

Alliance System

Site Preparation Guide

Notice

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Introduction

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

Related information

[Alliance™ System User Guides](#) (Waters.com).

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 explicitly follow the site preparation guide may result in damage to the products, injury to persons, and damage to other property.



Important: Observe good laboratory practice at all times. When working with hazardous materials, consult the safety representative for your organization.



Warning: To avoid contact with solvents, wear suitable gloves and safety glasses.



Glossary of abbreviations

Table 1 gives a glossary of product name abbreviations.

Table 1: Glossary of abbreviations

Abbreviation	Component name
2414	2414 Refractive Index (RI) Detector
2424	2424 Evaporative Light Scattering (ELS) Detector
2432	2432 Conductivity Detector
2475	2475 Multi-wavelength Fluorescence Detector
2489	2489 UV/Visible Detector
2998	2998 Photodiode Array (PDA) Detector
3465	3465 Electrochemical Detector
CH	Alliance Series Column Heater
CHC	Alliance Series Column Heater/Cooler
e2695	Alliance 2695-series Separations Module
FM-A	Waters Fraction Manager Analytical
ISM	Isocratic Solvent Manager
MS	Mass spectrometer
QDa™	ACQUITY™ QDa Detector
SQD	Single Quadrupole Detector
SQD 2	Single Quadrupole Detector 2

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 to prepare the site correctly and complete the checklist accurately. If a Waters service engineer arrives on site 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.

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 ticking 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, 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.

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

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 engineer at the time of installation
- Adhere to appropriate country and company regulations



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



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



Warning: To avoid injury, get more than one person to lift the instrument into place if the unit exceeds 23 kg (50 lbs). If necessary, use lifting equipment that can raise the instrument to the height of the laboratory bench.

Moving

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 (without the pallet), be sure to move all containers, and retain all packing slips.



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.

Doorways

Doorways must be a minimum width to accommodate the largest component. For system dimensions, see [Table 2](#) and [Table 3](#).

Elevators, corridors, and staircases

Elevators and corridors must be wide enough to allow corners to be negotiated. 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

Ensure that 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

Check the box below 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 have been 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 in various configurations.



