ACCQPrep® SFC

Pre-Installation Guide



TELEDYNE ISCO
Everywhereyoulook™

Part #60-5262-024
Revision A November, 2022

Use and Disclosure of Data: Information contained herein is classified as EAR99 under the U.S. Export Administration Regulations. Export, reexport or diversion contrary to U.S. law is prohibited.

© 2022 Teledyne Instruments Inc.

All rights reserved. Reproduction, adaptation, or translation without permission is prohibited, except as allowed under copyright laws.

Updated Information

The information contained in this document is subject to change without notice.

Contact Information

Phone (USA, Canada, Mexico):	(800) 228-4373
Phone (Outside North America):	(402) 464-0231
Fax:	(402) 465-3022
Mailing Address:	PO Box 82531, Lincoln, NE 68501-2531
Customer Service Contact:	https://www.teledyneisco.com/chromatography/contact-us-customer-service
Technical Service Contact:	https://www.teledyneisco.com/chromatography/contact-us-technical-service

Teledyne ISCO welcomes suggestions that would improve the information presented in this manual or enhance the operation of the equipment itself.

ACCQ*Prep*® SFC Pre-Installation Guide

1.1 Purpose

To ensure that the customer's Teledyne ISCO ACCQ*Prep* SFC system will be successfully installed, careful evaluation and preparation of the installation site is necessary.

This document lists installation and site preparation requirements for the ACCQ*Prep* SFC system, as well as for compatible components and accessories.

1.2 Responsibilities

The customer is responsible for ensuring that the facility provides the specific installation requirements of the ACCQ*Prep* SFC system and its components and accessories. These requirements include such items as laboratory bench space, room temperature and humidity, electrical power, exhaust ventilation, and others detailed in this document.

The customer is also responsible for supplies listed in this guide as required for operational validation of the system (with the exception of those identified as "included" with the system).

1.3 Procedure

Please review the information in this guide and then complete the "ACCQ*Prep* SFC Pre-Installation Checklist" form found at Section 2.1 prior to scheduling your installation date.

Submit the completed form via email to Teledyne ISCO Technical Service (isco.service@teledyne.com) and include the installer and sales representative associated with the Purchase Order.

You may contact Teledyne ISCO's Technical Service team at https://www.teledyneisco.com/chromatography/contact-us-technical-service.

Also, please review the documents listed in Table 1-1.

Table 1-1 Supporting Documents

Document	Part Number	Contents	Availability
ACCQPrep SFC Important Information	69-5263-088	safety information, hazard cautions and warnings, general information, certifications.	A paper copy is included with the system; also at www.teledynesisco.com
ACCQPrep SFC Installation Guide	69-5263-098	unpacking and installation instructions	www.teledynesisco.com
ACCQPrep SFC Operation Guide	69-5263-074	the user manual: configuration, use, and maintenance instructions	www.teledynesisco.com

1.4 Receiving Considerations for the ACCQ*Prep* SFC system

The facility must be able to accept delivery of pallets having a maximum dimension of 121.9 x 81.3 x 106.7 cm (48 x 32 x 42 in) (L x W x H).

The ACCQ*Prep* SFC system ships in two wood crates with dimensions of 86.4 x 68.6 x 73.7 cm (34 x 27 x 29 in) (L x W x H). The control box is packaged in its own crate, while the oven box and pump boxes are packaged in a shared crate. Additionally, any accessories such as the AutoSampler, chiller, vapor enclosure, racks, and installation kits are boxed and strapped to the crates or to a separate pallet with dimensions of 121.9 x 81.3 x 106.7 (48 x 32 x 42 in) (L x W x H).

NOTE

A power screwdriver is recommended for unpacking the system. A #2 square drive bit is required to unpackage the instrument and should be provided by the installer.

