

HAPSITE® CDT



Operating Manual and Software

The HAPSITE CDT Operating Manual can be found on the INFICON website in the Downloads section of the HAPSITE CDT product page (<https://www.inficon.com/en/products/chemical-detection-and-utility-monitoring/hapsite-cdt>).

The HAPSITE CDT software and CDT IQ laptop software can be found on the INFICON website under Service & Support > Download Software (<https://www.inficon.com/en/service-and-support/download-software>).

Safety Information

All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end user of the product.

Misuse of HAPSITE CDT can damage the instrument and may cause bodily harm. The safety messages in this document and in the Operating Manual are provided to protect the user, as well as to optimize HAPSITE CDT performance. Before operating HAPSITE CDT, the user must read and understand all safety messages and take adequate precautions to mitigate hazards or equipment damage.

Getting Started

Recommended Operating Conditions

HAPSITE CDT is a portable gas chromatograph/mass spectrometer (GC/ MS) designed for remote operation. It is recommended that operating temperatures be within 0–35°C and with less than 95% relative humidity.

Space and Venting Requirements

During portable operation, HAPSITE CDT only requires the space of the exterior footprint of the instrument, which occupies a space of 50.6 cm x 51.4 cm x 19.3 cm.

If HAPSITE CDT is being run off external power and is venting exhaust with tubing, allow an additional 15 cm (6 in.) of clearance on either side of the instrument. When operating HAPSITE CDT attached to the Service Module (SM), allow for clearance of the SM vents.

HAPSITE CDT is capable of external venting. This feature allows for less downtime between analyses and only requires clearance and airflow above and below the instrument, which can be obtained by using the handle as a support and positioning HAPSITE CDT at an angle.

Power Requirements

HAPSITE CDT uses a power supply input of 100–240 V (AC) $\pm$ 10%, 47–63 Hz and a power supply output of 24 V (DC) at 250 W. The power requirement for HAPSITE CDT is 24 V (DC) at 200 W.

Computer Hardware Requirements

The following is the minimum recommended laptop computer system for communication with one HAPSITE CDT:

Component	Requirement
Processor	Intel® Core™ i3
RAM	8 GB or greater
Storage	10 GB
Display size	14 in.
Display resolution	1920 x 1080 pixels
Network	Ethernet or wireless
Operating system	Windows 10, 11

Network Preparation

If HAPSITE CDT will be connected to a local area network (LAN) using a static IP address, the HAPSITE CDT host name and static IP address must be assigned by the LAN administrator.

It is not necessary for a LAN administrator to set up the HAPSITE CDT hostname and static IP address when Dynamic Host Configuration Protocol (DHCP) is used to assign the HAPSITE CDT IP address.

Basic Assembly

Protective Coverings Removal

- 1 Remove the protective shipping caps from the HAPSITE CDT external carrier gas and exhaust ports.



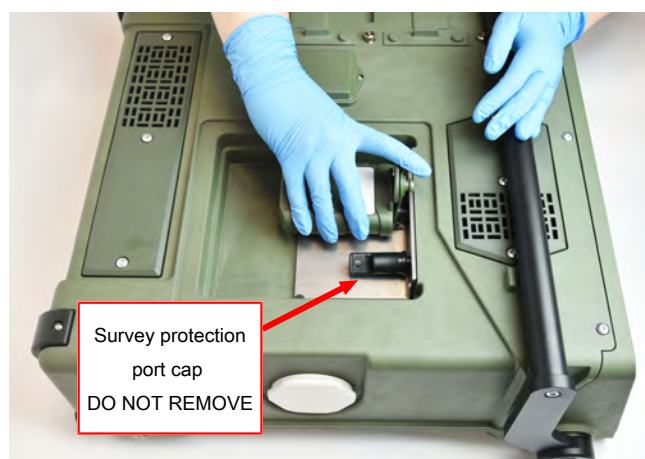
- 2 Remove the protective shipping caps from the HAPSITE CDT Ethernet, communication, and power ports.



