

ACQUITY UPLC/ ACQUITY Premier Systems with 2D Technology

Site Preparation Guide

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General information

This guide helps you prepare your laboratory facility for installation of your Waters 2D system. Proper site preparation is critical to successful operation of the system.

Note:

- References to the ACQUITY™ UltraPerformance Liquid Chromatography (UPLC™) H-Class Systems and modules also pertain to the Series Systems.
- References to the SM-FTN also pertain to the SM-FTN PLUS and ACQUITY Premier SM-FTN.
- References to the BSM also pertain to the BSM PLUS and ACQUITY Premier BSM.
- References to the QSM also pertain to the QSM PLUS and ACQUITY Premier QSM.
- This site preparation guide only supports ACQUITY Systems using specific flow rate ranges. It does not support the ACQUITY M-Class System with its nanoflow applications for use with 2D Technology.

System description

ACQUITY UPLC Systems with 2D Technology include the following:

- ACQUITY Premier BSM/BSM 2D System
- ACQUITY Premier BSM/QSM 2D System
- ACQUITY UPLC I-Class PLUS BSM/BSM 2D System
- ACQUITY UPLC I-Class PLUS BSM/QSM 2D System
- ACQUITY UPLC H-Class PLUS BSM/QSM 2D System
- ACQUITY UPLC BSM/BSM 2D System

Related information

[ACQUITY UPLC Systems with 2D LC Technology](#)

Customer support

If you have questions about this document or preparing your site, contact your local Waters sales representative.

Safety advisories

- ! **Warning:** To avoid damage to the products, injury to persons, and damage to other property, completely read and closely follow the site preparation guide.
- ! **Important:** Observe Good Laboratory Practice (GLP) at all times. When working with hazardous materials, consult the Material Safety Data Sheets regarding the solvents you use. Additionally, consult the safety representative for your organization regarding its protocols for handling such materials, and refer to [Controlling Contamination in LC/MS Systems](#) (715001307) and [Preventing Contamination in ACQUITY UPLC/MS Systems](#) on www.waters.com.

Glossary of abbreviations

Table 1 gives a glossary of product name abbreviations.

Table 1: Glossary of abbreviations

Abbreviation	Component name
BSM	ACQUITY UPLC /ACQUITY Premier Binary Solvent Manager
CM-A	ACQUITY UPLC/MaxPeak Premier Column Manager-Active
ELS	ACQUITY UPLC/ACQUITY Premier Evaporative Light-scattering (ELS) Detector
FLR	ACQUITY UPLC/ACQUITY Premier Fluorescence (FLR) Detector
ISM	ACQUITY Isocratic Solvent Manager
MS	Mass spectrometer (refer to the appropriate Site Preparation Guide)
PDA or PDA eλ	ACQUITY Photodiode Array (PDA) Detector
QSM	ACQUITY UPLC H-Class/ACQUITY Premier Quaternary Solvent Manager
SM-FL	ACQUITY UPLC Fixed-loop Sample Manager
SM-FTN	ACQUITY UPLC/ACQUITY Premier Sample Manager – Flow-through Needle
SO	ACQUITY UPLC Sample Organizer
TUV	ACQUITY/ACQUITY Premier Tunable UV Detector
WFM-A	Waters Fraction Manager-Analytical

Responsibilities

The customer must prepare the site as required before the Waters-certified engineer can install the system.

Customer responsibilities (storage and site preparation)

! **Important:** It is essential that you prepare the site correctly and complete the site preparation accurately. If a Waters service engineer arrives to begin your installation and cannot proceed because of inadequate site preparation or lack of necessary supplies, you may be charged for all travel costs incurred.

Please contact Waters if you have questions about preparing your site.

1. Provide appropriate storage for Waters equipment before it is installed.
2. Prepare your laboratory to meet the requirements specified in the site preparation guide.
3. Verify that each requirement has been met by marking the check box in each section.
4. Ensure that the person designated to operate and maintain the system is present at the installation for training in basic system operation.

Note: If the designated person cannot be present at the installation, please notify Waters so that we can reschedule the installation for a more convenient time.

Waters responsibilities (installation)

1. Unpack the system.
2. Install the system.
3. Test system performance to ensure that it is properly installed and operational.

Note: If you require specific training on the ACQUITY UPLC/ACQUITY Premier Systems with 2D Technology, Empower™, or MassLynx™ software, arrange for this separately from the startup through your local Waters office.

4. Train the customer on basic operation of the system hardware and software.

Sales consultation

Waters sales representatives have in-depth and up-to-date knowledge of the advanced science and technologies of Waters systems.

By assisting you in selecting the proper 2D system configuration for your application, they can help optimize your laboratory productivity, advise you on sample preparation to reduce downtime, and discuss your laboratory training requirements.

For enhanced efficiency in the site preparation process and for the field organization to better manage your expectations for your new system, ensure that you discuss the following with your sales representative or technical support specialist:

- The 2D system configuration agreed upon is suitable for your application.
- The possibility of running test samples as part of a demo.
- The risks associated with controlling the 2D system without a Waters workstation.
- A QSM configured in the second dimension has variable retention times and is not recommended.
- ACQUITY UPLC/ACQUITY Premier Systems with 2D Technology cannot control multiple MS systems with one workstation.
- An ACQUITY Isocratic Solvent Manager (ISM) can also be used on a system for At-Column Dilution or as a second dimension pump.
- The relevant 2D installation chemistry kits were ordered.
- Optional 2D system options and tubing assemblies.
- Total assurance and warranty, installation services, and training options.
- If the installation site is in a regulated laboratory, you might require [validation consulting services](#) or [qualification services](#).
- If necessary, the relevant [qualification products](#) were ordered.

