

ACQUITY Premier System

Site Preparation Guide

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System layout

The following figure shows a typical ACQUITY™ Premier system.

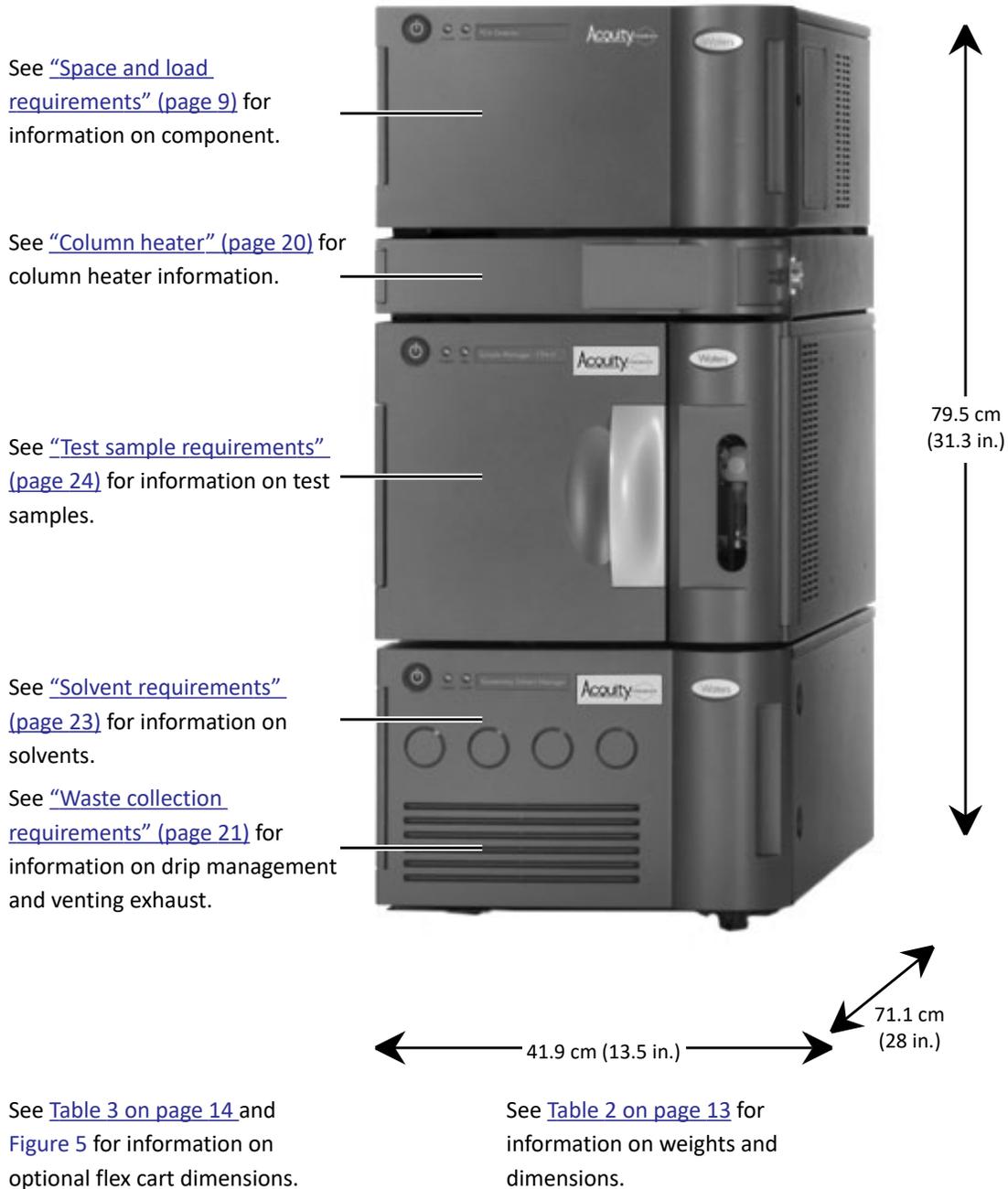


Figure 1 – Example ACQUITY Premier System configuration

General information

This guide helps you prepare your laboratory facility for installation of the ACQUITY Premier System. Proper site preparation is critical to successful operation of the system.