Figure 1-1 ACCQPrep SFC Shipping Crates and Packaging





1.5 Space and Weight Requirements

Review the appropriate system specifications according to the system configuration that will be installed. Ensure the work surface where the ACCQ*Prep* SFC system and other system components (AutoSampler, Vapor Enclosure, CO_2 chiller, etc.) will be placed provides:

- A clear area, sufficient for the combined system dimensions.
- The capability of supporting the total combined system weight.
- Unobstructed access to the ACCQ*Prep* and other system component power switches, circuit breakers, and power cord connections on the rear panel.
- Allowance for firm and even placement of the unit.

Table 1-2 ACCQ*Prep* SFC System

Dimensions	41 x 56 x 73 cm (16.25 x 22.25 x 28.75 in) (W x D x H)
Weight	38.2 kg (84.5 lbs)

Table 1-3 ACCQ*Prep* SFC System With Autosampler and/or Enclosure

ACCQ*Prep* SFC AutoSampler AS 2x2 Dimensions	34 x 56 x 66 cm (13.5 X 22.25 X 26 in) (W x D x H)
ACCQ*Prep* SFC AutoSampler AS 2x2 with Vapor Enclosure Dimensions	40 x 69 x 76 cm (15.75 x 27.25 X 30 in) (W x D x H)
ACCQ*Prep* SFC AutoSampler AS 4x2 Dimensions	58 x 56 x 66 cm (23 x 22.25 X 26 in) (W x D x H)
ACCQ*Prep* SFC AutoSampler AS 4x2 with Vapor Enclosure Dimensions	64 x 69 x 76 cm (25.25 x 27.25 x 30 in) (W x D x H)
AutoSampler AS 2x2 Weight	14.1 kg (31.1 lbs)
AutoSampler AS 4x2 Weight	19.1 kg (42.2 lbs)
AS 2x2 Vapor Enclosure Weight	13.7 kg (30.2 lbs)
AS 4x2 Vapor Enclosure Weight	15.8 kg (34.8 lbs)

Table 1-4 CO_2 Chiller (Optional)	
Dimensions	22.1 x 54.1 x 64.5 cm (8.7 x 21.3 x 25.4 in) (W x D x H)
Weight	25.6 kg (56.4 lbs)

1.6 Environment Requirements

Table 1-5 ACCQ*Prep* SFC System Environment[a]	
Ambient Temperature Range	20 to 40 °C
Humidity	Recommended maximum 90% relative humidity at 20 to 40 °C (non-condensing)
Air Quality	Ensure that the laboratory is not exposed to excessive dust.
Air Flow	Ensure that air flow from heating or air-conditioning vents is not directed at the system or any system modules.
Pollution Degree	The laboratory environment must comply with pollution degree 2 (Normally only nonconductive pollution occurs. Temporary conductivity caused by condensation is to be expected. Examples include laboratories or test stations)
Maximum Altitude	2000 m
Note: Always maintain adequate ventilation to control vapors.	

a. Environmental requirements for any optional modules are the same as those for the ACCQ*Prep* SFC system, except that the CO_2 chiller has a ambient temperature range of 5° to 35°C (41° to 95°F); and relative humidity maximum of 80%, noncondensing).

1.7 Electrical Requirements

1.7.1 Electrical Safety

Follow all local electrical safety requirements in preparing your laboratory.

Provide a dedicated, earthed (grounded) power source for all system components. The receptacles from this power source must be accessible to the system components, and they must share a common ground.

Provide appropriate wall receptacles for the plug(s) that come with your system. (See Table 1-7.)

Provide clear access to the combination power switch and circuit breaker located on the rear panel of the system. (The rear panel-mounted circuit breaker is the power disconnect device.)

Locate the system away from potential spark sources, such as equipment with mechanical thermostats or line level power switches.

Provide an anti-static floor mat. Place it on the floor where the operator stands.

NOTE

If you are uncertain which power cord is supplied for your region, contact your Teledyne ISCO representative.