- ! **Important:** Full-system qualification for 2D systems is currently unavailable, but qualification for standard one-pump ACQUITY UPLC/ACQUITY Premier Systems with LC detectors and mass spectrometers is available in most cases.

Verify sales consultation requirements

Mark the check box to verify that all requirements are met. After you complete all check boxes, return the site preparation guide to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.

All sales consultation requirements met

Relocating shipping containers

! **Important:** Do not unpack the equipment before lifting or moving it.

Follow the guidelines in this section to lift, relocate, and store shipping containers.

Lifting

! **Warning:** To avoid injury, use appropriate lifting equipment to lift the mass spectrometer. Do not lift it manually.

! **Warning:** To avoid injury, at least two people (or suitable lifting equipment) must lift any instrument that weighs more than 39.68 lb (18 kg).

! **Important:** If your system includes a mass spectrometer, refer to the appropriate site preparation guide for additional lifting requirements.

As a general guide before lifting, lowering, or moving the shipping containers:

- Assess the risk of injury.
- Take action to eliminate risk.
- Plan the operation ahead of the installation, and in conjunction with the Waters Field Service Engineer (FSE) at the time of installation.
- Adhere to appropriate country and company regulations.

Moving

! **Caution:** To avoid damaging the system, do not bump or jolt it during transport. If you must transport the instrument across an uneven surface, carry it on a forklift truck or trolley.

If you move the shipping containers, transport them to the laboratory designated for system use. Follow these guidelines:

- Ensure that all passageways accommodate the largest component.
- Keep shipping containers on the pallet. If you find it necessary to transport shipping containers individually (that is, without the pallet), be sure to move all containers, and retain all packing slips.

Doorways

Doorways must be a minimum width to accommodate the largest component. For system dimensions, see [Table 2](#).

Elevators, corridors, and staircases

Elevators and corridors must be wide enough to negotiate corners. If you plan to move the system via staircase, you are responsible for moving the system.

! **Important:** For safety reasons, Waters is not responsible for moving products via staircases.

Storage

Maintain the following storage conditions before Waters installs your system:

- Unopened shipping crates
- Storage area temperature 0 to 40 °C (32 to 104 °F)
- Humidity <80%, noncondensing

Verify relocating shipping containers requirements

Mark the check box to verify that all requirements have been met. After completing all check boxes, return the site preparation guide to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.



All relocation requirements met

Space and load requirements

Ensure that the laboratory bench has sufficient space for system configuration and installation, and can support the weight of all components.

Recommended configurations

The following figures show recommended layouts for your system as configured in a single, double, or triple stack.

! **Important:** If you do not know which layout to prepare for, contact your Waters representative.

Note: The vertical dimensions in Figure 1 include extra clearance for solvent tray access and the horizontal dimension includes extra right-side clearances for SM-FTN and CM-A ventilation. Use the dimensions in [Table 2](#) and the information in ["Component dimensions and weights" on page 13](#) to determine the space requirements for the components that comprise your system.

Figures 1 and 2 show example 2D configurations.

