench.

Bench loading

The bench must be able to support the combined weight of the mass spectrometer, data system and LC system. Nominal weights for the instrument and data system are shown in Table 1. Refer to the UPLC, HPLC, or GC system site preparation guide for specific weight information.

Space requirements

Instrument

The instrument has the following dimensions:

- Width 345 mm (13.75 inch)
- Length 885 mm (35.0 inch)
- Height 533 mm (21.0 inch)

Note: A moveable workbench of suitable load rating is the preferred arrangement for the system setup, to provide ease of access for servicing.

For service access, a minimum clearance of 600 mm (23.6 inch) is required for the front, back, and right side of the instrument; a temporary clearance of 1000 mm (39.5 inch) is required for the left side of the instrument. If the instrument is placed on a bench that can be moved out during service visits, the minimum clearance at the back is 150 mm (6 inch) with the rotary/scroll pump positioned beneath the instrument. The mass spectrometer must be installed on a surface that is level to within ±1° in any direction.

The instrument is fitted with a 2.5-m (8-ft) power cable.

A possible layout for the TQD/SQD, rotary/scroll pump, data system, and ancillary equipment is shown in Figure 1 and Figure 2.

Note: An additional 150 mm (6 inch) is recommended behind the workbench to accommodate vacuum tubing.

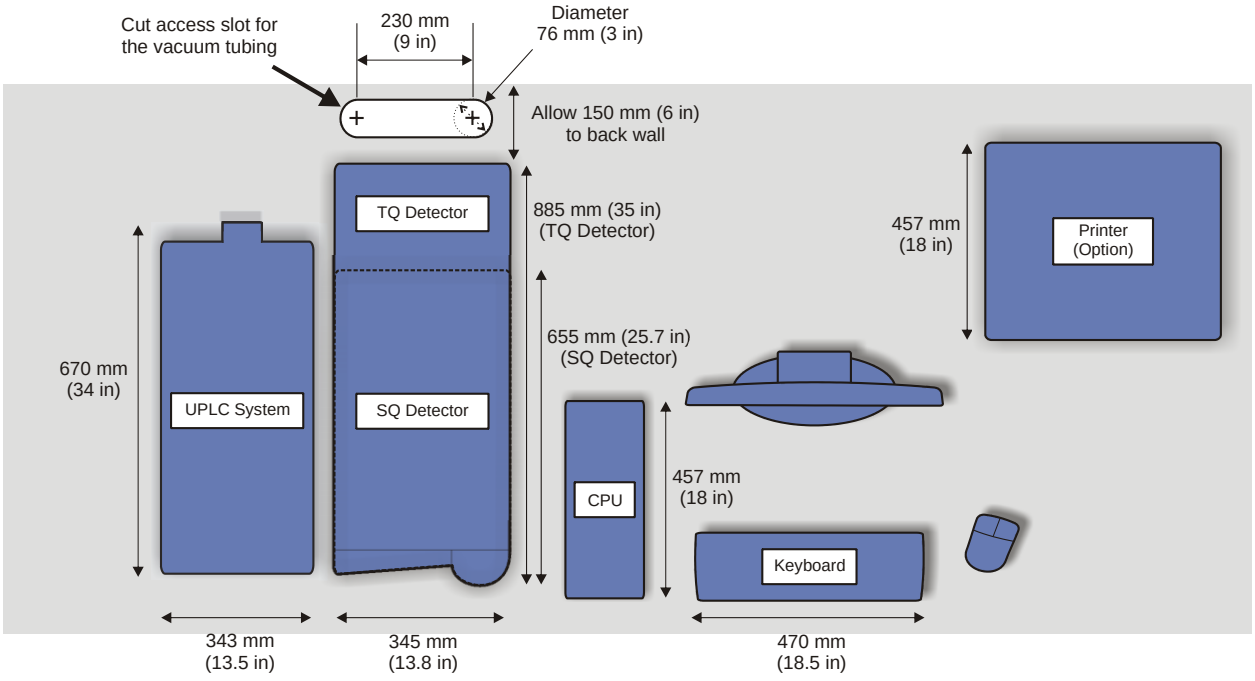

Figure 1 - Plan view, showing space requirements (SQ/TQ)