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

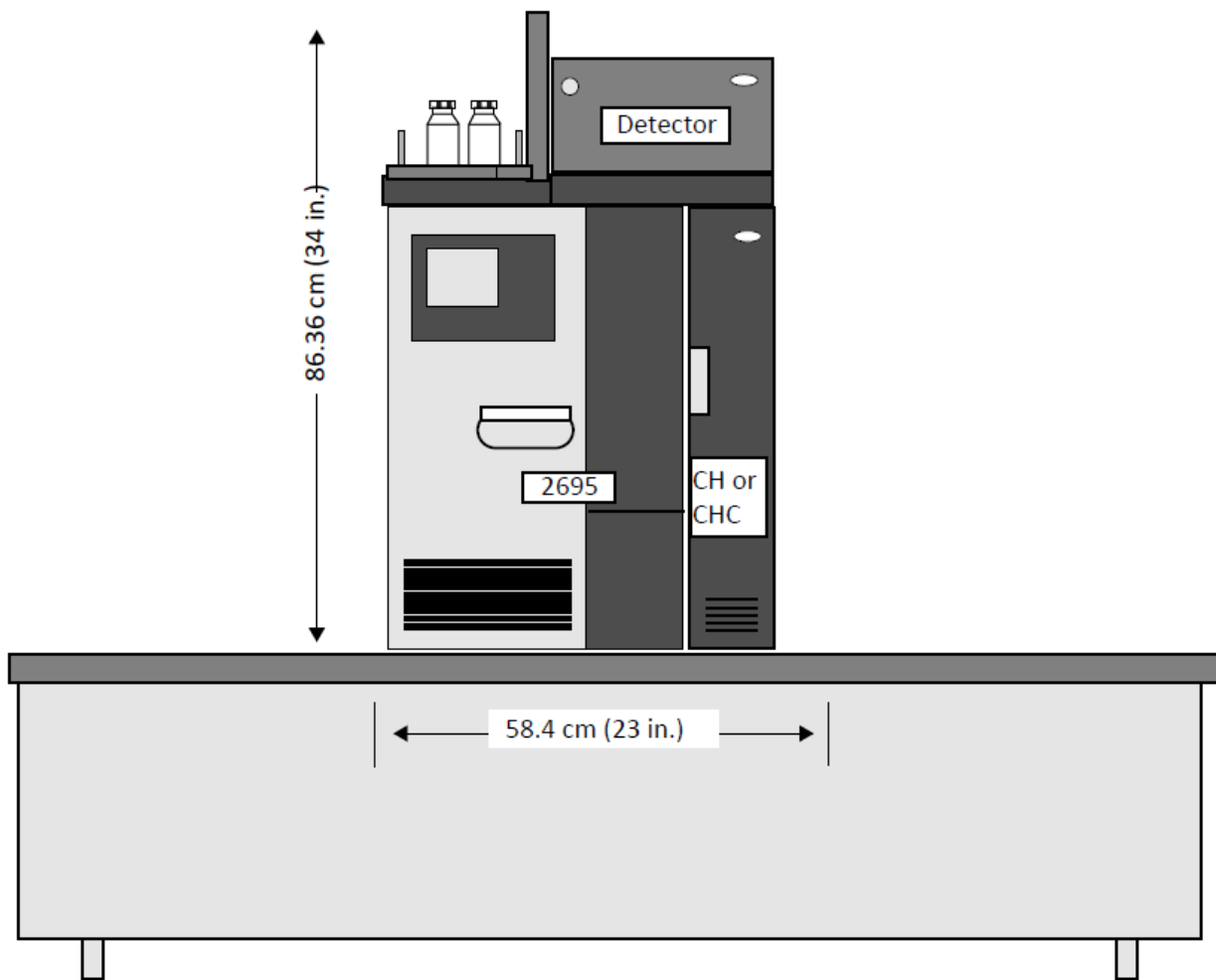


Figure 1 – Example configuration with CH or CHC and detector (front view)

*This layout is an example only.
For configuration information
specific to your system, contact
your Waters representative.*