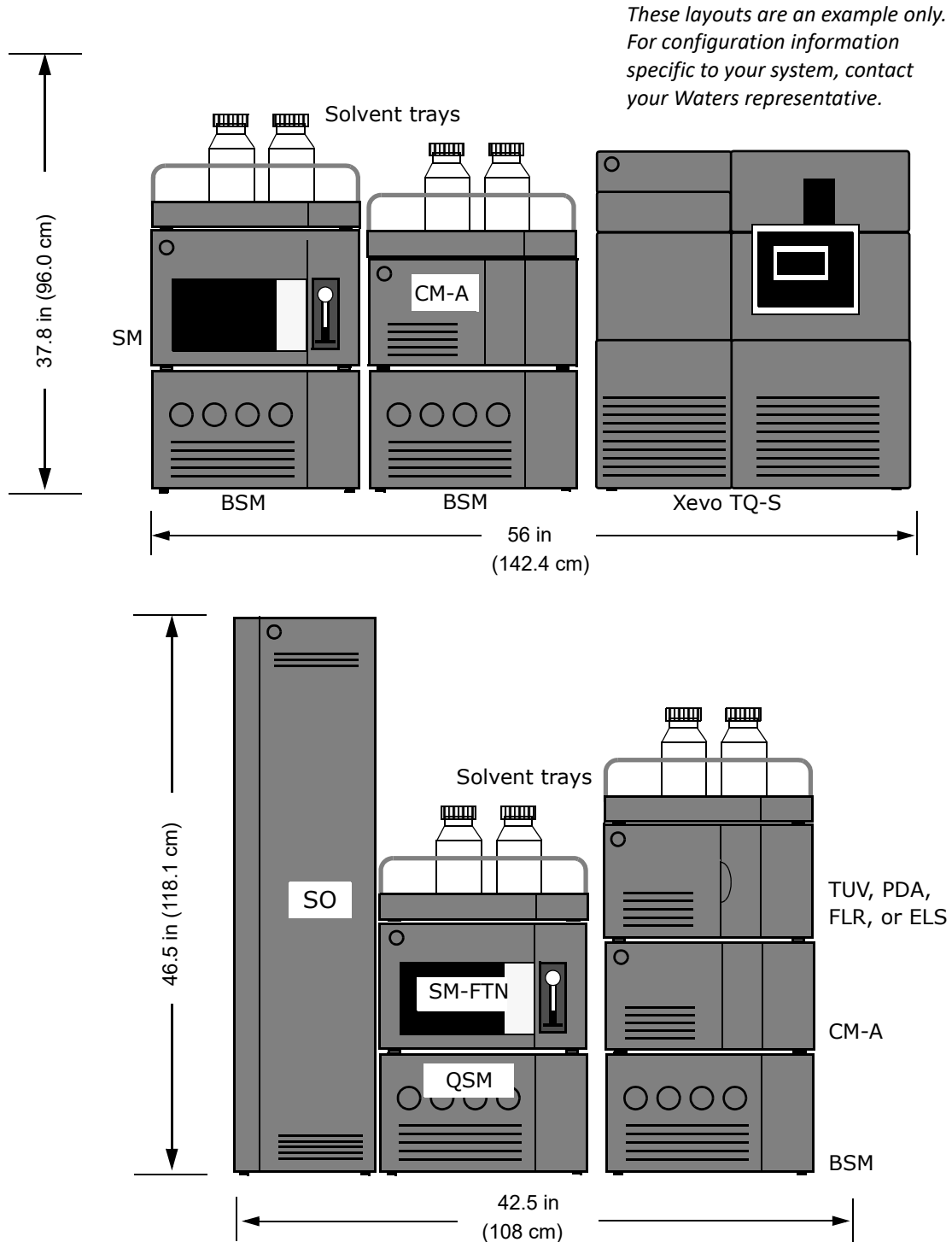
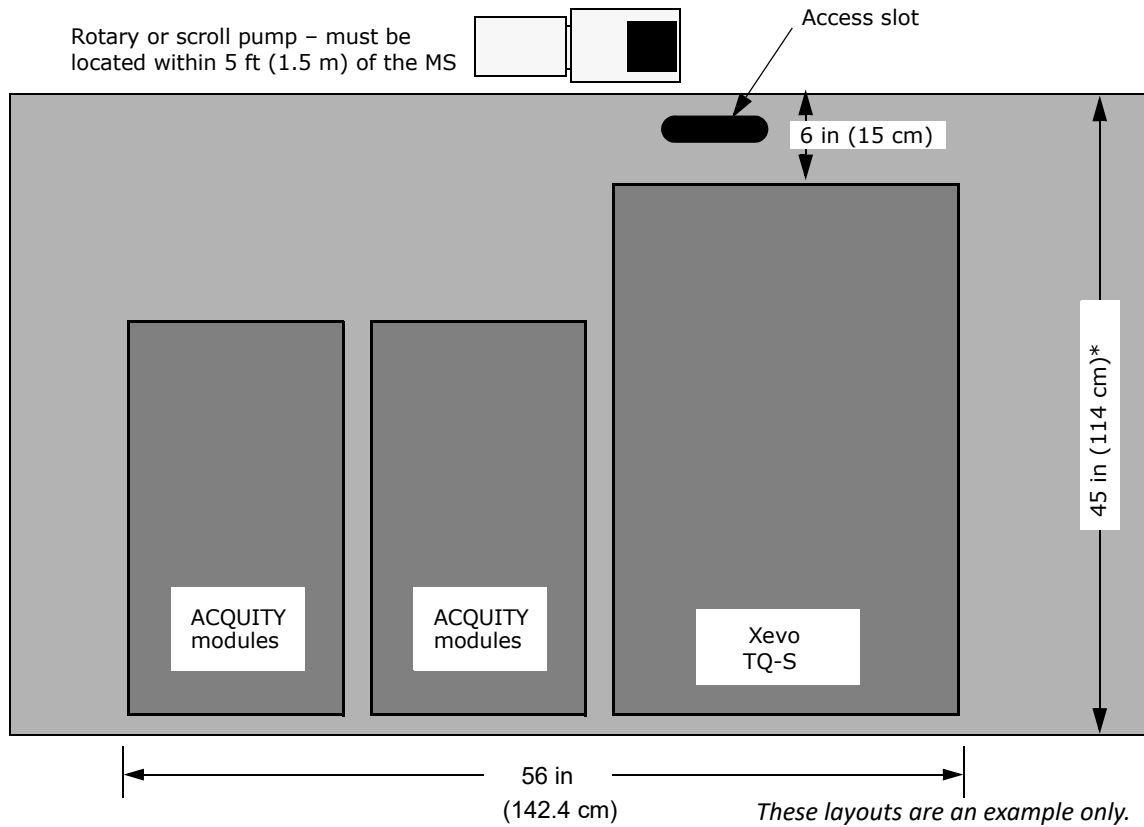


Figure 1 – Example 2D configurations (front view)



These layouts are an example only. For configuration information specific to your system, contact your Waters representative.