1.7.2 Electrical Specifications

Table 1-6 ACCQ*Prep* SFC System Electrical Requirements	
Power	120(+-10%) or 240 (+-10%) VAC, 50/60 Hz, 300 VA
Outlets and Plug Type	Requires two total outlets for NEMA 5-15P (US); BS 1363 (UK1-13P); CEE 7/7 (EU); IRAM 2073 (AR1-10P); AS/NZS 3112 (AU1-10P); or GB 2009.1 (CH1-10P) plug (cord shipped depends on location).
Power Consumption	1350 (average at 200 mL/min system flow); 650 watt (average at 80 mL/min system flow)

Table 1-7 Plug and Receptacle Types

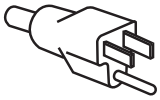
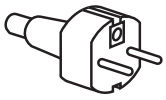
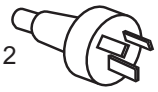
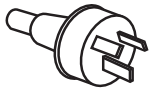
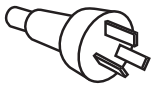
Region Connector Type	Plug	Receptacle
US/Canada NEMA 5-15		
UK BS 1363		
Europe CEE 7		
Australia AS/NZS 3112		
China CH1-10P		
Argentina IRAM 2073		

Table 1-8 CO_2 Chiller (Optional)	
Voltage	120 VAC, 60 Hz, 12 A 240 VAC, 50 Hz, 12 A
Outlets and Plug Type	120 VAC chiller requires one additional outlet for NEMA 5-15P plug (US). 240 VAC chiller requires one additional outlet for either a BS 1363 (UK1-13P), or CEE 7/7 (EU) plug.

1.8 Carbon Dioxide Requirements

1.8.1 CO_2 Detectors

The customer **must** provide suitable CO_2 detectors for the location where the system is installed. Additionally, appropriate power sources and related safety equipment (alarms or warning strobes, for example) must be installed to meet customer site requirement needs.

1.8.2 Carbon Dioxide (CO_2) Supply

Table 1-9 ACCQ*Prep* SFC System CO_2 Supply

Item	Requirement
Purity Required	Liquid CO_2 with a purity of 99.97% (food-grade) or better
Source Type	Liquid CO_2 may be provided from either a cylinder with dip (siphon) tube, cryogenic cylinder with a booster pump system or a bulk supply
Source Location	The CO_2 source must be placed close enough to chiller and/or CO_2 source for connection using the tubing and fittings provided with installation kit to be sufficient. Refer to Section 1.8.3 "CO_2 Supply Connection Fittings, Filter and Tubing". To avoid the low CO_2 inlet pressure caused by cold tanks, ensure that • the laboratory temperature is as close as possible to the recommended 19 to 22 °C (66 to 72 °F) range • tanks stored in cold areas have been adequately warmed to ambient temperature.
Inlet Pressure	Pressure must be between 51 to 150 bar (735 to 2175 psi)
Maximum Inlet Temperature[a]	10 °C if pressure is below 120 bar (1740 psi)
	20 °C if supply pressure is above 120 bar (1740 psi)
Optional CO_2 Chiller[a]	The chiller contains a coil to pre-chill the CO_2 and a recirculating pump to cool the CO_2 pump heads. An on-site trial demonstration includes the CO_2 chiller, after which the customer can purchase a chiller from Teledyne ISCO, or provide on their own. If CO_2 inlet pressures are sufficiently high, a chiller is not required.

a. If minimum supply pressure and temperature are not met, maximum CO_2 flow rate of the system may be limited.

1.8.3 CO_2 Supply Connection Fittings, Filter and Tubing

The Carbon Dioxide Supply Kit that accompanies the ACCQ*Prep* SFC system includes the necessary fittings to connect to up to four high-pressure CO_2 cylinders[1], or any CO_2 supply (meeting the requirements of Table 1-9) that has:

- 1/8 or 1/4 inch OD bare tubing
- 1/8 or 1/4 inch OD tubing with Swagelok® nut and ferrule
- 1/8 or 1/4 inch Swagelok port, or
- 1/8 or 1/4 inch fittings with nut and ferrule.