- 3 Remove the yellow protective loop cartridge. Slide the loop cartridge straight backward from the inlet until the cartridge releases from the inlet and guide pins.



- 4 Install the sample cartridge. Align the cartridge using the guide pins on the accessory deck of HAPSITE CDT. Make sure the cartridge is flat against the accessory deck. Slide the cartridge toward the inlet until the cartridge clicks into place.



CAUTION

Leave the survey protection port cap installed. Removal of this cap will cause a leak to the GC during analysis.

Power Connection

HAPSITE CDT uses a power supply that accepts 100–240 V (AC) input and provides 24 V (DC) to the instrument.

CAUTION

Using an alternative power supply voids the warranty.

CAUTION

Connect the cables in the following order to avoid damage to the instrument.

- 1 HAPSITE CDT ships with a universal power supply kit. Connect the appropriate region specific power cord to the 24 V (DC) power supply.
- 2 Insert the Fischer® connector to the back right of the instrument, with the connector oriented to the three o'clock position so that the red dots align. A click will be audible when the power connector is properly connected.



- 3 Connect the male end of the power cord to the 100–240 V (AC) power source.
- ⇒ With the power supply properly connected, HAPSITE CDT can be powered on by pressing the power button on the front panel.



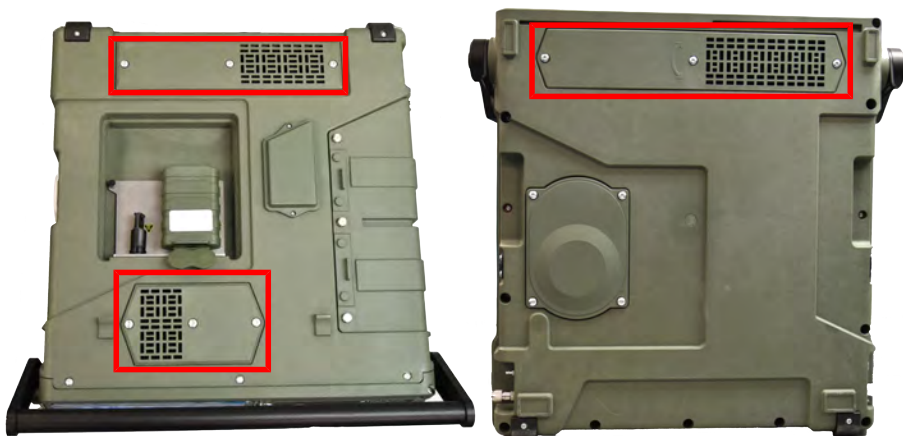
Ventilation

HAPSITE CDT has three vents built into the instrument's enclosure. The steps below detail how to open and close the vents.

CAUTION

Opening a vent while in a contaminated or harsh environment may cause contamination or damage to HAPSITE CDT. Make sure vents are rotated in a proper sealed position prior to entering a contaminated or harsh environment.

- 1 Use a 3 mm hex tool to loosen the socket head screws one-quarter turn on the vent covers. There are two vent covers on top and one on the bottom of the instrument.



- 2 Once the screws are loosened, lift and rotate each cover 180 degrees.



- 3 Use a 3 mm hex tool to tighten the socket head screws one-quarter turn.

Battery Charging and Installation

- 1 To access the battery compartment, first adjust the handle forward toward the front panel so that there is a clear path for the battery compartment door.
- 2 Loosen the three fasteners on the battery compartment door. Swing the battery compartment door open.



- 3 To install a battery, position the battery so that its power connector and communication pads align with the power connector and pogo pins on the instrument.



- 4 Once aligned, push the battery down onto the power connector.
- 5 Secure the batteries with the attached battery strap. Repeat with a second battery, if desired.



- 6 Close the battery compartment door and tighten the three fasteners.