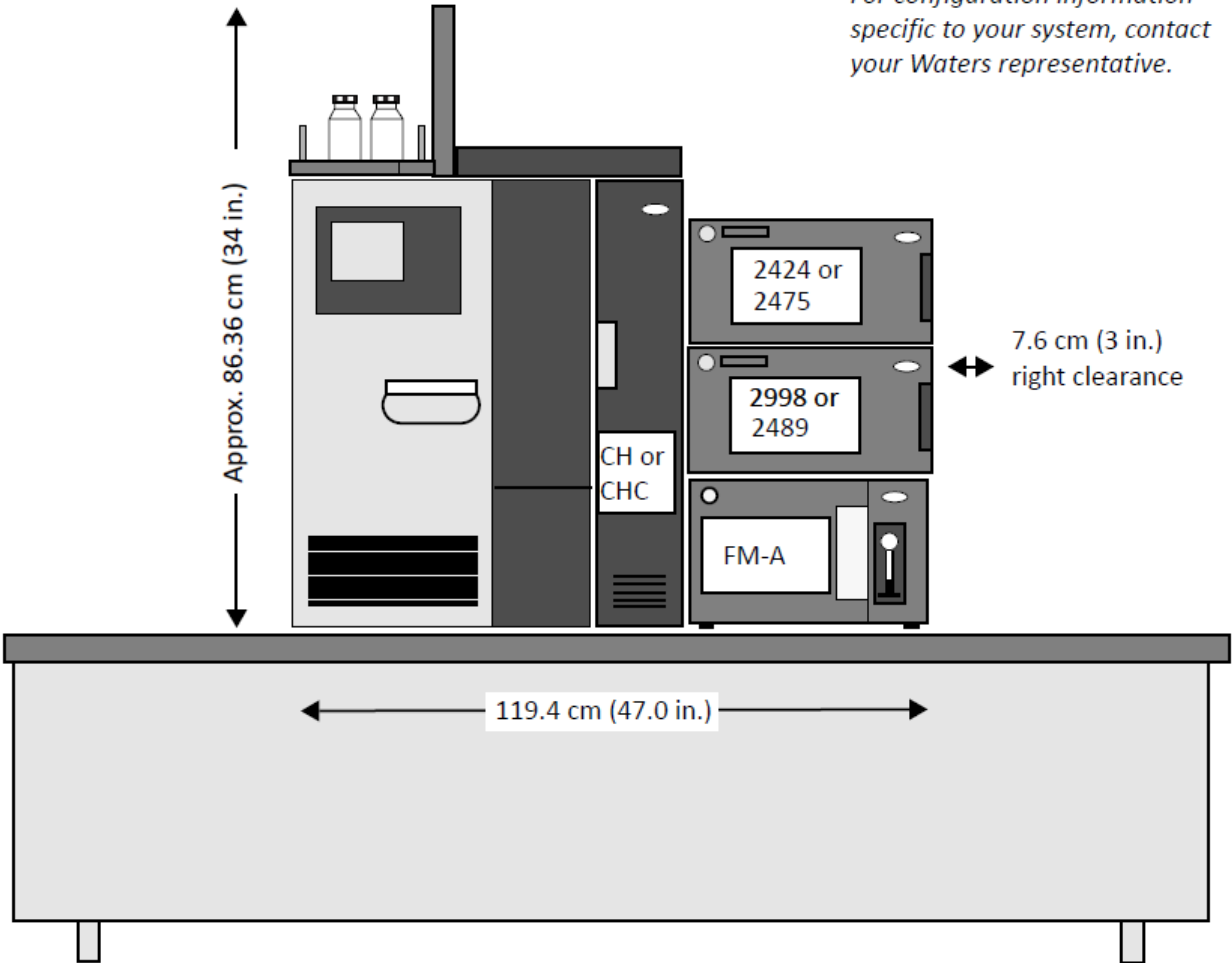


Figure 2 – Example configuration with WFM-A and HPLC detector (front view)

*This layout is an example only.
For configuration information
specific to your system, contact
your Waters representative.*