Diagrams of examples of different CO_2 supply set-ups are shown in to Figures 1-2, 1-3, and 1-4.

1. Male-threaded CGA320 fittings are standard in the U.S. If CGA320 fittings are not used on gas cylinders in your location, then the purchaser must procure the necessary adapter for their area to connect to the 1/4" NPT or tubing provided with our system.

Figure 1-2

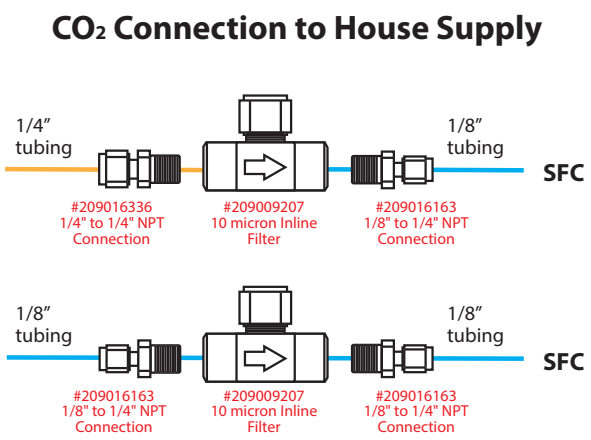


Figure 1-3

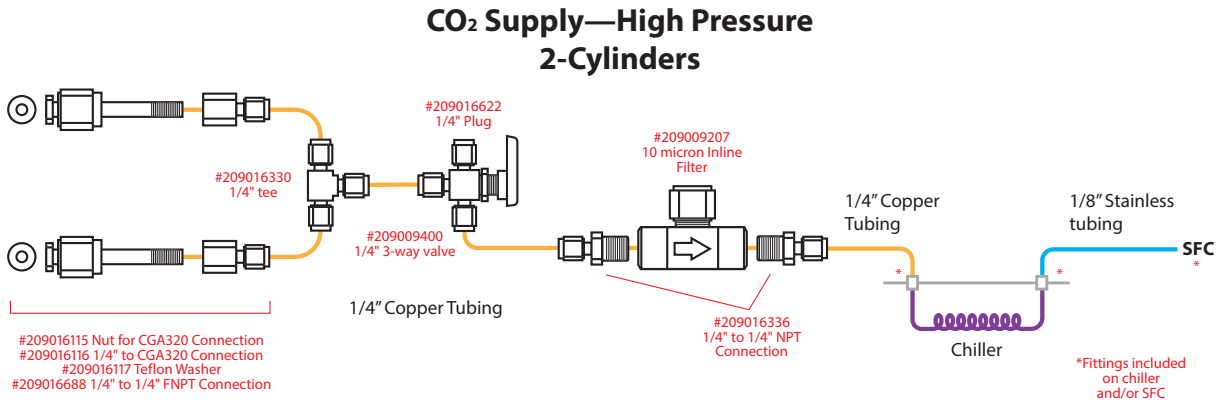


Figure 1-4

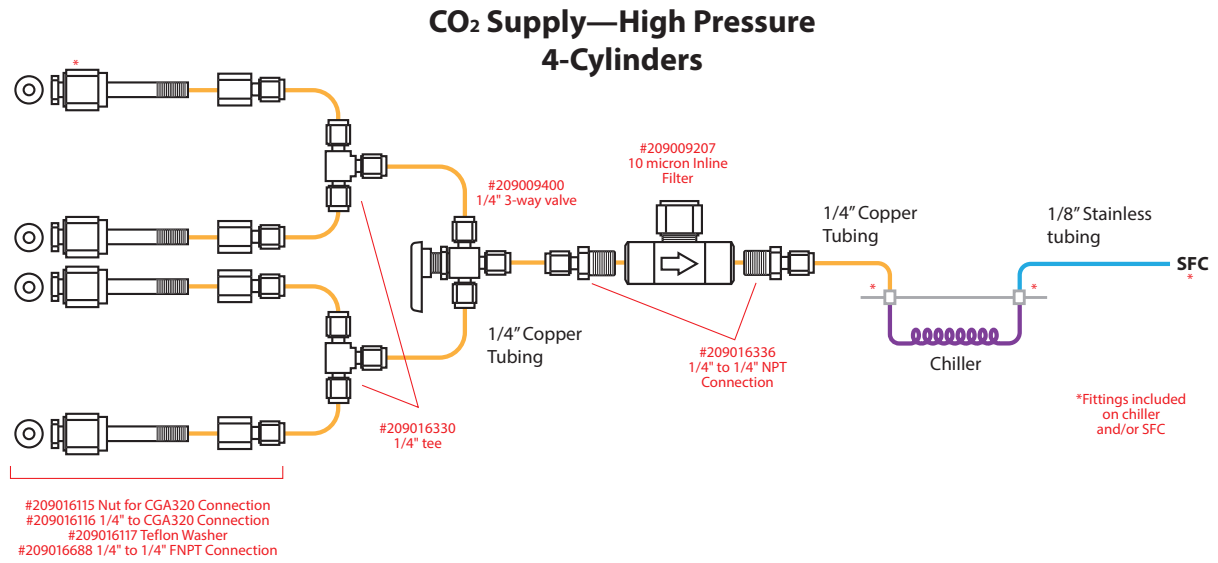


Table 1-10 Carbon Dioxide (CO_2) Supply Kit Contents (Included with ACCQ*Prep* SFC)	
Item	**Description**
Filter	Filter for CO_2 supply
CO_2 Supply to Chiller (or system) Tubing	50 ft of 1/4 inch OD copper tubing (and all necessary fittings) to connect the ACCQPrep SFC system to a CO_2 source (or for a configuration including the optional CO_2 chiller to connect the CO_2 source to the chiller tubing coil)
Chiller to System Tubing	10 ft of 1/8 inch OD stainless steel tubing (and all necessary fittings) to connect the chiller tubing coil to the ACCQPrep SFC system.
	20 ft of 1/4 inch OD silicon tubing, insulation (and all necessary fittings) to connect the CO_2 pump heads to and from the recirculating chiller pump
ACCQ*Prep* SFC Exhaust Tubing	20 ft of 1/2 inch silicone system exhaust tubing (and all necessary fittings) to connect to the ACCQ*Prep* SFC system.