WARNING

Only use INFICON-approved batteries. HAPSITE CDT Battery (937-3090-P1S), Ultralife UBBL13-01. Refer to the Safety Data Sheet for battery safety information.

NOTICE

Batteries will charge only when external power is connected and instrument is in extended standby.

Network Connections

Wired Ethernet Connection

Connect an Ethernet cable to the Ethernet port on the right side of HAPSITE CDT near the rear of the system. The other end of this connection can be connected to a computer or Ethernet switching device.

NOTICE

The system will be assigned a generic IP address at the factory. If HAPSITE CDT will be connected to a local area network, check with the network administrator prior to changing to static IP address to avoid conflicts.

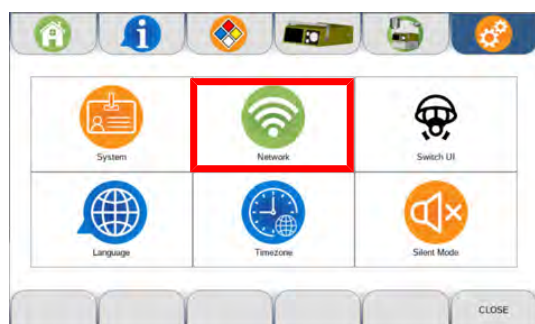
CAUTION

Hot zone use requires a sealed Ethernet cable. The Ethernet port should be covered with an Ethernet cap when not in use.



Static Ethernet Configuration

- 1 Touch the **Settings** navigation tab.
- 2 Touch the **Network** icon.



- 3 Touch **Ethernet Settings** to configure the HAPSITE CDT Ethernet connection.



- 4 Select **Static** configuration type.
- 5 Select **Auto Connect**.
- 6 Edit **IP Address** to desired value; the factory default is **192.168.1.1**.
- 7 Edit **Prefix** to match your local network.
- 8 Leave **Default Gateway** blank or use the gateway to match your local network.
- 9 Touch **Save**.
- 10 Touch **Close**.



Wireless Connection

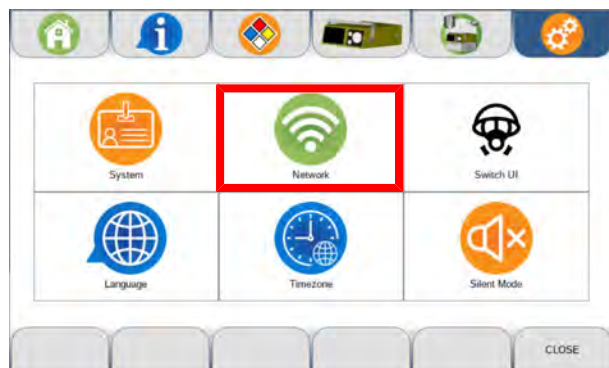
The HAPSITE CDT wireless connection will be disabled as the default configuration. The system adopts a dynamic IP address and runs DHCP by default when enabled. The user will need to assign a password for a secure wireless connection. HAPSITE CDT supports a direct wireless connection with the laptop computer, wireless connection through a network, or static wireless connection.

- Enable the wireless signal by opening the front panel door and switching on the wireless switch.



Direct Wireless Configuration

- 1 Touch the **Settings** navigation tab.
- 2 Touch the **Network** icon.



- 3 Touch **Wifi Settings** to configure the HAPSITE CDT wireless connection.



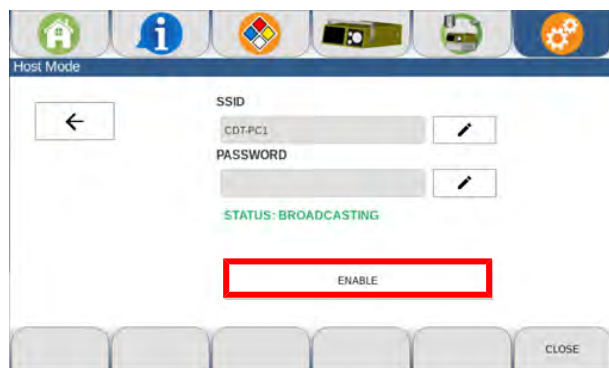
- 4 Touch **Host Mode** configuration type.