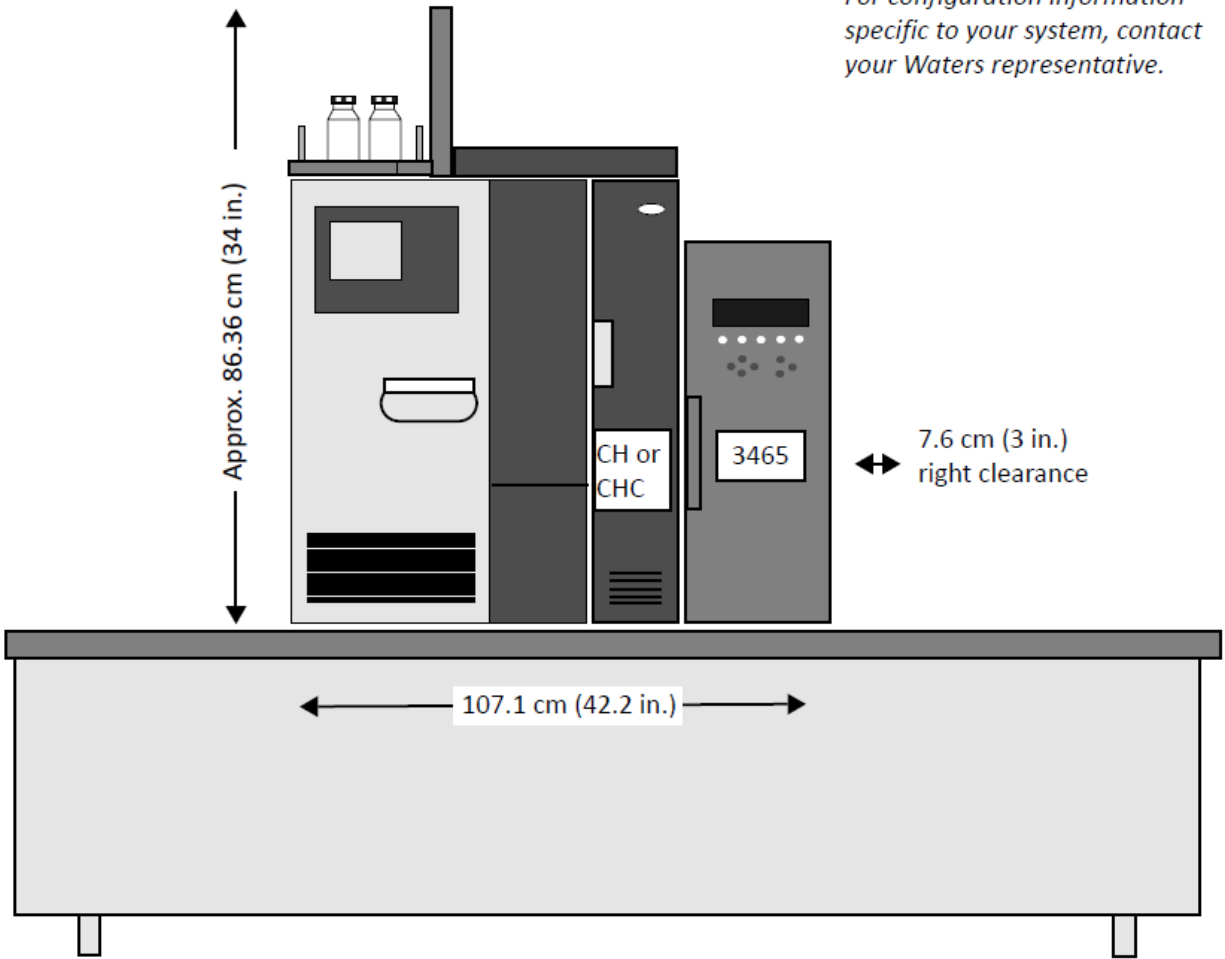


Figure 3 - Example configuration with 3465 detector (front view)

*This layout is an example only.
For configuration information
specific to your system, contact
your Waters representative.*