Related information

- [ACQUITY Premier System user guides, including detectors \(under Support tab\)](#)
- [Mass spectrometer \(MS\) system user guides](#)

Customer support

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

Safety advisories



Warning: Failure to completely read and closely follow this site preparation guide may result in injury to persons, product damage, and damage to other property.



Warning: To avoid personal contamination and eye injury, wear clean, chemical-resistant, powder-free gloves and use eye protection when performing this procedure.



Warning: Observe Good Laboratory Practice (GLP) at all times, particularly when working with hazardous materials. Consult the Safety Data Sheets (SDSs) 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](#) (video).



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



Warning: To avoid injury, use appropriate lifting equipment to lift an MS. Do not lift it manually.



Warning: To avoid injuries arising from contact with spilled solvent, Waters does not supply solvents with the ACQUITY Premier System.



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



Caution: Never use an extension cord to connect a system component to an ac power source.

Safety advisories (continued)

-  **Caution:** If you are uncertain which power cord is supplied for your region, contact your Waters representative.
-  **Caution:** Failure to operate in the recommended temperature ranges will compromise system performance and can result in instrument failure.
-  **Caution:** The CM-A and CH-A are designed to accurately control the column temperature when the difference between the room and column temperatures is at least 5 °C (9 °F).
-  **Caution:** If the ambient temperature equals or exceeds 25 °C (77 °F), sample cooling in the CM-A will not reach 4 °C (39.2 °F).
-  **Caution:** If the ambient temperature equals or exceeds 23 °C (73.4 °F), sample cooling in the SM will not reach 4 °C (39.2 °F).
-  **Caution:** If any RF device causes interference, discontinue its use.
-  **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.
-  **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.

Glossary of abbreviations

The following table provides a glossary of product name abbreviations.

Table 1: Glossary of abbreviations

Abbreviation	Component name
BSM	ACQUITY Premier Binary Solvent Manager
CH-A	ACQUITY Premier Column Heater – Active
CHC	ACQUITY UPLC 30-cm Column Heater/Cooler
CM-A	ACQUITY Premier Column Manager – Active
CM-Aux	ACQUITY Premier Column Manager – Auxiliary
eλPDA	ACQUITY Premier Extended Wavelength (eλ or eLambda) Photodiode Array Detector

Table 1: Glossary of abbreviations (continued)

Abbreviation	Component name
FLR	ACQUITY Premier Fluorescence Detector
MS	Mass spectrometer
QDa	ACQUITY QDa Detector
QSM	ACQUITY Premier Quaternary Solvent Manager
SM-FL	ACQUITY Premier Sample Manager – Fixed Loop
SM-FTN	ACQUITY Premier Sample Manager – Flow-through Needle
SO	ACQUITY Premier or ACQUITY UPLC Sample Organizer
SQD 2	Single Quadrupole Detector 2
TUV	ACQUITY Premier Tunable Ultraviolet Detector
UPLC	ACQUITY UltraPerformance Liquid Chromatography
Xevo TQD	Xevo Triple Quadrupole Detector

Responsibilities

The customer must prepare the site as required before the Waters Field Service Engineer (FSE) can install the system.

Customer responsibilities (storage and site preparation)

! **Important:** It is essential that you prepare the site correctly and complete the checklist accurately. If a Waters FSE 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.

If you have questions about preparing your site, contact Waters.

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 checkbox in each section of the guide.
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.
4. Train the customer on basic operation of the system hardware and software.

Relocating shipping containers

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

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

Lifting

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

Before lifting, lowering, or moving the shipping containers:

- Assess the risk of injury
- Take action to eliminate risk
- Plan the operation, both ahead of the installation and in conjunction with the Waters FSE at the time of installation
- Adhere to appropriate country and company regulations
- If your system includes an MS:

 **Warning:** To avoid injury, use appropriate lifting equipment to lift an MS. Do not lift it manually.

! **Important:** For further MS requirements, refer to its site preparation guide.