1.9 Ventilation/Exhaust Requirements

1.9.1 System Ventilation and Exhaust

Follow these guidelines when connecting exhaust tubing:

- The system exhaust outlet should only be connected to an exhaust source with negative pressure such as
  - a fume cabinet,
  - an exhaust duct, or
  - to an exhaust duct through the ACCQ*Prep* SFC AutoSampler Vapor Enclosure (if installed).
- The connection should be made using the supplied exhaust tubing.
- The use of longer runs of exhaust tubing, tubing not supplied with the system, or exhaust tubing that is kinked or obstructed may impact system performance.

1.9.2 AutoSampler Enclosure Connection Duct, Fittings and Adapters

When using an AutoSampler Vapor Enclosure (605267015 or 605267016), connect the enclosure to the exhaust system using the components in the AutoSampler Vapor Enclosure Accessory Kit.

Table 1-11 AutoSampler Vapor Enclosure Accessory Kit	
Item	**Description**
Duct[a]	10 ft of 4 inch exhaust duct (to connect the vapor enclosure to a negative pressure exhaust with at least .05" (1.3mm) of water vacuum at the duct connection). After installation, the user should verify that it meets their safety requirements.
Fittings and Adapters	4 inch duct-coupler and clamps
	4 inch duct adapter for AutoSampler Vapor Enclosure

a. When connecting to an exhaust duct that is not 4 inches (102 mm) in diameter, a customer supplied adapter is required.