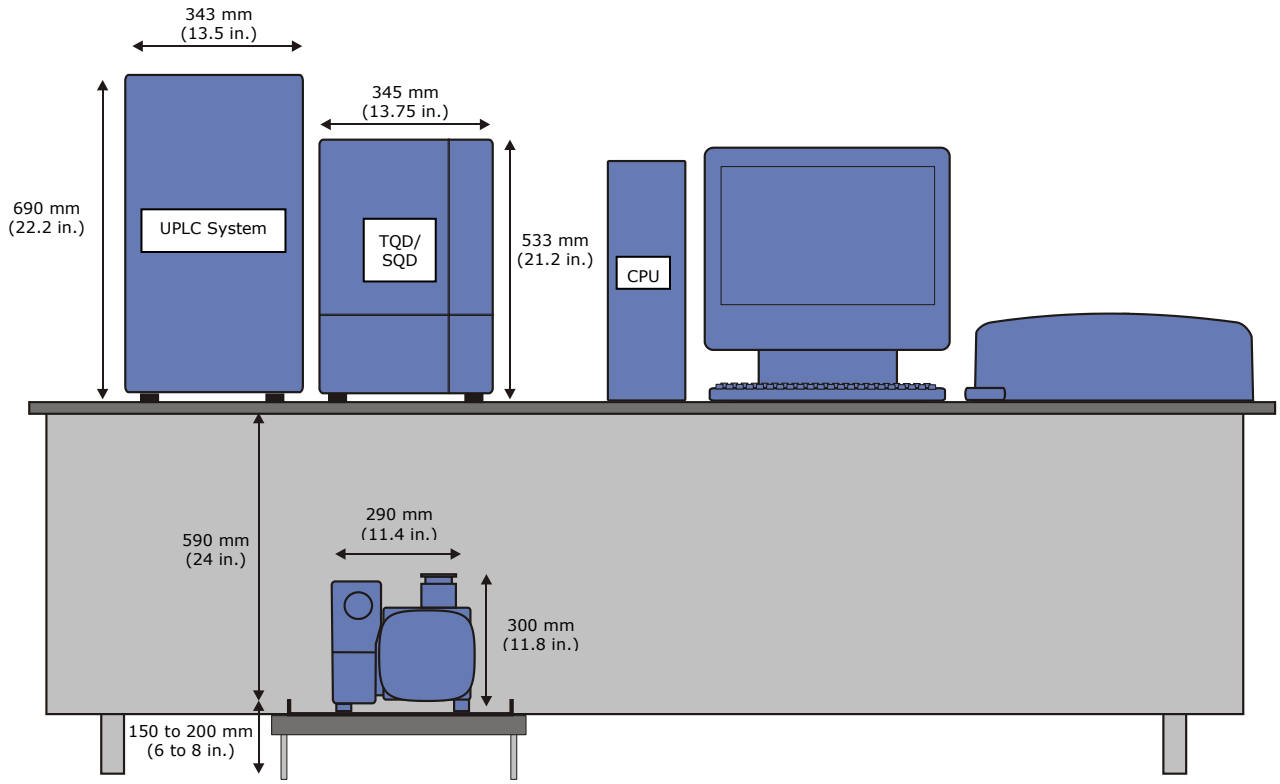

Figure 2 - Front view, showing space requirements

Rotary/scroll pump

The rotary pump or optional scroll pump must be positioned on the floor, either behind or underneath the instrument and within 1 m (3.3 ft) of the rear of the chassis. The pumps are powered via a dedicated pump switching-box fitted with two 2 m (6.5 ft) power cables.

Note: The rotary pump dimensions are shown in Figure 2. The scroll pump (option) dimensions are; width 500 mm (19.7 inch), depth 400 mm (15.8 inch).

LC system

Ensure that there is sufficient space to the left of the mass spectrometer for the LC system. Refer to the UPLC or HPLC system site preparation guide for the relevant space requirements.

Data system

The data system can be positioned on the same bench as the mass spectrometer or on a separate desk (available as an option). A 3-m (10-ft) X-wire network cable connects the computer to the mass spectrometer. The two data system power cables for the PC and monitor are approximately 2 m (6.5 ft) in length.

Warning: To avoid damage to and/or risk of electric shock and fire, the data system and any ancillary equipment must not be exposed to dripping or splashing liquids; nor should objects filled with liquid, such as solvent bottles, be placed on them.

Connections INSIGHT® installation requirements

Installation of the Waters Connections INSIGHT software (Intelligent Services that provide real-time system monitoring and notification), requires the following:

- An active Internet connection (direct, or through a firewall or proxy server)
- SSL (secure sockets layer) port 443 to be activated

Note: Connections INSIGHT software directly communicates with the Waters Enterprise Server using 128-bit data encryption. For further information see *Connections INSIGHT Frequently Asked Questions* (p/n 720001131EN).

Electrical safety

The TQ/SQ detector complies with the International Safety Standard IEC 61010-1:2010 and meets the European Low Voltage Directive 2006/95/EC by means of European Harmonized Standard EN 61010-1:2010.

For installations in Australia and New Zealand, the building installation must comply with AS3000: electrical installations for Australia and New Zealand.