Moving



Caution: To avoid damaging the system, do not bump or jolt it during transport. If you must transport a system component 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 must transport shipping containers individually (without the pallet), ensure that all containers are moved, and retain all packing slips.

Doorways

Doorways must be wide enough to accommodate the largest component. For system dimensions, see Tables 2 and 4.

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%, non-condensing)

Verify relocating shipping containers requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes, return the site preparation guide to Waters.

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

All relocation requirements met

Laboratory preparation

Space and load requirements

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

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

Recommended configurations

The following figures show recommended layouts for single-, double-, or triple-stack system configurations.

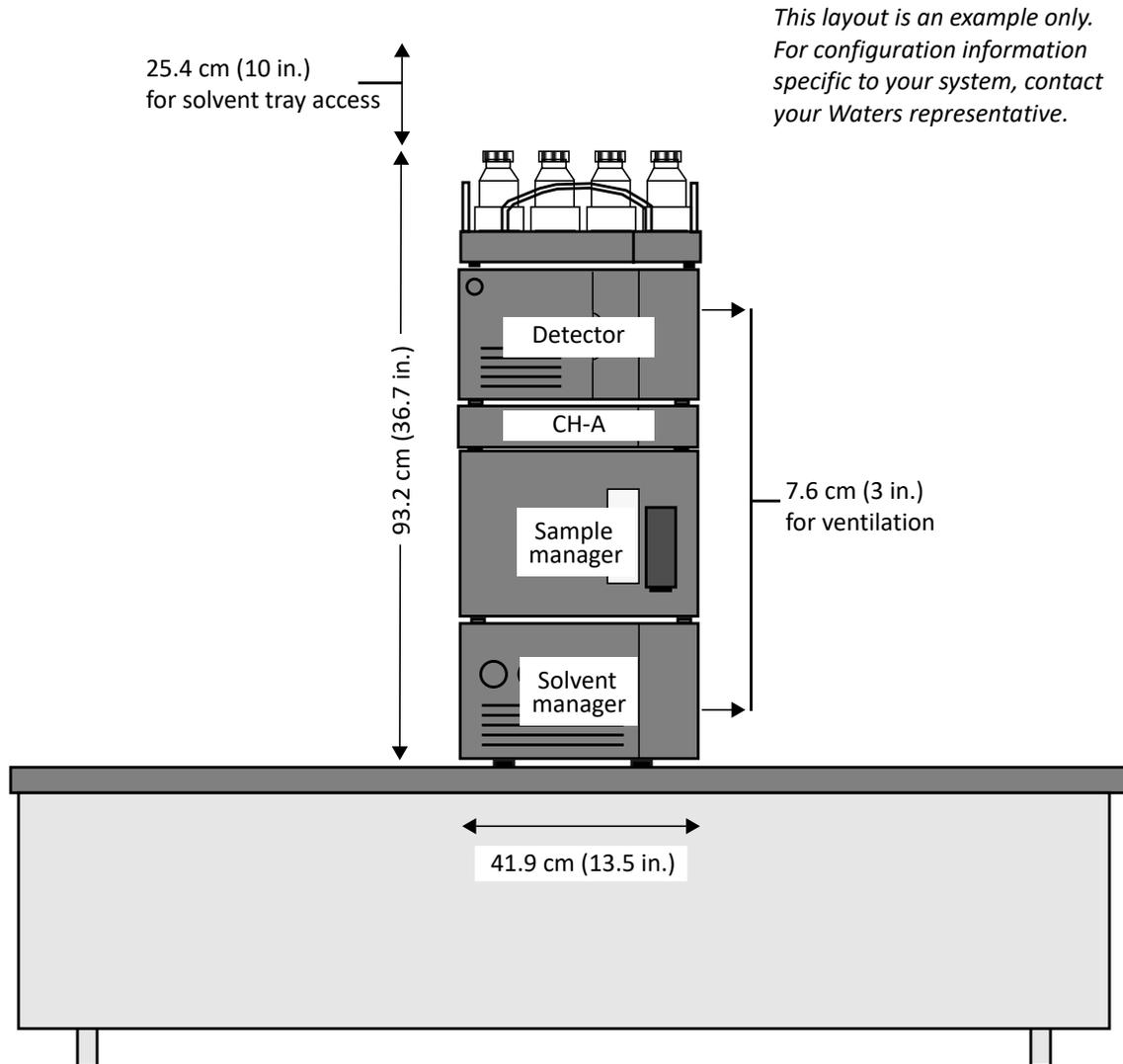


Figure 2 – One-stack configuration (example, front view)