1.10 Required Installation and Operational Verification Supplies

1.10.1 Customer Provided Supplies Required

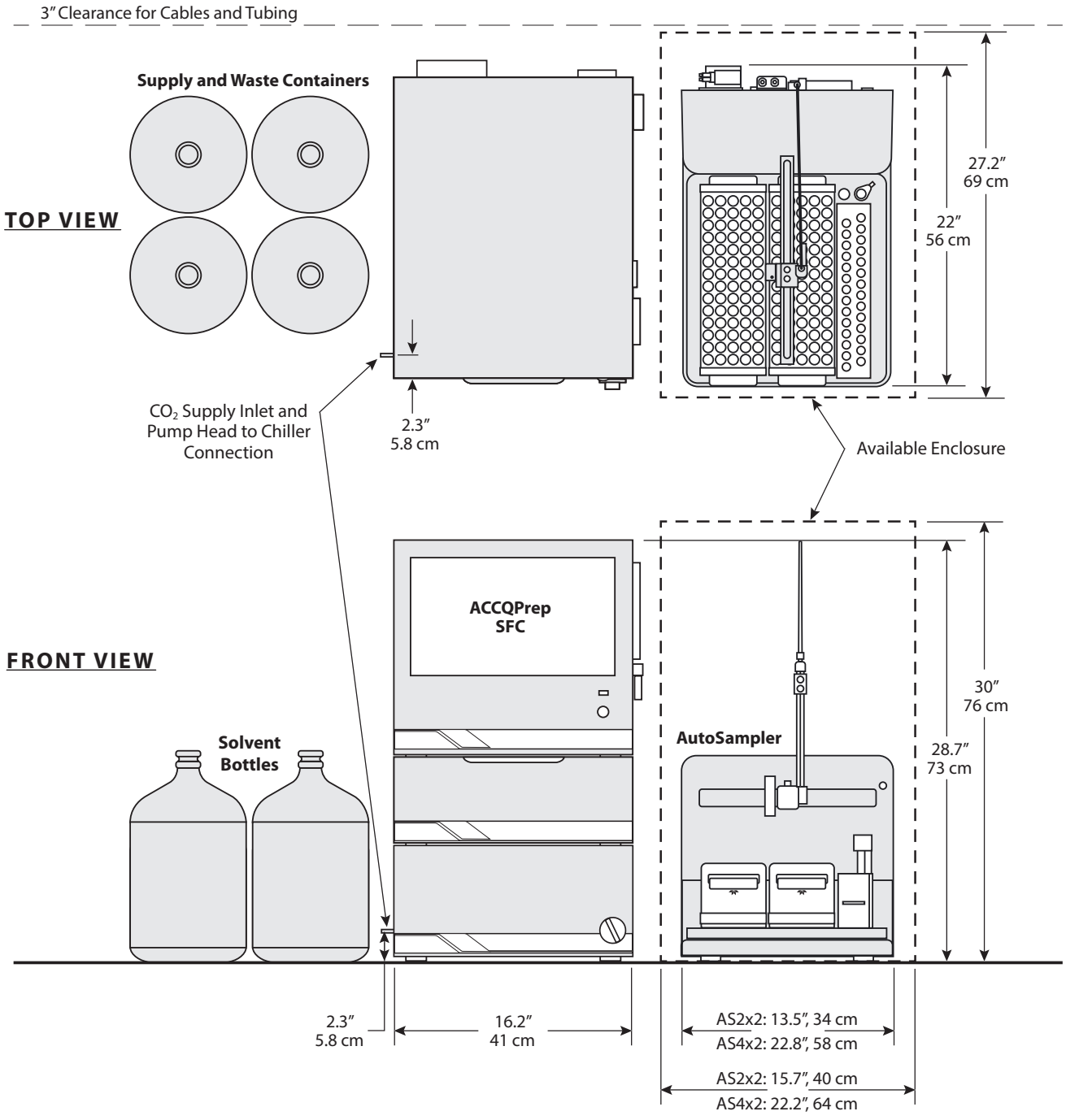
Table 1-12 Customer Provided Supplies Required	
Item	**Requirement**
Liquid CO_2	Per requirements in Section 1.8.2 "Carbon Dioxide (CO_2) Supply")
Chiller Reservoir Fluid (if optional CO_2 chiller is being installed)	7 L of 25% ethylene glycol/water **Note:** Do not use automotive antifreeze with additives; hard tap water; deionized water; concentrations of acids or bases; solutions of halides or sulfur; bleach; solutions of chromates or chromium salts; glycerine; or syltherm fluids.
Solvents	Methanol: 4 L bottle or larger of ACS grade or higher (needed for system verification procedure)
	Any additional solvents that will be used on the system
Glassware and other containers	Four (4) or up to eight (8) bottles of any size with GL-45 caps for fraction collection via the fractionation valve
	Waste container having a minimum of 4 L capacity, capable of being vented to exhaust, and meeting OSHA and/or any other applicable regulations
	Any additional secondary containment for solvent and waste containers as required
Glassware and other containers, If an optional Autosampler is installed	**Sample Vials for Sample Rack-Size Ordered**
	13 mm test tubes
	28 mm scintillation vials
	125 mL square bottles
	Test Tubes/Bottles for Fraction Rack-Size Ordered
	18 x 150 mm (standard in US and Asia)
	16 x 150/160 mm (standard in Europe)
Columns	Redi*Sep*® Prep guard holder (69-2203-889) (optional)
	Redi*Sep*® Prep guard cartridge (to match column chemistry)
	Any additional Redi*Sep* Prep or other preparative columns (2 to 3 cm diameter up to 250 mm in length) to be installed