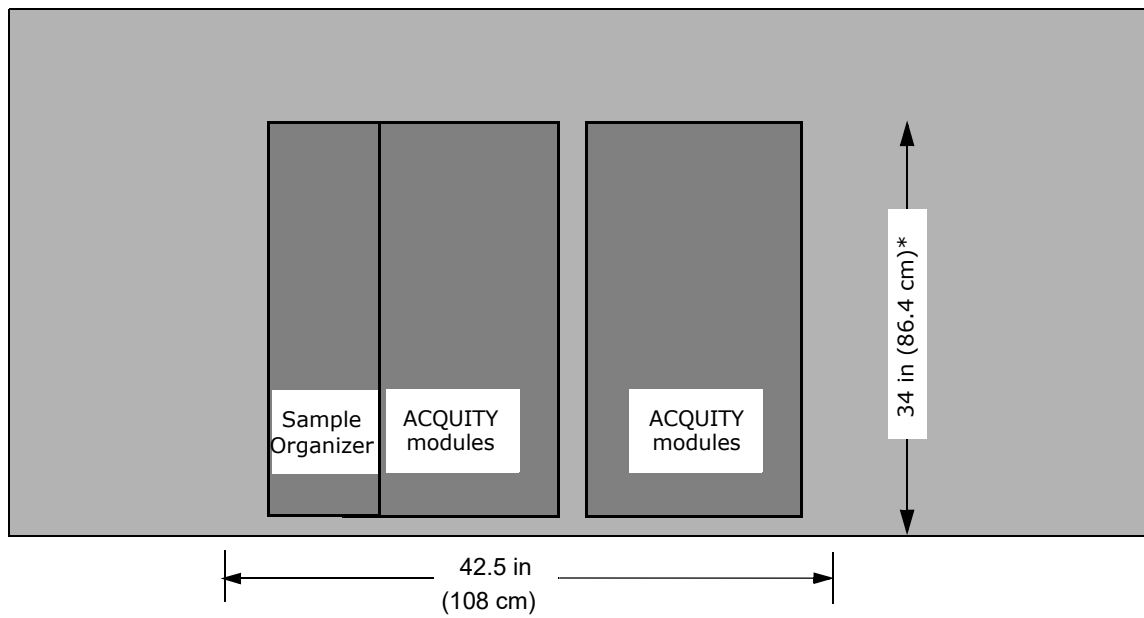


Figure 2 – Example 2D configurations (overhead view)

Component dimensions and weights

Ensure your laboratory bench has sufficient space for and can support the weight of all system components (see [Table 2](#)).

! Important:

- To determine the benchtop width required to accommodate the installation of your system, be aware that no stack can exceed one meter (39.4 inches) in height. Depending on the modules in your system, you may need to configure the modules in one, two, or more stacks. Contact your Waters representative with any questions.
- Ensure there is at least 152 cm (5.0 ft) of vertical clearance above the laboratory bench.
- For specific height and weight restrictions, contact your Waters service representative.
- If your system includes an MS, refer to its site preparation guide for component dimensions and weights.

Note: All instruments are equipped with 0.25 inch-high (0.64-cm) feet. The BSM, QSM and ISM are shipped with 0.875-inch (2.2-cm) snap-in feet installed over the 0.25-inch feet. For systems that include the SO, remove the 0.875-inch (2.2-cm) snap-in feet from these components.

Table 2: Component dimensions and weights

System component	Width	Depth	Height	Weight
BSM	34.3 cm (13.5 in.)	66.1 cm (26.0 in.)	23.8 cm (9.38 in.)	26.3 kg (58.0 lb)
QSM ^a				27.5 kg (60.5 lb)
SM-FL ^{ac}		71.2 cm (28.0 in.)	34.0 cm (13.38 in.)	25.0 kg (55.0 lb)
SM-FTN ^{ab}				27.1 cm (10.7 in.)
SO ^d	24.1 cm (9.5 in.)	68.0 cm (26.75 in.)	92.7 cm (36.5 in.)	63.5 kg (140.0 lb)
CM-A ^{ab}	34.3 cm (13.5 in.)	61 cm (24.0 in.)	20 cm (7.8 in.)	21.0 kg (46.0 lb)
ELS Detector ^{ae}		51.8 cm (20.4 in.)	21.6 cm (8.5 in.)	14.7 kg (32.5 lb)
FLR Detector ^{af}				50.8 cm (20.0 in.)
ISM		61.5 cm (24.2 in.)	23.8 cm (9.38 in.)	25.9 kg (57 lb)
PDA Detector ^{af}		51.8 cm (20.4 in.)	21.6 cm (8.5 in.)	15.6 kg (34.3 lb)
PDA eλ Detector	34.3 cm (13.5 in.)	60.7 cm (23.9 in.)	19.4 cm (7.6 in.)	13.6 kg (30 lb)
TUV Detector ^{af}		53.4 cm (21.0 in.)	20.8 cm (8.2 in.)	9.3 kg (20.5 lb)
Solvent Tray Module		52.1 cm (20.5 in.)	12.7 cm (5.0 in.)	2.3 kg (5.0 lb)
WFM-A		71.1 cm (28.0 in.)	27.3 cm (10.75 in.)	20.4 kg (45.0 lb)
MS	See the appropriate MS site preparation guide.			

a. Allow at least 6.0 inches (15.2 cm) clearance at the rear for ventilation and connections.

b. Allow at least 3.0 inches (7.6 cm) clearance to the right for ventilation and connections.

c. Additionally, the fluidics drawer of the Sample Manager slides outward 15.5 inches (39.4 cm).

- d. Width measurement equals 22.5 inches (57.2 cm) including base plate and height measurement given includes base.
- e. When positioned in the left stack, allow for an additional 1.0 inch (2.54 cm) drain tube clearance between the stacks.
- f. When the multi-detector drip tray option is used, allow for an additional 2.0 inches (5.1 cm) drain tube clearance to the right of the detector.

Optional flex cart dimensions

Table 3: Flex cart dimensions

Width	76.1 cm (30.0 in.)
Depth	83.8 cm (33.0 in.)
Minimum table height	76.1 cm (30.0 in.)
Maximum table height	111.8 cm (44.0 in.)
Height adjustment	35.6 cm (14.0 in.)
Cart weight	77.3 kg (170.0 lb)
Supportable weight	181.8 kg (400.0 lb)