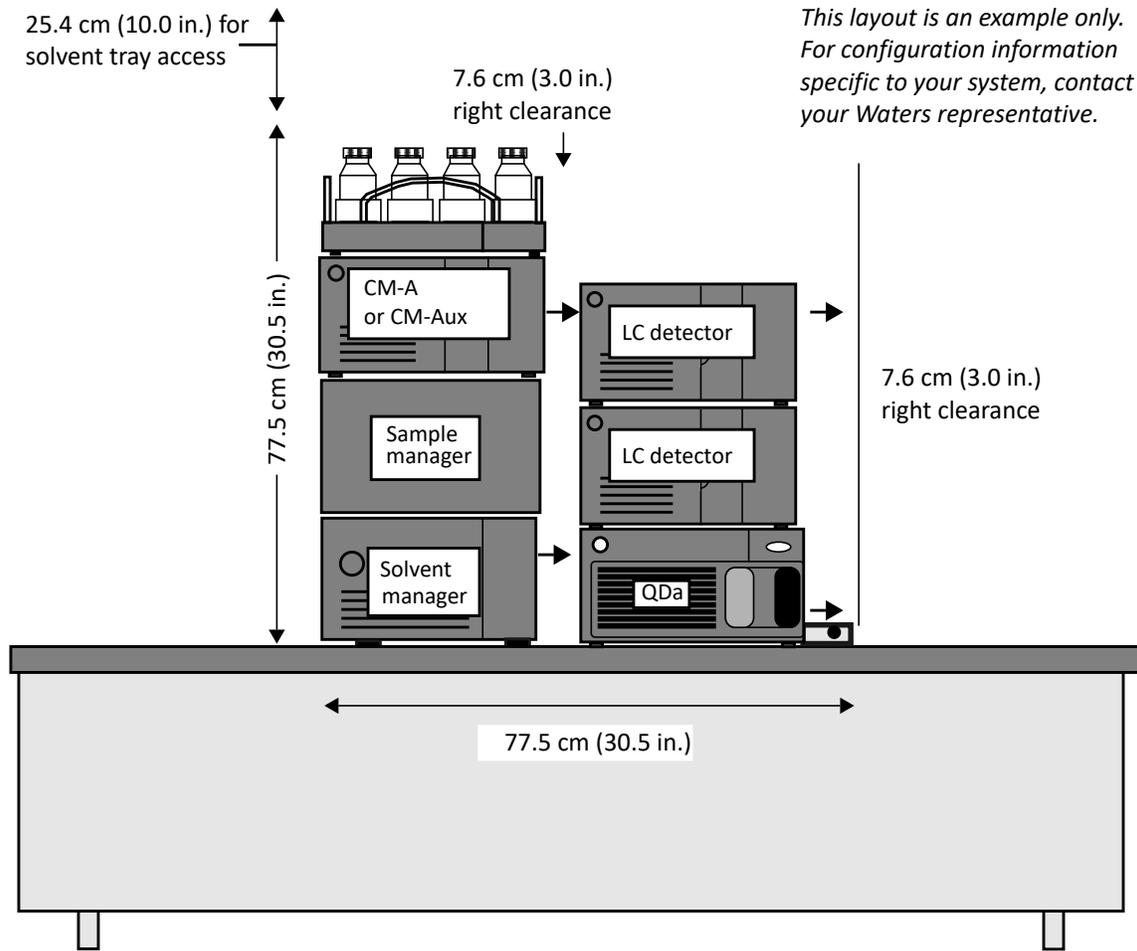


Figure 3 – Two-stack configuration (example, front view)