1.10.2 Supplies Provided With the ACCQ*Prep* SFC System

Table 1-13 Supplies Provided With the ACCQ*Prep* SFC System	
Item	**Requirement**
Caps for Fractionation Valve Bottles:	4 provided with instrument (additional for purchase (PN: 60-5235-051))
Tubing and fittings to connect up to six (6) columns to the system.	Included with instrument.
Column	20 x 150 mm Silica Redi*Sep*® Prep Column
System Verification Kit[a]	ACCQ*Prep* SFC Verification Kit (PN: 60-5269-003)

a. Refer to the ACCQ*Prep* SFC Validation Instruction (PN: 69-5263-097).

Figure 1-5 Front and top views of system configurations with AutoSamplers and/or Vapor Enclosures.



2.1 ACCQ*Prep* SFC Pre-Installation Checklist Instructions

The completion of this form ensures that you have satisfied all pre-installation requirements. Failure to meet one or more of the pre-installation requirements may prevent your instrument from operating properly. If a Field Service Engineer determines during installation that one or more of the pre-installation requirements have not been met, the Field Service Engineer reserves the right to delay installation until all requirements have been satisfied. Additional time and travel costs required will be billed at the prevailing service rates to the customer's account. If you have any questions regarding these requirements, please contact Teledyne ISCO Customer Support.

Installation of your Teledyne ISCO ACCQ*Prep* SFC system, components, and accessories cannot be scheduled until the following form has been completed and submitted via email to Teledyne ISCO Technical Service (isco.service@teledyne.com), and to the installer and sales representative associated with the Purchase Order.

- Complete the following form using "YES" and "NO" responses where indicated. When an item is not applicable to the installation, enter "N/A". If it is necessary to explain why an item was answered "NO" or "N/A", use the respective comments section to provide explanation. For additional comment space, use the "Comments" section at the end of the form.
- Complete additional requests (such as quantity or identification of system type) when requested.
- Submit the completed form via email to Teledyne ISCO Technical Service (isco.service@teledyne.com) and include the installer and sales representative associated with the Purchase Order.