The instrument is suitable for use in environments categorized as Pollution Degree 2 and Over-voltage Category II.

Power requirements

The TQ/SQ detector and rotary/scroll pump require one power socket each. The power supply sockets must be located within 2 m (6.5 ft.) of the instrument. Do not position the equipment so that it is difficult to disconnect the mains cable.

The data system typically requires two power sockets located adjacent to the detector for the instrument PC and monitor. Further outlets may be required for optional equipment, such as a printer. Do not position the equipment so that it is difficult to disconnect the mains cable.

A typical LC system may require three or more additional sockets - refer to the relevant LC documentation for information.

Important: Mains voltage fluctuations must not exceed ±10%.

The power requirements for the equipment are summarized in Table 2.

Table 2: Summary of power requirements

	Nominal rated voltage	**Supply fuse / circuit breaker rating**	**Typical power consumption**	**Power connection**	**Power sockets**	**Power sockets** (with optional UPS)
Detector	200 to 240 V, 50/60 Hz	13 to 16 A	700 W	IEC 60320 C20 receptacle	1	1
Rotary pump	200 to 240 V, 50 Hz	8.4 A	1.5 kW	IEC 60320 C20 receptacle	1	
	200 to 240 V, 60 Hz	10 A	1.8 kW		1	
Data system	100 to 127 V /200 to 240 V, 50/60 Hz	5 to 15 A 2.5 to 16 A	200 W	IEC 60320 C14 receptacles	2	

Important: Voltage supply stability is critical for instrument operation. The nominal power supply voltage must fall within the ranges specified in Table 2 at all times to allow for the occasional 10% surge.

The supplies must be wired with a protective earth and fused or fitted with circuit-breakers of the specified ratings, in accordance with local regulations.

The mains supply must not have brown-outs/surges greater than ±10%, and must not exceed the specified maximum operating range for more than 0.3 sec. Transient voltage drops to half nominal voltage or less must have a duration of less than 20 ms. There must be less than 1.0 V RMS of ripple on the mains supply.

On pump start-up, currents of up to 36 A (200 to 240 V) or 50 A (115 to 120 V) may be drawn for several seconds, because of the initial pump loading. It is recommended that time delay fuses and circuit-breakers are used to prevent nuisance tripping.

Important: This is not applicable for instruments using pumps fitted with a frequency converter.

The rotary/scroll pump is normally in continuous operation; it is recommended that the system is installed such that the supply cannot be inadvertently switched off.

It is also recommended that additional protection is provided for the instrument by means of:

- Residual Current Devices (RCDs) for UK and Europe
- Ground Fault Circuit Interrupters (GFCIs) for the rest of the world

In the case of instruments fitted with a transformer, the RCD/GFCI must be fitted on the primary (supply) side of the transformer.

Electrical transformers

If there is a possibility that the supply voltages will not meet the specified operating range under all conditions, a transformer must be used to change the primary supply voltage to the specified range. Mains conditioners/stabilizers are also available as an optional accessory. Contact Waters with advance notification if power supply problems are likely to be experienced and for additional advice.

In the case of instruments fitted with a transformer, the RCD/GFCI must be fitted on the primary (supply) side of the transformer.

If your order includes a nitrogen generator and the mains supply is known to run continuously at voltages less than 220 V, Waters and Peak Scientific recommend fitting one of the following transformers between the generator and mains supply.

Caution: Running nitrogen generators continuously at voltages less than 220 V is not recommended and extended periods at these extremes can affect the operation and life of the generator.

Table 3: Nitrogen generator transformer options

Model type	**06-3100**	**06-3110**
View		
Description	208 volt AC to 230 volt AC boost transformer	115 volt AC to 230 volt AC boost transformer

System plug options

The system plug options are shown in Table 4. The instrument is shipped with the plugs that were requested at the point of order. The user must provide appropriate sockets for the relevant type of plug used. If the available sockets are incompatible with the plugs supplied, the customer must supply appropriate cord sets for the instrument and pumps. The cord sets must comply with local regulations.

Computer equipment is typically rated at 100 to 120 V / 220 to 240 V, 50/60 Hz. In some cases, it may be necessary to set the appropriate voltage using a voltage selector switch before connecting the equipment to the power supply. For full details, refer to the instructions provided with the equipment.

Note: If ancillary equipment is to be installed (for example, compressors) additional power outlets, possibly requiring 3-phase supplies, may be needed. Such supplemental needs must be confirmed with the local Waters agent prior to the start of the installation.