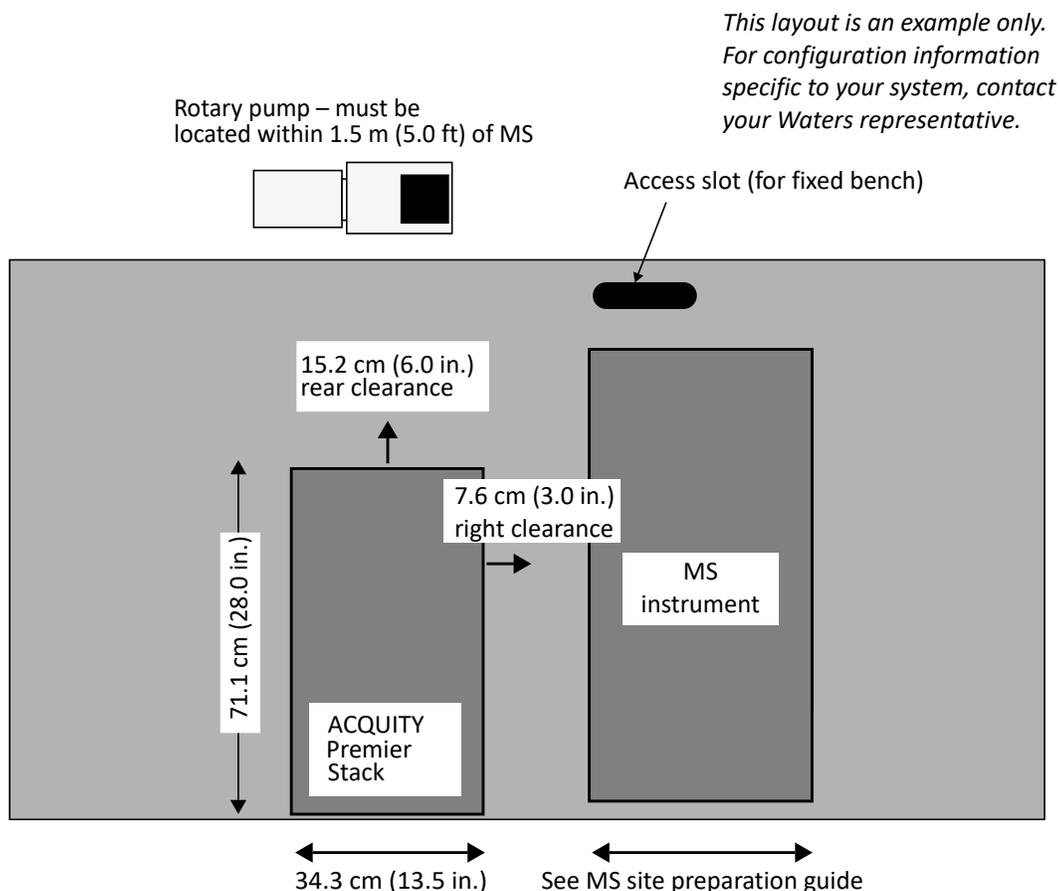


Figure 4 – Example configuration with MS (top view)

Component dimensions

Refer to the following table and ensure that your laboratory bench has sufficient space and that it can support the weight of all system components.

- ! **Requirement:** To determine the benchtop width required to accommodate the installation of your system, be aware that no stack can exceed one meter (39.4 in.) 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.
- ! **Important:** Ensure that there is at least 152 cm (5 ft) of vertical clearance above the laboratory bench.
- ! **Important:** For specific height and weight restrictions, contact your Waters service representative.
- ! **Important:** For complete MS requirements, refer to its site preparation guide.