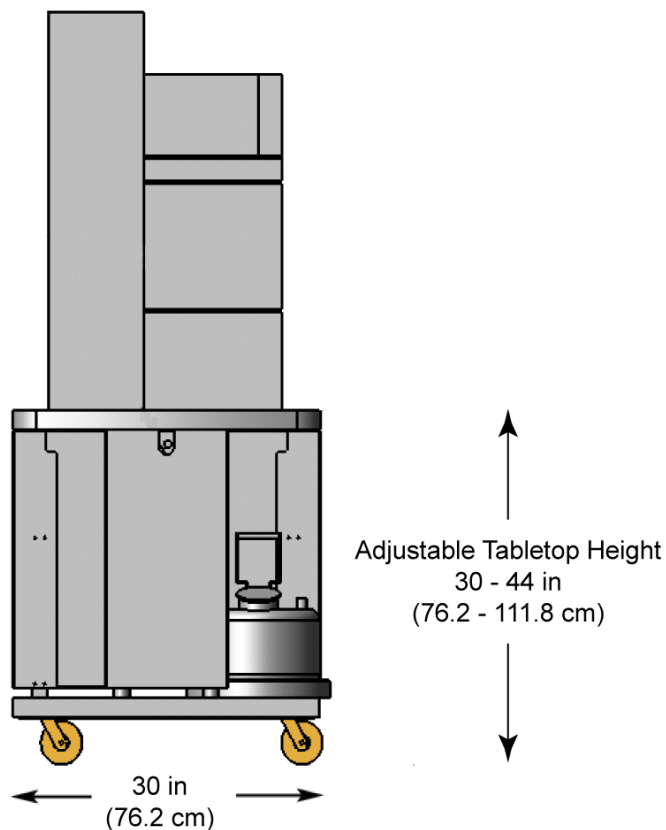


Figure 3 – ACQUITY system flex cart

Clearances

! **Important:** For MS requirements, refer to the appropriate mass spectrometer site preparation guide.

Ensure the laboratory space provides sufficient clearance (working space) for all necessary components (Table 4).

Table 4: System clearances

System/component	Clearance
Customer's laboratory bench	<ul style="list-style-type: none"> Vertical: 152 cm (5 ft)
System components Note: Refer to the appropriate mass spectrometer site preparation guide for additional requirements.	<ul style="list-style-type: none"> Rear: 15.2 cm (6 in.) Right: 7.6 cm (3 in.)
SM-FL	<ul style="list-style-type: none"> Front: Fluidics drawer slides outward 39.4 cm (15.5 in.)
Solvent tray (top-mounted)	<ul style="list-style-type: none"> Vertical: 25.4 cm (10 in.)
Data system (computer CPU, monitor, keyboard, Ethernet switch, and mouse)	<ul style="list-style-type: none"> Components require approximately 24.0 inches (61.0 cm) of bench space. Standard-length cables are provided with the system. If necessary, extension cables for any of these cables may be sourced locally from a computer supply vendor. Must be within 16.0 ft (5.0 m) of the mass spectrometer to allow connection of the communication cables. An access slot may need to be cut in the bench top to allow the vacuum tubes and gas lines to be passed to and from the MS.

Verify space and load requirements

Mark the check box to verify that all requirements have been met. After completing all check boxes, return the site preparation guide to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.



All space and load requirements met

Solvent requirements

- ! **Caution:** To ensure proper performance of the LC/MS system, use clean, high-purity (LC/MS-grade) solvents. Failure to provide clean solvents and glassware can cause significant delays to the installation.
- ! **Important:** For MS requirements, refer to the appropriate mass spectrometer site preparation guide.

Have the following solvents available for the installation:

- ! **Important:** For details on solvent brands, glassware requirement, and procedures to control contamination, see:
 - [Controlling Contamination in LC/MS Systems](#) (715001307)
 - The [safety data sheets \(SDSs\)](#) for your products
 - [ACQUITY UPLC H-Class, I-Class Series, and ACQUITY Premier Systems Solvent Considerations](#) (715005742)
 - [MaxPeak Premier Systems Solvent Considerations](#) (715007352)
- Water
- Acetonitrile
- Methanol
- Isopropanol (IPA)
- Acetone
- Formic acid, analytical-grade
- Ammonium hydroxide

Verify solvent requirements

Mark the check box to verify that all requirements have been met. After completing all check boxes, return the site preparation guide to Waters.

- ! **Important:** Installation cannot proceed unless all site preparation requirements are met.

All solvent requirements met

Gas requirements

! **Important:** For MS requirements, refer to the appropriate mass spectrometer site preparation guide.

Refer to the following gas requirements when preparing your laboratory.

Gas for the sample organizer

Air or nitrogen

The sample organizer requires a suitable supply of high-purity air or nitrogen.

Air/gas quality

- Air/gas quality should meet the highest possible standards for particle diameter, moisture, and oil density. Waters has successfully tested the SO to the ISO 8573.1 degrees of quality 1, 5, 1 (where 1, 5, 1 indicates particle diameter, moisture, and oil, respectively, with 1 being the highest standard). [Table 5](#) shows the ISO 8573.1 and JIS B 8392-1 degrees of quality standards, and indicates the acceptable (Waters-tested) criteria for the SO.

Note: To connect the SO model 186015021 to your house air source, Waters provides a 3/8-inch NPT-compatible male quick-disconnect fitting that conforms to the A-A-59439 MIL specification. You can remove the provided quick-disconnect fitting and replace it with a compatible fitting that meets the specification.

Note the following air quality recommendations:

- Use house air. Do not use compressed air that contains chemicals, synthetic oils with organic solvents, salts, corrosive gases, or similar contaminants.
- If necessary, install air filters on the upstream side of in-house compressor valves. Filters should provide filtration of 5 microns or less.
- To remove excessive moisture from the air source, install an air dryer after a cooler, drain catch, or water separator.
- If carbon dust is generated by the in-house compressor, install mist separators on the upstream side of compressor valves.

 Indicates acceptable criteria for particles, moisture, and oil.