Table 4: Power cords supplied by Waters

Plug option	Plug type	System components
US/Canada (125 V) 	5-15P (UL817 and CSA C.22.2)	Data system
US/Canada (250 V) 	L6-15P (UL817 and CSA C.22.2)	Mass spectrometer Rotary/scroll pump Nitrogen generator
UK 	3-pin (BS1363)	Data system Mass spectrometer Rotary/scroll pump Nitrogen generator
Europe 	2-pin (CEE7)	
Denmark 	3-pin (Afsnit 107-2-D1)	Data system Mass spectrometer Rotary/scroll pump Nitrogen generator
Australia 	3-pin (AS/NZS 3112)	Data system Mass spectrometer Rotary/scroll pump Nitrogen generator
China 	GB2099 (10 A version)	Data system
China 	GB2099 (16 A version)	Mass spectrometer Rotary/scroll pump Nitrogen generator

Uninterruptible power supply

To prevent instabilities in local mains power impacting system reliability and performance, Waters recommends the use of an uninterruptible power supply (UPS). In support of this recommendation, Waters supplies UPS units that have been specifically configured and evaluated for use with Waters MS systems. Your local Waters field sales representative can provide further details.

These UPS units step up single-phase line voltage to 230 V AC, provide power conditioning and protection for the MS system.

For North America, the UPS system requires one L6-30 (30 amp) wall socket. In other areas, the UPS system will typically connect to your laboratory mains power using the standard MS instrument power cord and wall socket required for your system. See Table 2 and Table 4.

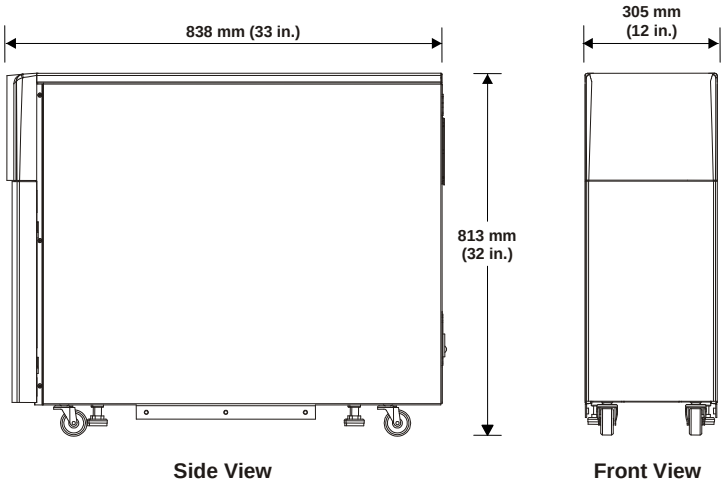

Figure 3 - Approximate maximum dimensions of the UPS

Environment requirements

Safety recommendations

Because of the operation of atmospheric pressure sources, the user must be aware of potential chemical hazards. In particular, the user must assess the risks associated with nitrogen gas (oxygen deficiency) and solvents vented into the laboratory. Note that because of the fluidic nature of the sample inlet, ionization and exhaust system, there is a potential for gas/liquid leaks to occur. The user must give due consideration to the laboratory environment (including volume and air changes) before installation and during operation of the system.

Warning: The active exhaust vent must provide a minimum vacuum of 2 millibar below atmospheric pressure (negative pressure). It must be capable of supporting a maximum instrument exhaust gas load of 2500 L/hour.

Warning: Exhaust venting must comply with all local safety and environmental regulations. The ANSI/AIHA Z9.2-2001 standard for "Fundamentals governing the design and operation of local exhaust ventilation systems" provides guidance on compliant exhaust systems.

Positioning

It is recommended that the instrument is installed in an air conditioned laboratory, in a draft free position, away from excessive amounts of dust. Air conditioning units must not be positioned directly above the mass spectrometer. To avoid adverse operation, do not locate the instrument in direct sunlight.

Ventilation

The maximum overall heat dissipation into the room from the instrument and pumps is approximately 2.7 kW (SQD), 3.0 kW (TQD). These figures do not take into account the data system or other ancillary equipment such as LC systems. Air conditioning systems may have to be installed or upgraded to accommodate additional heat load into the room when these systems are installed.

Temperature

The ambient temperature range required for normal operation is 15 to 28 °C (59 to 82 °F).

Short-term (1.5 h) variations must be no more than ±2 °C (3.5 °F).

Humidity

The relative humidity in which the instrument and pumps are to operate must be in the range of 20% to 80%, non-condensing.

Altitude

The instrument is designed and tested to operate below 2000 m (6500 ft).

Vibration

The instrument must not be placed close to heavy machinery such as compressors and generators, which may generate excessive floor vibration.

Magnetic fields

The instrument must be positioned away from magnetic fields of greater than 10 Gauss, such as those generated by NMR spectrometers and magnetic sector mass spectrometers.

Radio emissions

The instrument must not be placed within a Radio Frequency (RF) field of greater than 1.0 V/m.