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 lb)
CH-A	34.3 cm (13.5 in.)	63.0 cm (24.8 in.)	7.6 cm (3.0 in.)	5.7 kg (12.5 lb)
CH-30A	34.3 cm (13.5 in.)	14.8 cm (5.8 in.) 18.6 cm (7.3 in.) ²	7.6 cm (3.0 in.)	5.7 kg (12.5 lb)
CM-A	34.3 cm (13.5 in.)	61.0 cm (24.0 in.)	19.9 cm (7.8 in.)	20.9 kg (46 lb)
CM-Aux	34.3 cm (13.5 in.)	61.0 cm (24.0 in.)	13.7 cm (5.4 in.)	11.3 kg (25 lb)
ELS	34.3 cm (13.5 in.)	51.8 cm (20.4 in.)	21.6 cm (8.5 in.)	14.7 kg (32.5 lb)
FLR	34.3 cm (13.5 in.)	50.8 cm (20.0 in.)	21.6 cm (8.5 in.)	13.61 kg (30 lb)
MS	Refer to the appropriate MS site preparation guide.			
eλPDA	34.3 cm (13.5 in.)	60.7 cm (23.9 in.)	19.4 cm (7.6 in.)	13.6 kg (30 lb)
QSM	34.3 cm (13.5 in.)	66.0 cm (26.0 in.)	22.9 cm (9.0 in.)	27.7 kg (61 lb)
RI	34.3 cm (13.5 in.)	61.0 cm (24.0 in.)	20.8 cm (8.2 in.)	34 lb (15.4 kg)
SM	34.3 cm (13.5 in.)	71.1 cm (28.0 in.)	27.3 cm (10.8 in.)	25.9 kg (57 lb)
SO	25.4 cm (10.0 in.)	72.2 cm (30.0 in.) (model 186015021)	96.5 cm (38.0 in.) ³	63.5 kg (140 lb)
		68.0 cm (26.75 in.) (model 186015020)		
Solvent tray ⁴	34.3 cm (13.5 in.)	52.1 cm (20.5 in.)	12.7 cm (5.0 in.)	2.3 kg (5 lb)
TUV	34.3 cm (13.5 in.)	53.4 cm (21.0 in.)	20.8 cm (8.2 in.)	9.3 kg (20.5 lb)
WFMA	34.3 cm (13.5 in.)	71.1 cm (28 in.) ²	27.3 cm (10.75 in.)	20.4 kg (45 lbs)

1. Without drip tray fitting.

2. For modules that include the optional column module switch box (and without drip tray fitting for the 30-cm CHC).

3. Including base.

4. Top-mounted.

Optional flex cart dimensions

Table 3: Flex cart dimensions

Width	76.2 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)

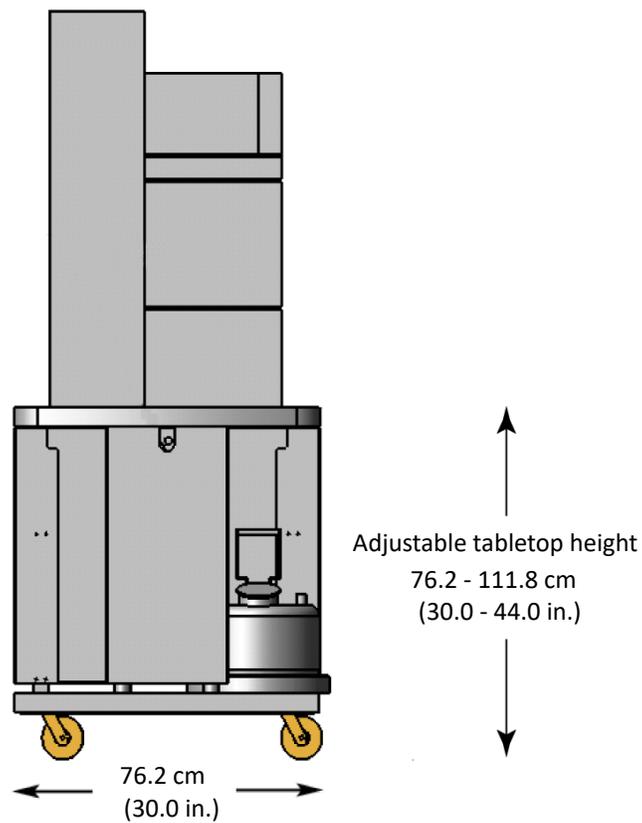


Figure 5 – System flex cart

Clearances

Refer to the following table and ensure that the laboratory space provides sufficient clearance (working space) for all necessary components.

! **Important:** Configure your system so that the highest point of the topmost module (for example, the rails of the solvent bottle tray) is no more than one meter (39.37 inches) above the benchtop. Do not include the solvent reservoir bottles in the measurement.