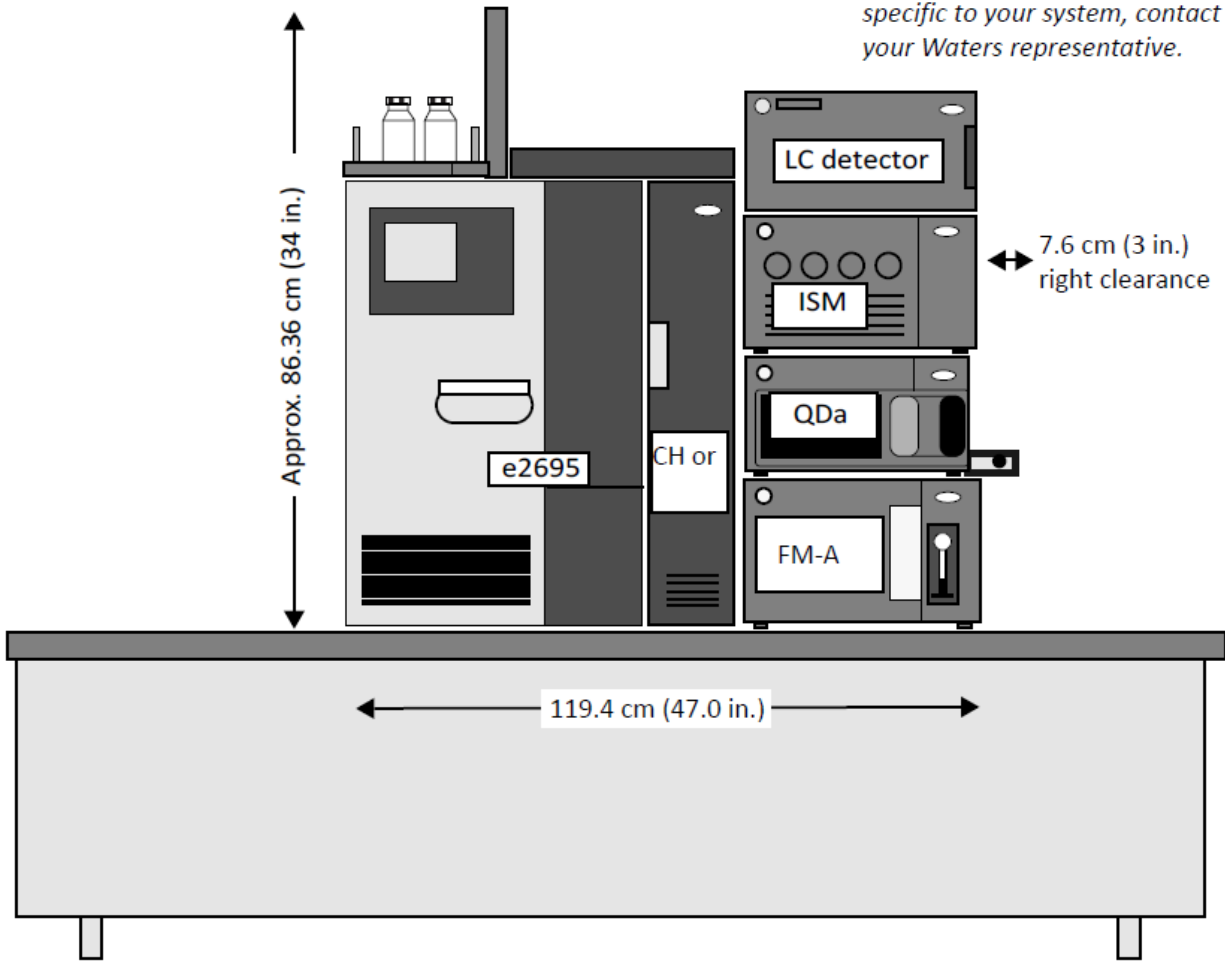


Figure 4 – Example configuration with WFM-A, QDa, and ISM (front view)

*This layout is an example only.
For configuration information
specific to your system, contact
your Waters representative.*