Table 5: Acceptable Criteria for ISO 8573-1 and JIS B 8392-1 degrees of quality

Degrees of quality	Max. particle diameter (µm)	Min. pressure dewpoint (°C)	Max. oil density (mg/m ³)
1	0.1	-70	0.01
2	1	-40	0.1
3	5	-20	1.0
4	15	+3	5
5	40	+7	25
6	—	+10	—

Gas for the ELS Detector

Air or nitrogen

Note: Gas cylinders are not recommended because of their limited capacity.

The ELS detector requires the following:



Warning: If using zero grade air, consider the combustibility of the solvents.

Use air or nitrogen

The ELS detector requires:

- a suitable supply of nitrogen gas or zero-grade air
- a gas flow of approximately 3 to 4 L/min
- a constant gas supply (65 to 100 psi at the regulator)

Note: Gas cylinders are not recommended because of their limited capacity.

Air/gas quality

Air/gas quality should meet the highest possible standards for particle diameter, moisture, and oil density.

Verify gas requirements

Mark the check box to verify that all requirements are met. After you complete all check boxes, return the site preparation guide to Waters.



Important: Installation cannot proceed unless all site preparation requirements have been met.

<input type="checkbox"/>	All gas requirements met
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Power requirements

! **Important:** For MS requirements, refer to the appropriate mass spectrometer site preparation guide.

Refer to the following power requirements when preparing your laboratory.

Electrical safety

Follow all local electrical safety requirements in preparing your laboratory.

Over-voltage rating

The laboratory environment must comply with installation (over-voltage) category II.

Power source/receptacles

All system components require a dedicated, earthed (grounded) power source. The receptacles from this power source must be accessible to the system components, and must share a common ground. Use [Table 7](#) as a guide for determining the receptacles required for the components in your system.

Optional valves

If your system includes optional valves, be aware that each valve includes a power supply that requires a power receptacle that uses a common, earthed (grounded) power source.

Power summary

! **Caution:** Never use an extension cord to connect the instrument to an AC power source.

See [Table 6](#) for a summary of component power requirements. For more information on power terminology, see [Plug/receptacle types, page 20](#).

Table 6: System power requirements

Component	Nominal rated voltage	Maximum power consumption
BSM		200 VA
CM-A		400 VA

Table 6: System power requirements (continued)

Component	Nominal rated voltage	Maximum power consumption
ELS	100 to 240 VAC 50/60 Hz	200 VA
FLR		280 VA
ISM		200 VA
PDA/PDA eλ		145 VA/185 VA
QSM		200 VA
SM-FL		400 VA
SM-FTN		400 VA
TUV		185 VA
WFM-A	90 to 265 VAC 47/63 Hz	400 VA
MS	See the appropriate MS site preparation guide	

Plug/receptacle types

! **Requirement:** Ensure that one receptacle is available for each system component (including the data system).

Table 7: Power cords supplied by Waters




















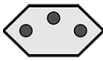
Region	Plug	Receptacle	Receptacle type
US/Canada/ Japan/Taiwan			NEMA 5-15R
UK			BS 1363
Europe			CEE 7
Australia			AS/NZS 3112
Brazil			NBR 14136
China			CPCS-CCC
Denmark			107-2-D1

Table 7: Power cords supplied by Waters (continued)

Region	Plug	Receptacle	Receptacle type
India			UK2-15R
Korea			SK1-16R
Switzerland			SEV 1011

Verify power requirements

Mark the check box to verify that all requirements are met. After you complete all check boxes, return the site preparation guide to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.

<input type="checkbox"/>	All power requirements met
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Environmental requirements

Air quality

! **Important:** The laboratory environment must comply with pollution degree 2, pollution category 1, and installation category 2.

Ensure that the laboratory is not exposed to excessive dust.

Humidity

Ensure relative humidity of the laboratory is between 20% and 80%, noncondensing.

Air flow

Ensure that air flow from heating or air-conditioning diffusers is not directed on the system, and that the system is in a draft-free position within the laboratory.

Temperature



Caution:

- Failure to operate within the ambient temperature range will compromise system performance and can result in instrument failure.
- The CM-A is designed to accurately control the column temperature when the difference between the room and column temperatures is at least 5 °C (9 °F). Also, sample cooling in the CM-A will not reach 4 °C (39.2 °F) if the ambient temperature is 25 °C (77 °F) or greater.
- If the ambient temperature equals or exceeds 23 °C (73.4 °F), sample cooling in the SM-FTN will not reach 4 °C (39.2 °F).



Important: If your system includes a mass spectrometer, refer to its site preparation guide for specific information on thermal variations.

Follow these temperature requirements and considerations when preparing your laboratory.

- The ambient temperature in the laboratory must be as follows:
 - For systems with only a PDA or TUV Detector: 10 to 35 °C (50 to 95 °F)
 - For systems with an ELS Detector (no mass spectrometer): 10 to 30 °C (50 to 86 °F)
- The optimum temperature range of the laboratory is 19 to 22 °C (66 to 72 °F). Short-term thermal variations should be no more than 2 °C (3.6 °F) per 1.5 hours.

Vibration

Ensure the laboratory is located away from heavy machines such as compressors and generators, which can create excessive floor vibration.

Magnetic fields

If using the system with a mass spectrometer, ensure the laboratory is located away from strong magnetic fields such as those generated by nuclear magnetic resonance (NMR) systems or magnetic sector mass spectrometers.

Radio emissions



Caution: If any of these devices causes interference, discontinue its use.

Minimize radio frequency (RF) emission from surrounding sources. Possible sources of RF emission include RF-linked alarm systems, mobile telephones, and hand-held transmitters.

Verify environmental requirements

Mark the check box to verify that all requirements are met. After you complete all check boxes, return the site preparation guide to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.