Possible sources of RF emission include RF-linked alarm systems, Local Area Networks (LANs), mobile telephones, and hand-held transmitters.

Gases and regulators

Nitrogen gas

The detector requires a supply of dry, oil-free nitrogen with a purity of at least 95%. The nitrogen must be regulated at 7 bar (100 psi) outlet pressure, using a two-stage gas regulator with an appropriate outlet range, for example, 0 to 8 bar (0 to 116 psi).

Important: It is the customer's responsibility to provide a two-stage regulator fitted with an adapter to connect to a 6-mm push-in fitting, see Table 7.

Caution: The nitrogen must be connected using the 5-m (16 ft.) of 6-mm OD Teflon tubing supplied. Do not cut the tubing to size. The nitrogen line must be checked for leaks under pressure.

If copper tubing is used for the nitrogen line, the copper must be chemically cleaned; if stainless steel tubing is used, the stainless steel must be medical grade. Ensure that there are no soldered or brazed joints in the line, as these may result in contamination of the instrument with tin or lead oxide. Any joints in the nitrogen line must be compression fittings.

During API operation, typical nitrogen usage varies from 600 to 1200 L/h (at atmospheric pressure). This equates approximately to the consumption of a large cylinder of compressed nitrogen each day. You may prefer to use a liquid nitrogen Dewar, which will last for several weeks, consult your local gas supplier for an ideal gas supply configuration.

Note: The use of nitrogen cylinders is not recommended. Because of high consumption, a cylinder is likely to empty during long sample runs. The supply must be constant in case venting occurs.

Collision gas (TQ Detector only)

Argon is required for the collision cell. The argon must be dry, high purity (99.997%), and regulated at a pressure of 0.5 bar (7 psi), using a two-stage high purity gas regulator with an appropriate outlet range, for example, 0 to 2 bar (0 to 29 psi).

Important: It is the customer's responsibility to provide a two-stage regulator fitted with an adapter to connect to a $^{1}/_{8}$-inch Swagelok type fitting, see Table 7.

Caution: Ensure that there are no soldered or brazed joints in the argon line, as these may result in contamination of the instrument with tin or lead oxide. Any joints in the collision gas line must be compression fittings.

The gas supply must be connected using the clean, ⅛-inch OD, medical-grade stainless steel tubing supplied and checked for leaks under pressure.

Exhaust outlets

Rotary/scroll pump exhaust

The rotary/scroll pump exhaust gases must be vented to the atmosphere outside the laboratory via a user-supplied fume hood or industrial vent. The exhaust may be connected to an existing laboratory vent carrying gases from other sources.

Five meters (16 ft) of 12-mm ID PVC tubing is supplied. If this length is insufficient, the user must supply an adapter and tubing with an internal diameter of at least 51 mm (2 inch) for the extra distance to the vent point.

Note: The fume hood/industrial vent must be equipped with an extraction fan system to enable adequate displacement of the exhaust gases.

Source exhaust (nitrogen)

The source exhaust line must be connected to either a laboratory fume hood, or to an active exhaust system using an open connection type as shown in Figure 4. Where a shared exhaust system is used, the source exhaust must be connected via its own exhaust spur.

Refer to the exhaust warnings in the Environment requirements section on page 15 for additional source exhaust information.