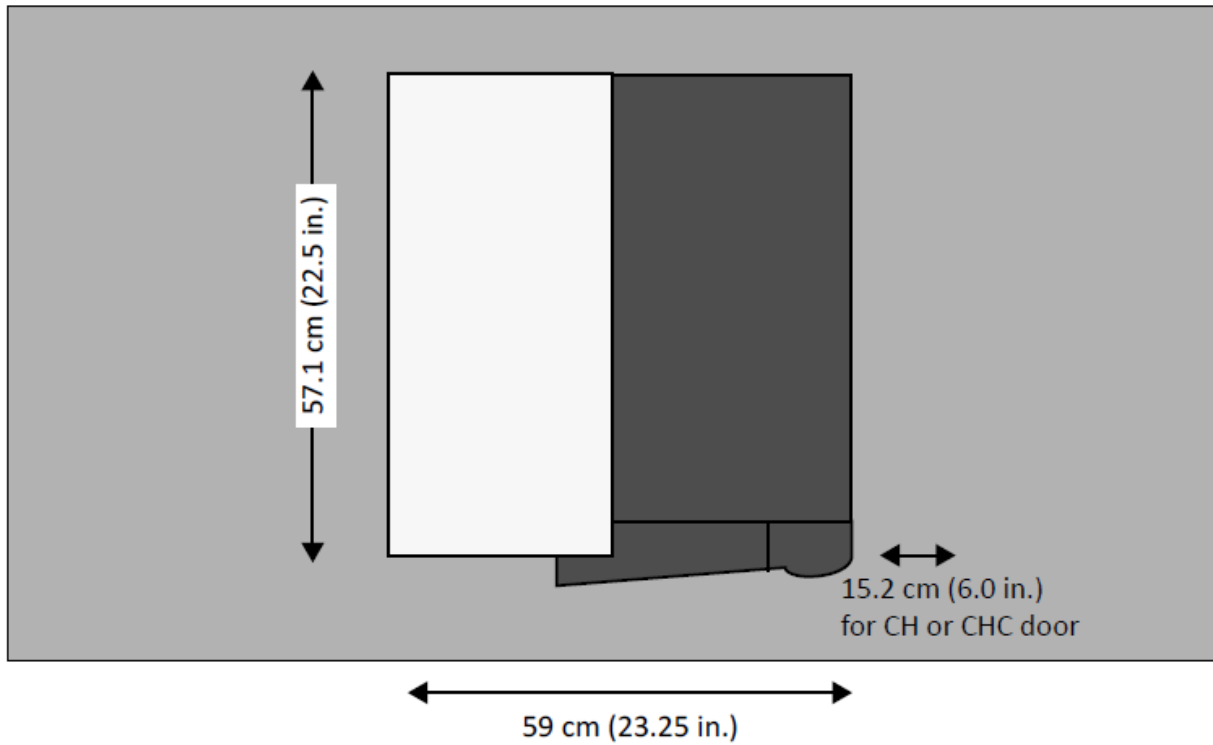


Figure 5 – Example configuration with CH or CHC (top view)

Component dimensions

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



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 MS requirements, refer to the appropriate mass spectrometer site preparation guide.

Table 2: Component dimensions and weights

System component	Width	Depth	Height	Weight
2414	34.3 cm (13.5 in)	61.0 cm (24.0 in)	20.8 cm (8.2 in)	16.3 kg (36.0 lbs)
2424				18.6 kg (41.0 lbs)
2432				12.3 kg (27.2 lbs)
2475				18.1 kg (40.0 lbs)
2489				13.8 kg (30.5 lbs)
2998				14.5 kg (32.0 lbs)
3465	22.0 cm (8.7 in)	43.0 cm (16.9 in)	44.0 cm (17.3 in)	20.0 kg (44.1 lbs) 14.4 kg (32.0 lbs) without flow cell and column
CH or CHC	15.2 cm (6 in)	57.2 cm (22.5 in)	55.2 cm (21.75 in)	7.7 kg (17 lbs)
e2695	45.7 (18.0 in.)	57.1 cm (22.5 in.)	57.1 cm (22.5 in.)	45.5 kg (100.0 lbs)
	58.4 cm (23.0 in.) with optional CH	64.8 cm (25.5 in.) with optional sample heater/cooler		59.1 kg (130.0 lbs) with optional sample heater/cooler and CH
FM-A	34.3 cm (13.5 in)	71.1 cm (28 in)	27.3 cm (10.75 in)	20.4 kg (45 lbs)
ISM	34.3 cm (13.5 in)	66.1 cm (26.0 in)	23.8 cm (9.38 in) with 2.2 cm (0.875 in) feet	24.9 kg (55 lb)
QDa	35.3 cm (13.9 in.)	65.0 cm (25.6 in.)	20.0 cm (7.9 in.)	26.4 kg (58.0 lbs)
		75.0 cm (29.5 in.) with integrated diaphragm backing pump		29.4 kg (65.0 lbs) with integrated diaphragm backing pump

System component	Width	Depth	Height	Weight
SQD	34.5 cm (13.8 in.)	65.5 cm (25.6 in.)	53.3 cm (20.8 in.)	58 kg (127.0 lbs)
SQD2	36.0 cm (14.2 in.)	74.1 cm (29.2 in.)	59.3 cm (23.4 in.)	80 kg (176.0 lbs)
Solvent tray (side mounted)	15.9 cm (6.25 in.)	63.5 cm (25 in.)	13.3 cm (5.25 in.)	10.9 kg (24 lb)
Solvent tray (top mounted)	34.3 cm (13.5 in.)	52.1 cm (20.5 in.)	12.7 cm (5.0 in.)	2.3 kg (5 lb)

Clearances

Ensure that the laboratory space provides sufficient clearance (working space) for all necessary components ([Table 3](#)).



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

Table 3: System clearances

System/component	Clearance
Customer's laboratory bench	• Vertical: 152 cm (5 ft)
Alliance system components Note: Refer to the appropriate mass spectrometer site preparation guide for additional requirements.	• Rear: 15.2 cm (6 in.) • Right: 7.6 cm (3 in.)
Solvent tray (top-mounted)	• Vertical: 25.4 cm (10 in.)