<input type="checkbox"/>	All environmental requirements met
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Waste collection requirements

! **Important:** To maintain proper drainage and leak control, ensure the system is level.

The ACQUITY UPLC drip management system is a closed-architecture, gravity-driven drainage system that effectively collects and removes any solvent leaks and process waste from the system. Each instrument uses a drip tray to collect and route the waste from one module tray to the one beneath it.

Follow these waste collection requirements when preparing your laboratory:

- To maintain proper drainage and leak control, the ACQUITY System with 2D Technology must be level.
- A waste container, such as a large-capacity carboy or safely enclosed glass container, must be positioned below the bench top to collect the waste.
- All waste tubing must be routed in a manner that prevents the formation of traps in the tubing.
- Each Solvent Tray Module located on top of the system is capable of holding up to two liters of spilled solvent. You must supply a separate waste container of sufficient capacity to collect any spill from the waste line at the rear of each tray.
- When an optical detector is positioned anywhere other than on top of the CM-A, the Waters Multi-detector Drip Tray option (205000355) must be installed on the detector.

Waste container

Position a suitable waste container below the bench top.

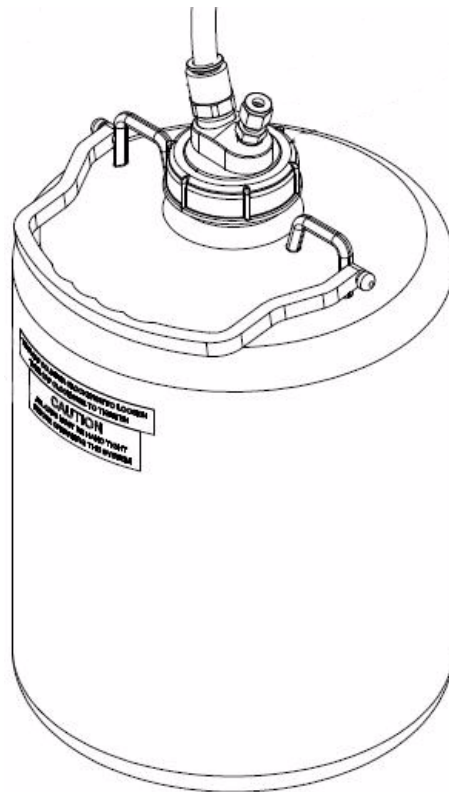


Figure 4 – Example waste container

See www.grainger.com for examples of suitable waste containers.

Exhaust outlets

! Important:

- Venting of the system is the sole responsibility of the customer.
- If your system includes an MS, refer to its site preparation guide for detailed pump and source exhaust outlet information.

Warning: The active exhaust vent must provide a minimum vacuum of 2 mbar (0.03 psi) below atmospheric pressure.

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.

Warning: To avoid releasing potentially harmful solvent vapors into the room, route the degasser vent tubing to a fume hood or other suitable exhaust system. Alternatively, route the tubing to a suitable waste container, ensuring that the tubing's discharge end is elevated above the fluid level at all times.

An in-line degasser, integral to the solvent managers, exhausts dissolved gases from the eluents and condensate from the exhaust system through a vent line on the front of the instruments. To avoid exposure to solvent vapors, it is recommended that you route the exhaust to a laboratory fume hood using the supplied tubing. A 3.5-foot (1.06 m) length of 1/8-inch (0.32-cm) I.D. tubing is supplied in the solvent manager start-up kits.

To properly vent the exhaust vapor to waste in the ELS detector, a drying gas exhaust bottle is provided to trap any condensate that forms from vented vapor exiting the detector. A 3-ft (0.9-m) and 5-ft (1.5-m) length of black exhaust hose is also supplied to route exhaust from the detector to the bottle, and from the bottle to a laboratory exhaust system that applies a slight negative pressure.

Verify waste collection requirements

Mark the check box to verify that all requirements are met. After you complete all check boxes in the site preparation guide, return it to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.

<input type="checkbox"/>	All waste collection requirements met
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Test sample requirements

The Waters service engineer uses the samples supplied with the system. If the test samples were received in a separate shipment, you must make the samples available to the Waters engineer at the time of installation. If a Waters service engineer arrives to begin your installation and cannot proceed because test samples are unavailable, the installation may be delayed. Waters may ask for reimbursement of the costs incurred due to the extra time required to complete the installation.

! **Important:** Please contact Waters if you have questions about providing test samples.

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.

Verify test sample requirements

Mark the box check to verify that all requirements are met. After you complete all check boxes in the site preparation guide, return it to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.



All test sample requirements met

Items you must supply

! **Caution:** Ensure that the supplied items have never been washed with detergent, washed with other glassware, or washed in facilities that might have detergent residue. Washing glassware in a common dishwashing facility can contaminate glassware with detergent residues, which may contain polyethylene glycol and other “sticky” substances. Vinyl-coated steel racks can be additional sources of contamination.

! **Important:** If your system includes a mass spectrometer, refer to the mass spectrometer site preparation guide for other required items.

Supply the following items for the installation:

- Acetone, LC/MS-grade
- Acetonitrile, MS-grade
- Ammonium hydroxide
- Balance, analytical (calibrated)
- Cylinders, measuring (spanning range 100-mL to 1-L)
- Flasks, volumetric (10-, 20-, 50-, and 100-mL)
- Formic acid, analytical-grade
- Gloves, nitrile
- Methanol, LC/MS-grade
- Syringes, calibrated (Eppendorf® or equivalent, spanning range 1- μ L to 1-mL)
- Tissue, lint-free
- Water, MS-grade

Verify items you must supply requirements

Mark the check box to verify that all requirements are met. After you complete all check boxes in the site preparation guide, return it to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.