! **Important:** For complete MS requirements, refer to its site preparation guide.

Table 4: System clearances

System/component	Clearance
Customer's laboratory bench	Vertical: 152 cm (5 ft)
System components Note: For complete MS requirements, refer to its site preparation guide.	Rear: 15.2 cm (6 inches) Right: 7.6 cm (3 inches)
Solvent tray (top-mounted)	Vertical: 25.4 cm (10 inches)

Verify space and load requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes in the site preparation guide, return it to Waters.

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

All space and load requirements met

Workstation 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:** For additional information and restrictions, refer to the [release notes](#) applicable to your system's software. Release notes contain important information about known and fixed issues, installation, configuration, and recommendations for requalification and revalidation.

Verify workstation requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes in the site preparation guide, return it to Waters.

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

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

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 they must share a common ground. Use [Table 6](#) 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.

Systems with an MS

! **Important:** For complete MS requirements, refer to its site preparation guide.

Power summary



Caution: Never use an extension cord to connect a system component to an ac power source.

See the following table for a summary of component power requirements. For more information on power terminology, see [“Power source/receptacles” \(page 16\)](#).

Table 5: System power requirements

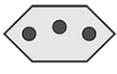
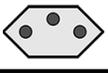
Component	Nominal rated voltage	Maximum power consumption
BSM	100 to 240 VAC 50/60 Hz	360 VA
CH-A		N/A
CH-30A		50 W
CM-A		400 VA
CM-Aux		400 VA
ELS		200 VA
FLR		280 VA
PDA		145 VA
QDa		400 VA
QSM		200 VA
RI		145 VA
SM		400 VA
SO		540 VA
TUV		185 VA
WFMA		400 VA
MS	Refer to the appropriate MS site preparation guide.	

Plug/receptacle types

 **Caution:** If you are uncertain which power cord is supplied for your region, contact your Waters representative.

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

Table 6: 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
Switzerland			SEV 1011

Verify power requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes, 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

Ensure that the laboratory is not exposed to excessive dust.

! **Requirement:** The laboratory environment must comply with the requirements of International Electrotechnical Commission (IEC) Pollution Degree 2.

Humidity

Ensure that the relative humidity of the laboratory is 20% to 80%, non-condensing.

Air flow

Ensure that air flow from heating or air-conditioning diffusers is not directed on the system.

Temperature

⚠ **Caution:** Failure to operate in the recommended temperature ranges will compromise system performance and can result in equipment failure.

The ambient temperature in the lab must be from 4 to 40°C (39.2 to 104 °F). Short-term thermal variations should be no more than 2 °C (3.6 °F) per 1.5 hours.

Note: The optimum temperature of the laboratory is 19 to 22 °C (66 to 72 °F).

Column heater



Caution: The CM-A and CH-A are designed to accurately control the column temperature when the difference between the room and column temperatures is at least 5 °C (9 °F).



Caution: If the ambient temperature equals or exceeds 25 °C (77 °F), sample cooling in the CM-A will not reach 4 °C (39.2 °F).

Sample manager



Caution: If the ambient temperature equals or exceeds 23 °C (73.4 °F), sample cooling in the SM will not reach 4 °C (39.2 °F).

Mass spectrometer



Important: For complete MS requirements, refer to its site preparation guide for detailed information on thermal variations.

Vibration

Ensure that 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 that the laboratory is located away from strong magnetic fields such as those generated by Nuclear Magnetic Resonance (NMR) systems or magnetic sector MSs.

Radio emissions



Caution: If any RF device causes interference, discontinue its use.

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

Verify environmental requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes, 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

The 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 system component uses a drip tray to collect and route the waste from one module tray to the one beneath it.

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

Waste container

Position a suitable waste container below the bench top.