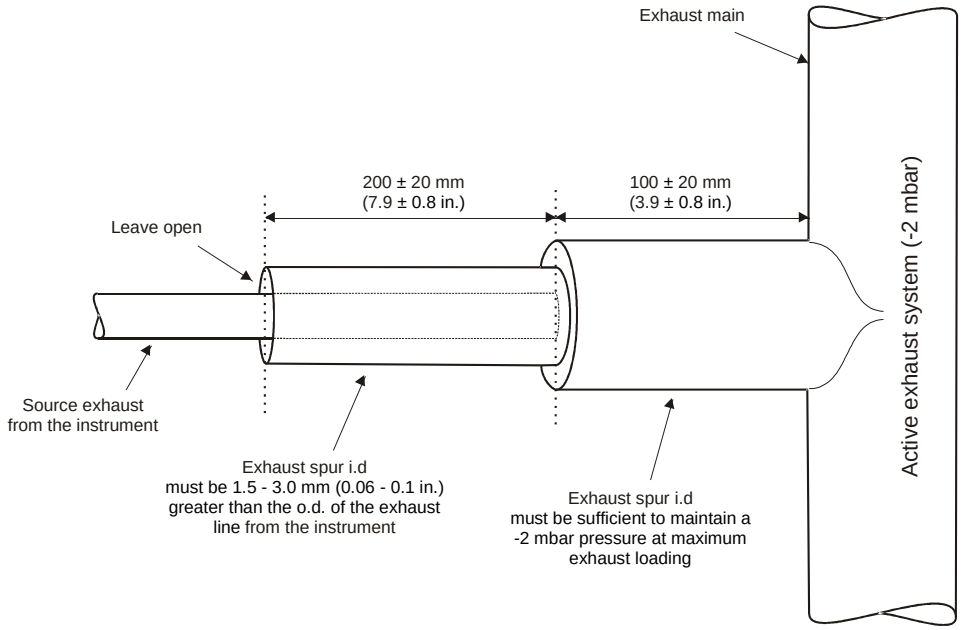

Figure 4 - Source exhaust connection

Caution: Severe contamination of the instrument may result if the source exhaust line is connected to the rotary pump exhaust line. The damage will occur when the nitrogen supply is turned off, or when the nitrogen runs out, as any rotary pump oil vapor will migrate via the source exhaust to the ion source and then through the sample cone into the analyzer.

Five meters (16 ft) of 12-mm OD Teflon tubing is supplied for the source exhaust. If this length is insufficient, the user must supply an adapter and tubing with an ID of at least 16 mm (⅝ inch) for the extra distance to the vent point.

The instrument software can be configured to switch the LC system off if it detects that the nitrogen gas supply has failed. In the event that the nitrogen gas is switched off (or runs out) and the LC system continues to operate, excess solvent is drained from the source via the source exhaust line.

Solvent delivery system

The instrument includes an ACQUITY ever-flow valve and syringe drive for infusion. A gas-tight, 250 µL syringe, with a flow rate range of 5 to 200 µL/min is included.

For ESI / ESCi, a UPLC / HPLC pump giving a stable, pulse-free flow of 50 to 1000 µL/min is required. For APCI using the ion sabre probe, the pump must provide a stable, pulse-free flow of 50 to 2000 µL/min.

Before returning the checklist at the end of this document, please ensure that any locally supplied solvent delivery system has either already been commissioned or that a commissioning date has been scheduled.

Test samples

Warning: Hazardous samples must be handled with care and in a manner that conforms to the manufacturers' guidelines.

Test samples are required for verifying the performance of instruments at the time of installation; they are also used for routine operations such as tuning and mass calibration. The compounds that are used for performance testing of the detectors are listed in Table 5 and Table 6.

Note: A Test Sample Kit is supplied with the instrument for the installation setup. It is the customer's responsibility, in conjunction with the local Waters sales representative, to ensure that any additional samples required for customer-specific tests and post-installation testing are available.

Note: The Waters engineer will not carry test samples to the installation. If the Waters engineer is unable to complete the installation because of a lack of facilities, costs incurred will be charged. The installation will be rescheduled when the chemicals are available.

Important: Storage instructions provided with the test samples must be adhered to; the use of inferior quality test chemicals caused by adverse storage conditions could impair the instrument installation.

Note: If your laboratory practices require full sample certification documentation, Waters Analytical Standards and Reagents provide ready-to-use reference materials and reagents that are fully traceable and certified (www.waters.com).

Table 5: SQ Detector chemical kit (700003093)

Description	Analyte(s)	Concentration	Matrix
Setup solution QP	PPG 1000 Triacetyl-B-cyclodextrin Verapamil Ammonium acetate Leucine enkaphalin	2.5 ng/µL 5.0 ng/µL 100 pg/µL 0.31 mg/mL 1 ng/µL	Acetonitrile/water (1:1 v/v)
Stock solution	Reserpine Chloramphenicol	1 ng/µL 2 ng/µL	Acetonitrile/water (1:1 v/v)
Tuning solution	Reserpine Chloramphenicol	100 pg/µL 200 pg/µL	Acetonitrile/water (1:1 v/v)
Working solution	Reserpine Chloramphenicol	10 pg/µL 20 pg/µL	Acetonitrile/water (1:1 v/v)
API calibration solution	Sodium iodide Cesium iodide	2 µg/µL +1% -0% 50 ng/µL +1% -0%	IPA/water (1:1 v/v)

Table 6: TQ Detector chemical kit (700002646)