All items we (the customer) must supply are available

Workstation requirements

Software/operating system requirements

If you are providing your own computer for a Waters chromatography data system, contact your Waters sales representative for details on the software and operating system requirements.

! **Important:** Refer to the [Release Notes](#) for additional information and restrictions. The Release Notes contain important information about known and resolved issues, installation, configuration, and recommendations for requalification and revalidation.

! **Important:** If a mass spectrometer is in use, computer requirements are dictated by the software platform and type of mass spectrometer being used, rather than by ACQUITY 2D technology. Software platforms include Empower, MassLynx, or UNIFI 1.9.4 (minimum).

Note: The data system can be positioned on the same bench as the mass spectrometer or on a separate bench.

Note: A 3-m (9.8-ft) X-wire network cable connects the computer to the mass spectrometer. The two data system power cords for the PC and monitor are approximately 2.5 m (8 ft) in length.

[Table 8](#) shows the hardware configuration for a Lenovo P720 series chassis for use with MassLynx.

Table 8: P720 requirements for MassLynx

Item	Requirement
OS	English version of Microsoft® Windows® 10 Enterprise LTSB version 1607
CPU	2 x Intel Xeon Gold processor 5122 3.6G 4C 105W
Memory	8 x 8GB (64 GB RAM) DDR4 2666 ECC RDIMM
Graphics card	1 x Nvidia Quadro P-1000 4-GB 4mDP HP
SSD M.2 PCIe OPAL	1 x 512-GB
Spinning storage drives	1 x 10-TB HD 7200RPM 3.5" SATA3
NIC	Integrated 2-port Gigabit10 Ethernet (i219LM and i210)
Serial port	1
DVD	CD-RW Rambo W10

Table 9 shows the hardware configuration for a Lenovo P520 series chassis for use with Empower and UNIFI.

Table 9: P520 requirements for Empower and UNIFI

Item	Requirement
OS	English version of Microsoft® Windows® 10 Enterprise LTSC version 1607
CPU	Xeon W-2125 4.00 GHz
Memory	64 GB RAM 2600 MHz, DDR4 ECC
Graphics card	Quadro P1000 (slot 2)
SSD M.2 drive PCIe	512 GB
Spinning SATA drives	2 x 6-TB 7200 RPM
Spinning SATA3 drives	1 x 10-TB 7200 RPM
NIC	<ul style="list-style-type: none"> • Integrated single-port Gigabit Ethernet, Intel i219LM, supports Wake-on-LAN • Intel single-port Gigabit Ethernet server adapter i210-T1, supports Wake-on-LAN
Serial port	1
USB ports	10
DVD CD-RW	1



Warning: To avoid damage, risk of electric shock, and fire, the data system and any ancillary equipment must not be exposed to liquids. Do not place any solvent bottles or containers with liquid on them.

Verify computer requirements

Mark the check box to verify that all requirements are met. After you complete all check boxes in the site preparation guide, return it to Waters.



Important: Installation cannot proceed unless all site preparation requirements are met.

<input type="checkbox"/>	All computer requirements met
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Customer success tools

Waters Global Services focuses on optimizing Waters products with superior service, support, upgrades, training, and Waters Quality Parts.

Go to [Customer Success](#) on waters.com to gain access to basic content from the following success tools:

- Knowledge Base
- eLearning Courses
- Customer Education
- Application Notes
- How-to Video Library
- Waters Online Toolbox
- Support for TA Instruments Customers

For more in-depth support content, click **Login/Register** at the top-right of the [Customer Success](#) webpage to access the Graphical Parts Locator (an interactive graphical navigator for identifying spare parts and for gaining access to maintenance procedures and reference documents) and iRequest Technical Support to request technical support for instruments and software.

Verify customer success tools access

Mark the check box to verify that all requirements are met. After you complete all check boxes in the site preparation guide, return it to Waters.

! **Important:** Installation cannot proceed unless all site preparation requirements are met.

<input type="checkbox"/>	All customer success tools are available
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Customer confirmation

! **Important:** It is essential to prepare the site correctly and complete the checklist. If a Waters service engineer arrives to begin your installation and cannot proceed because of inadequate site preparation or lack of necessary supplies, you may be charged for all travel costs incurred.

Important: Please contact Waters if you have questions about preparing your site.

<input type="checkbox"/>	I confirm that all supplies are now available.
<input type="checkbox"/>	<p>I confirm that all facility requirements have been met and all Requirement check boxes have been completed. (See list of check box items below.)</p> <ol style="list-style-type: none"> 1. All sales consultation requirements met, page 7 2. All relocation requirements met, page 9 3. All space and load requirements met, page 15 4. All solvent requirements met, page 16 5. All gas requirements met, page 18 6. All power requirements met, page 21 7. All environmental requirements met, page 23 8. All test sample requirements met, page 26 9. All items we (the customer) must supply are available, page 27 10. All computer requirements met, page 29 11. All customer success tools are available, page 30
<input type="checkbox"/>	<p>I confirm that an operator will be available for demonstration and training by a Waters engineer during the installation.</p> <p><i>Indicate availability (check one):</i></p> <p><input type="checkbox"/> During the entire installation</p> <p><input type="checkbox"/> During part of the installation: approximately _____% of the time</p> <p>Important: If the designated person cannot be present at the installation, please notify Waters so that we can reschedule the installation for a more convenient time.</p>

Customer signature: _____

Customer summary

Please complete the summary table below in block letters.

Job title	
Name	
Organization	
Street	
City/state	
Zip/postal code	
Country	
Telephone	
Fax	
Email	

! **Important:** The installation of your system cannot begin until the site preparation guide has been fully completed and returned to your local Waters representative.