Verify space and load requirements

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



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

Have the following solvents available for the installation:

- Water
- Acetonitrile
- Methanol



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

- [Controlling Contamination in UltraPerformance LC/MS and HPLC/MS Systems](#) (715001307), located in the Waters Support Center
- The safety data sheets (SDSs) for your products

Verify solvent requirements

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



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



All solvent requirements met

Gas requirements

For the mass spectrometer



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

Gas for the 2424 ELS

Use air or nitrogen

The 2424 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.

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.

Verify gas requirements

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



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



All gas requirements met

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 must share a common ground. Use [Table 5](#) 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 a mass spectrometer

If your system includes a mass spectrometer, refer to its site preparation guide for specific power source requirements.

Power summary

See [Table 4](#) for a summary of component power requirements. For more information on power terminology, see "[Plug/receptacle types](#)".



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

Table 4: System power requirements

Component	Voltage/ frequency	Maximum power consumption
2414	100 to 240 VAC 50/60 Hz	145 VA
2424	100 to 240 VAC 50/60 Hz	200 VA
2432	100 to 240 VAC 50/60 Hz	160 VA
2475	100 to 240 VAC 50/60 Hz	280 VA
2489	100 to 240 VAC 50/60 Hz	195 VA
2998	100 to 240 VAC 50/60 Hz	195 VA
3465	100 to 240 VAC 50/60 Hz	260 VA
CH	100 to 240 VAC 50/60 Hz	200 VA
CHC	100 to 240 VAC 50/60 Hz	145 VA
e2695	100 to 240 VAC 50/60 Hz	950 VA
FM-A	90 to 264 VAC 47/63 Hz	400 VA
ISM	100 to 240 VAC 50/60 Hz	200 VA
QDa	Refer to the <i>QDa Detector Site Preparation Guide</i> (715002299).	
SQD	Refer to the <i>SQ Detector Site Preparation Guide</i> (715001306).	
SQD 2	Refer to the <i>SQ 2 Detector Site Preparation Guide</i> (715003254).	

Plug/receptacle types

Provide appropriate wall receptacles for the plug(s) that come with your system (see [Table 5](#)).




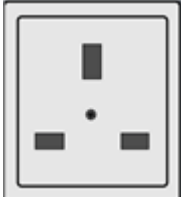



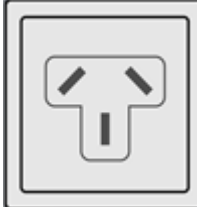







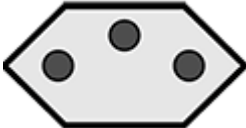


Notice: If you are uncertain which power cord is supplied for your region, contact your Waters representative.



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

Table 5: Power cords supplied by Waters

Region	Plug	Receptacle	Receptacle type
US/Canada			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

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



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



All power requirements met

Environmental requirements

Air quality

Ensure that the laboratory is not exposed to excessive dust.



Important: The laboratory environment must comply with pollution degree 2.

Humidity

Ensure that relative humidity of the laboratory is lower than 80%, non-condensing.

Air flow

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

Temperature

The ambient temperature in the laboratory 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.



Caution: Failure to operate in this range can compromise system performance and result in instrument failure.

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



Important: If your system includes a mass spectrometer, refer to its site preparation guide for specific 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 Alliance system with a mass spectrometer, ensure that the laboratory is located away from strong magnetic fields such as those generated by NMR systems or magnetic sector mass spectrometers.

Radio emissions

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



Caution: If use of any of these devices causes interference, discontinue using the interfering device.

Verify environmental requirements

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



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



All environmental requirements met

Waste collection requirements

Alliance 2695 systems use an open-architecture, gravity-driven drainage system that effectively collects and removes any solvent leaks and heater/cooler condensate. A drip tray collects and routes the solvent and condensate to waste.

A closed-architecture drainage system removes plunger seal and needle wash solvents to waste.



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

Waste container

Position a suitable waste container (Figure 6) below the bench top.