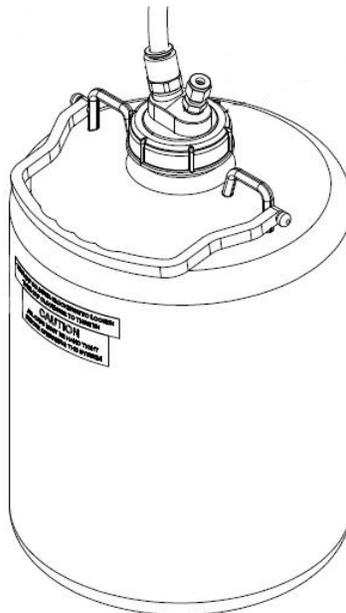


Figure 6 – Example waste container

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

Exhaust outlets

! **Important:** Venting of the system is the customer's responsibility.

An in-line degasser, integral to the solvent manager, exhausts dissolved gases from the eluents and condensate from the exhaust system through a vent line on the front of the instrument. To avoid exposure to solvent vapors, it is recommended that you route the exhaust to a laboratory fume hood.

Exhaust outlet for systems with an MS

! **Important:** For complete MS requirements, refer to its site preparation guide for detailed pump and source exhaust outlet information.

Verify waste collection requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes 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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System preparation

Solvent requirements



Warning: To avoid injuries arising from contact with spilled solvent, Waters does not supply solvents with the ACQUITY Premier System.



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 complete MS requirements, refer to its site preparation guide.

Have the following solvents available for the installation:

- Water
- Acetonitrile
- Methanol
- Isopropanol



Important: For details on solvent brands, glassware requirements, and procedures to control contamination, see the following:

- [Controlling Contamination in UltraPerformance LC/MS Systems](#) (715001307)
- [Preventing Contamination in ACQUITY UPLC/MS Systems](#) (video)
- The [SDSs](#) for your products

Verify solvent requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes, return the completed site preparation guide to Waters.



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



All solvent requirements met

Gas requirements

Gas for an MS

! **Important:** For complete MS requirements, refer to its site preparation guide.

Verify gas requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes, return the site preparation guide to Waters.

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

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

The Waters FSE 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 FSE at the time of installation. If an FSE 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:** If you have questions about providing test samples, contact Waters.

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 checkbox below to verify that all requirements are met. After you complete all checkboxes in the site preparation guide, return it to Waters.

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

<input type="checkbox"/>	All test sample requirements met
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Items you must supply

Supply the following items for the installation:

- Bottles, mobile phase, 1-L (4) or 2-L (2)
- Bottles, reservoir, 1-L (3)
- Cylinder, graduated, 100-mL
- Filtration apparatus, solvent (if applicable)
- Flask, volumetric, 100-mL
- Gloves, nitrile
- Pipettes, calibrated
- Solvents
- Tissue, lint-free
- Vials, sample
- Vortex mixer
- Test samples, Waters-supplied
- Waste container, non-glass (that can be vented to an exhaust system)



Warning: To avoid injuries arising from contact with spilled solvent, Waters does not supply solvents with the ACQUITY Premier System.



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 the system includes an MS, refer to its site preparation guide for other required items.

Verify items you must supply requirements

Mark the checkbox below to verify that all requirements are met. After you complete all checkboxes 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

Customer confirmation

- ! **Important:** It is essential to prepare the site correctly and complete the checklist. If a Waters FSE 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.

If you have questions about preparing your site, contact Waters.

- ! **Important:** If the designated person cannot be present at the installation, notify Waters to reschedule the installation for a more convenient time.

<input type="checkbox"/>	<p>I confirm that all supplies are now available.</p>
<input type="checkbox"/>	<p>I confirm that all facility requirements have been met and all requirement checkboxes have been completed. (See the list of checkbox items below.)</p> <ol style="list-style-type: none"> 1. All relocation requirements met, page 9 2. All space and load requirements met, page 15 3. All workstation requirements met, page 16 4. All power requirements met, page 19 5. All environmental requirements met, page 21 6. All solvent requirements met, page 23 7. All gas requirements met, page 24 8. All test sample requirements met, page 24 9. All items we (the customer) must supply are available, page 25
<input type="checkbox"/>	<p>I confirm that an operator will be available for demonstration and training by a Waters FSE 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>

Customer signature: _____

Customer summary

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

Complete the summary table below in block letters.

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