Description	Analyte(s)	Concentration	Matrix
Setup solution QP	PPG 1000 Triacetyl-B-cyclodextrin Verapamil Ammonium acetate Leucine enkaphalin	2.5 ng/µL 5.0 ng/µL 100 pg/µL 0.31 mg/mL 1 ng/µL	Acetonitrile/water (1:1 v/v)
ESI resolution solution	PPG 2000 solution Ammonium acetate	1 µg/µL 10.2 mg/mL	Acetonitrile/water (1:1 v/v)
ESI mass measurement accuracy solution	PEG 1000 solution Ammonium acetate	100 ng/µL 0.17 mg/mL	Acetonitrile/water (1:1 v/v)
ESI sensitivity Reserpine	Reserpine solid	5 mg (+10%, -0%)	None
ESI sensitivity Raffinose	Raffinose solid	10 mg (+10%, -0%)	None
IonSabre APCI sensitivity	17-α-hydroxyprogesterone	10 mg (+10%, -0%)	None
ESI sensitivity chloramphenicol	Chloramphenicol solid	50 mg (+0.1 mg, -0%)	None
API calibration solution	Sodium iodide Cesium iodide	2 µg/µL +1% -0% 50 ng/µL +1% -0%	IPA/water (1:1 v/v)
API setup solution	Reserpine PPG 1000 Triacetyl-B-cyclodextrin	2 ng/µL 25 ng/µL 50 ng/µL	Acetonitrile/water 50/50 (4 mM Ammonium acetate)

Note: If your laboratory practices require full sample certification documentation, we recommend that you obtain samples from a supplier that can provide such documentation.

Solvents and reagents

Caution: Clean, high-purity solvents and reagents and clean glassware must be used to ensure the optimum performance of the LC-MS system. Significant delays to the installation may occur if clean solvents and glassware are not provided by the customer prior to commencing the installation.

High-purity solvents (i.e. LC-MS grade) are required, as shown in the following list; these are used for making up standard solutions for performance tests and for cleaning instrument components. For detail on controlling contamination, and information on solvent brands, refer to *Controlling Contamination in Ultra Performance LC™/MS and HPLC/MS Systems* (p/n 715001307), located in the Support area of the Waters website (www.waters.com).

- Acetonitrile
- Methanol
- Formic acid
- Ammonium acetate

Caution: If using a water purification system, maintain it regularly in accordance with the manufacturer's guidelines.

Sample preparation equipment

Facilities for making up test samples must be available at site. Typical equipment required for sample preparation includes (but is not limited to):

- Calibrated syringes - Eppendorf (or equivalent), spanning range 1-µL to 1-mL
- Measuring cylinders, spanning range 100 mL to 1 L
- Volumetric flasks – 10-mL flasks (up to 11 required); 50-mL flasks (up to 7 required)
- Calibrated analytical balance
- Nitrile gloves
- Lint-free tissue

Cleaning test sample glassware

For detailed information on properly cleaning glassware or other components, refer to *Controlling Contamination in Ultra Performance LC®/MS and HPLC/MS Systems* (p/n 715001307), located in the Support area of the Waters website (www.waters.com).

Cleaning equipment

An ultrasonic bath is required for the routine cleaning of instrument parts. The bath must be at least 300 mm x 150 mm x 100 mm deep (12 inch x 6 inch x 4 inch).

Caution: Surfactants must not be used for cleaning glassware or other components. Refer to the document *Controlling Contamination in Ultra Performance LC™/MS and HPLC/MS Systems*, (p/n 715001307), located in the Support area of the Waters website (www.waters.com).

Surfactant-free glass vessels are required in which to place instrument components for cleaning. These vessels must be made available for use at the time of installation. The vessels must have a diameter of at least 120 mm (5 inch) and be approximately 120 mm (5 inch) high.

Summary of fittings

Table 7 shows a summary of the waste and gas connections for the installation of the detector.

Table 7: Summary of instrument fittings required

	Fittings on the system	**Items supplied with the instrument**	**Items to be supplied by the customer**
Rotary pump exhaust	12-mm OD tail pipe	5-m (16-ft) PVC tube, 12-mm ID	Industrial vent or fume hood
Source exhaust (Nitrogen)	12-mm push-in fitting	5-m (16-ft) Teflon tube, 12-mm OD	Industrial vent or fume hood
Liquid waste	0.375 x 0.25 ID one-touch fitting	2 m (6.5 ft.), Tygon tubing	Waste bottle, 1 L (minimum)
Nitrogen supply (API)	6-mm push-in fitting	5-m (16-ft) Teflon tube, 6-mm OD	Nitrogen supply, regulated to 7 bar (100 psi) via a 6-mm adapter
Collision gas supply (TQ Detector only)	$^{1}/_{8}$-inch fitting (Swagelok type)	3-m (10-ft) of $^{1}/_{8}$-inch OD stainless steel tubing	Argon supply, regulated to 0.5 bar (7 psi), via a $^{1}/_{8}$-inch adapter (Swagelok recommended)
ACQUITY Ever-Flow valve	Rheodyne nuts and ferrules	Tubing and Rheodyne nuts and ferrules	Tubing and Rheodyne nuts and ferrules

SQ Detector / TQ Detector site preparation checklist

This checklist must be completed and returned to Waters when all the amenities are available.