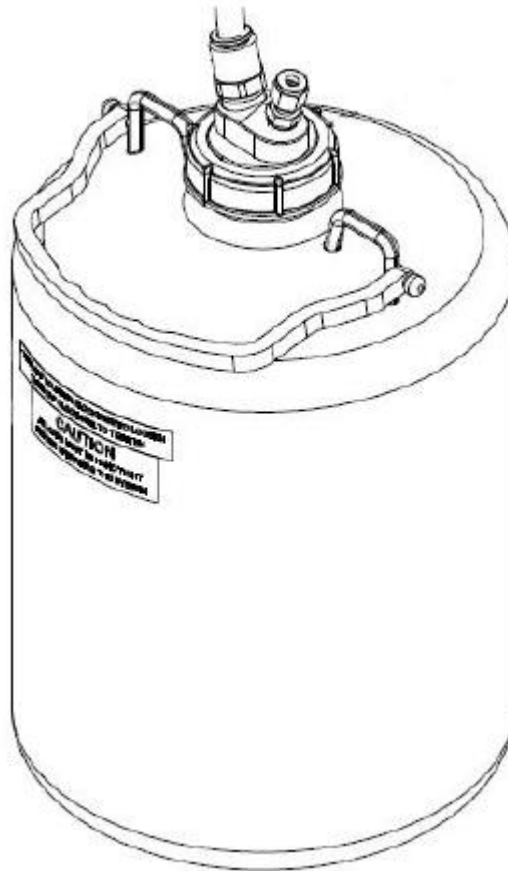


Figure 6 – Example waste container

Exhaust outlets



Important: Venting of the system is the sole responsibility of the customer.

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.

Exhaust outlet for systems with a mass spectrometer

If your system includes a mass spectrometer, refer to its site preparation guide for detailed pump and source exhaust outlet information.

Verify waste collection requirements

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



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



All waste collection requirements met

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 on site to begin your installation and cannot proceed because test samples are unavailable, the installation may be delayed. Waters may ask for reimbursement of costs incurred by the extra time required to complete the installation.



Important: 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

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



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



All test sample requirements met

Items you must supply

Supply the following items for the installation:

- Two solvent waste containers with a total capacity to handle a volume greater than or equal to that of the combined solvent bottles
- Six 1-liter solvent bottles
- Appropriate glassware for sample and solvent preparation
- Graduated measuring cylinders: 500 mL and 1000 mL
- 10-mL volumetric flask
- Nitrile gloves
- Lint-free tissue
- HPLC-grade or better acetonitrile, methanol, and 10 Megaohm-cm resistivity water
- Solvent filtration apparatus
- Waters-supplied test samples



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



Caution: Ensure that 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.

Verify items you must supply requirements

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



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



All items we (the customer) must supply are available

Computer requirements

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



Important: Refer to the [Release Notes](#) for additional information and restrictions. The Release Notes contain important information about known and fixed issues, installation, and configuration instructions, and recommendations for re-qualification or revalidation.

Verify computer requirements

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



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



All computer requirements met

Confirmation



Important: It is essential to prepare the site correctly and complete the checklist accurately. If a Waters service engineer arrives on site 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.

Contact Waters if you have questions about preparing your site.

<input type="checkbox"/>	I confirm that all required supplies are now available.
<input type="checkbox"/>	<p>I confirm that all requirements are met and all Requirement check boxes are completed.</p> <ol style="list-style-type: none"> 1. All relocation requirements met, page 8 2. All space and load requirements met, page 10 3. All solvent requirements met, page 17 4. All gas requirements met, page 18 5. All power requirements met, page 19 6. All environmental requirements met, page 23 7. All waste collection requirements met, page 25 8. All test sample requirements met, page 27 9. All items we (the customer) must supply are available, page 28 10. All computer requirements met, page 29
<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>Indicate availability (check one):</p> <ul style="list-style-type: none"> • During the entire installation. • During part of the installation: approximately ____% of the time. <p>Important: If the designated person cannot be present at the installation, notify Waters so that we can reschedule the installation for a more convenient time.</p>
Signed: _____	

Summary

Complete the summary table 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.