2.2 ACCQPrep SFC Pre-Installation Checklist Form

Receiving Considerations and System Space and Weight Requirement	**Y/N**
The facility is able to accept deliveries of pallets having a maximum dimension of 121.9 x 81.3 x 106.7 cm (48 x 32 x 42 in) (L x W x H).	
Installation location meets the ACCQ*Prep* SFC system (and any optional modules) space and weight requirements set forth in Section 1.5.	
Installation location meets the ACCQ*Prep* SFC system (and any optional modules) environmental requirements set forth in Section 1.6.	

Electrical Requirements		**Y/N**
Electrical requirements as set forth in Table 1-6 for the system and any additional components are met		
A dedicated power source sharing a common ground is provided for and accessible to the system and all components		
#	How many appropriate electrical outlet types for the system and all components and accessories are being provided (refer to Table1-7)?	

CO_2 Requirements		**Y/N**
Installation location will have suitable CO_2 detectors and meets the safety requirements set forth in Section 1.8.1.		
A source of liquid CO_2 meeting the requirements set forth in Table 1-9 will be provided from (select one):		
	☐ a High-pressure cylinder with dip (siphon) tube; ☐ a Cryogenic cylinder with a booster pump system	
The CO_2 source is within a distance that allows use of the gas plumbing supplies provided with the installation kit to connect the ACCQPrep SFC system and/or CO_2 chiller to the CO_2 source. (If CGA320 fittings are not used, refer to Section1.8.3).		
Record the planned CO_2 inlet pressure (between 51-150 bar (735-2150 psi)		
Inlet Temperature will be regulated by (select one):		
	☐ a CO_2 chiller purchased from Teledyne ISCO; ☐ no chiller (a maximum of 20 °C if pressure is above 120 bar (1740 psi)) ☐ a customer-provided chiller to cool the pump heads and CO_2 to insure a maximum of 10 °C if pressure is below 120 bar (1740 psi)	

Ventilation/Exhaust Requirements		**Y/N**
Which exhaust tubing to an exhaust source with negative pressure (select one) will the ACCQ*Prep* SFC system be connected to using the supplied exhaust tubing? (select one)		
	☐ Fume Cabinet; ☐ Exhaust Duct; ☐ AutoSampler Vapor Enclosure connected to an exhaust duct.	
The ACCQ*Prep* SFC system is within a distance from the exhaust ventilation outlet that allows use of the exhaust duct, tubing and fittings included with the system installation kit		

Customer Provided Supplies Required for Installation and Operational Verification	
All supplies indicated in Table 1-12 will be provided by the customer.	

Additional Comments

I have verified that the site requirements for space, electrical, exhaust, CO_2 supply and all other necessary requirements for the configuration ordered, have been met for the purpose of the installation of the equipment. By signing below, I certify that all the above-mentioned criteria have been met. I also understand that failure to comply with this checklist may result in unnecessary delays and/or charges. Additional charges may including the expense for rescheduling the installation, mileage, airfare, hotel, etc. and will be invoiced in addition to any previous agreed to installation charges.

Your signature below indicates that all pre-installation requirements listed in this guide and indicated on the checklist above (Section 2.1) have been met.	
I have read and understood the *Important Information* (P/N 69-5263-088) and the *Installation Guide* (P/N 69-5263-098) documents, as well as safety warnings and other important information contained in this document.	

Print Name & Title	Signature	Date

Return this completed and signed checklist to Teledyne ISCO Technical Service (isco.service@teledyne.com) and include the installer and sales representative associated with the Purchase Order.

ACCQ*Prep* SFC Customer Contact Information			
Contact Name and Title:			
Company Name:			
Teledyne ISCO Sales Order Number:			
Address:			
City:	**State:**	**Postal Code:**	
Telephone (extension):	**Email:**		