Note: If any items are on order, please indicate this on the checklist and include the anticipated arrival date.

Note: It is the customer's responsibility to ensure that all the correct laboratory supplies are present. If you need any additional information or have difficulties acquiring parts or samples, please contact your local Waters Sales representative.

Access (see page 5)
The instrument is located on the ground floor/basement/___ floor (delete as appropriate) ..... ❑

All elevators, staircases, corridors and doorways through which the instrument must pass are adequate to allow easy access to the laboratory ..... ❑

Lifting equipment (see page 6)
Suitable equipment is available to lift the instrument onto the laboratory bench ..... ❑

Bench/floor space (see page 7)
Adequate bench or floor space is available for the system ..... ❑

Connections INSIGHT® installation requirements (see page 9)
If you are planning to install Waters Connections INSIGHT software, an Internet connection is available ..... ❑

Power supply (see page 10)
An appropriate number of sockets with earth connections are available and they meet the stipulated power requirements ..... ❑

Positioning/ventilation (see page 15)
There is no direct air conditioning flow onto the instrument ..... ❑

Temperature (see page 15)
The room temperature is as specified in this document ..... ❑

Humidity (see page 15)
The humidity is as specified in this document ..... ❑

Altitude (see page 15)
The instrument will be operated below 2000 m (6500 ft) ..... ❑

Floor vibration (see page 16)
The site is free from known vibration ..... ❑

Magnetic fields (see page 16)
The site is free from magnetic fields of greater than 10 Gauss ..... ❑

Radio emissions (see page 16)
The RF field strength is less than 1 V/m ..... ❑

Gases and regulators (see page 16)

Dry, oil-free, ≥95% purity nitrogen gas is available, regulated at 6 to 7 bar (90 to 100 psi) with a 6-mm adapter ..... ❑

High purity ≥99.997% argon gas is available, regulated at 0.5 bar (7 psi) with a $^{1}/_{8}$-inch adapter (TQ Detector only) ..... ❑

Rotary/scroll pump exhaust (see page 17)

A suitable outlet is available for the rotary/scroll pump exhaust ..... ❑

Source exhaust (see page 17)

A separate exhaust, 2 mbar below atmospheric pressure is available ..... ❑

Solvent delivery system (see page 19)

Make and model of system to be used:

Make _____

Model _____

Flow rate capability of the system _____

Delivery system is already on site and commissioned ..... ❑

or

Delivery system is scheduled to be commissioned on: _____

A second (customer-supplied) syringe pump is available ..... ❑

Ancillary equipment

If you plan to use any other equipment with the system (e.g. Gilson Autosampler; UV Detector), please give details below.

Make / Type	Model	Already commissioned	To be commissioned on

Test samples (see page 19)
All samples required for the installation are available ..... ❑

Solvents/reagents (see page 21)
Solvents are available ..... ❑

Sample preparation equipment (see page 21)
Sample preparation equipment, as specified in this document, is available ..... ❑

Cleaning (see page 22)
An ultrasonic bath is available ..... ❑

Vessels for cleaning components are available ..... ❑

I confirm all supplies are now available and all specified environmental conditions have been met*.

During the installation, the user intends to be available for demonstration and training by the Waters engineer:

At all times ..... ❑

Approximately _____% of the time ..... ❑

Not at all ..... ❑

During the likely period of installation, the following dates are NOT convenient:

_____

Signed: _____

***Important:** If an authorized Waters service engineer arrives on site to begin installation work and can not complete the installation because of lack of facilities (i.e. lifting equipment, power, water, test samples, laboratory readiness), costs incurred will be charged to the customer.

Please complete the following sections in block letters:

Name _____

Position _____

Organization _____

Street _____

City _____

ZIP/Postcode _____

Country _____

Telephone _____

Fax _____

E Mail _____

Important: The installation of your system cannot begin until pages 23 through 28 of this document have been fully completed and returned to the Mass Spectrometer Sales Support Representative at your local Waters office.

Applications survey

As part of our commitment to provide greater customer service, we have found it necessary to obtain a little more information concerning our user base.

We would be grateful if you could take the time to complete the following questions to provide us with some information about how the instrument will be used.

This information will enable us to inform you of relevant current application notes and seminars and allows us to identify common interest groups so that we can promote cross transfer of information between customers.

What is your scientific field?
(e.g. pharmaceutical, environmental, general, etc.)

_____

_____

Which classes of compounds will be analyzed?
(e.g. carbohydrate, peptides, pesticides, etc.)

_____

_____

What is your application area?
(e.g. quantitation, purity analysis, structural determination, etc.)

_____

_____

Our sales team often requires reference sites for specific applications.
Would you be willing to be used as a contact reference site for prospective customers?

_____

_____