- 5 Click the pencil icon next to the Password line. Enter password and then click OK.



- Click **Enable**.



The wireless password must be at least 8 characters long.

- Touch **Save**.
- Touch **Close**.

System Blank Analysis

A system blank cleans out the system prior to analysis. This is an important step to ensure the instrument and its accessory are ready for sample analysis. System blanks also allow for basic troubleshooting and provide an indication of overall system health. It is recommended that system blanks are analyzed on a weekly basis or during daily system use.

NOTICE

When not in use, keep HAPSITE CDT in Extended Standby with the gas canisters removed. To enter Extended Standby, HAPSITE CDT must be connected to external power.

- Ensure the cartridge is properly installed. If the cartridge is not installed, install the cartridge prior to analysis. Align the cartridge using the guide pins on the accessory deck of HAPSITE CDT. Make sure the cartridge is flat against the accessory deck. Slide the cartridge toward the inlet until the cartridge clicks into place.



- 2 To prepare the system to run, open the front panel door by rotating the quarter-turn fasteners.



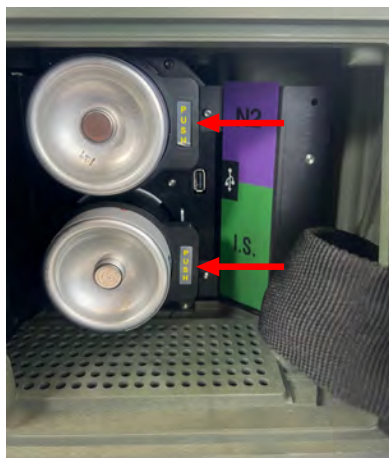
- 3 Insert the green-banded internal standard canister into the bottom round opening and insert the purple-banded carrier gas canister into the top round opening. These openings are marked with the corresponding color label.



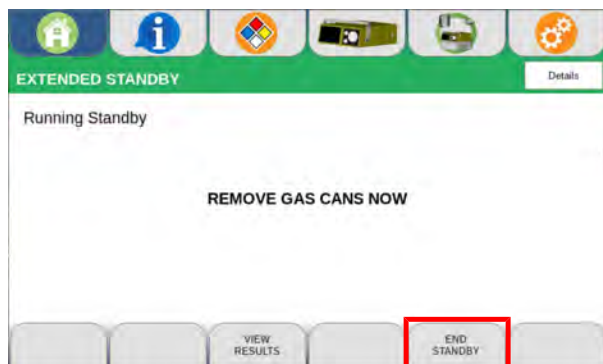
- 4 Press the PUSH lever while inserting the canister. Once inserted, press in the canister and PUSH lever together, then release the PUSH lever. Gently pull on the canister. It should remain fastened inside HAPSITE CDT.

CAUTION

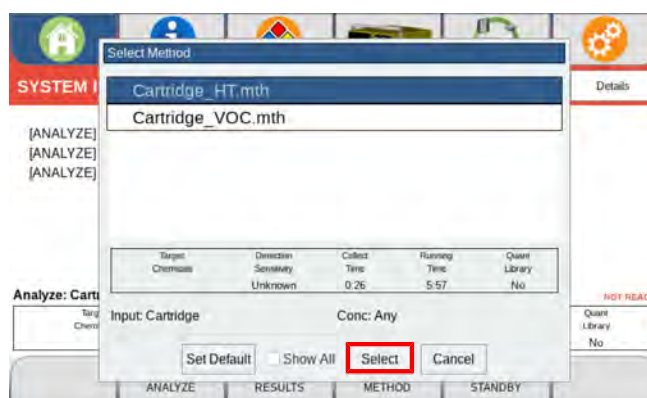
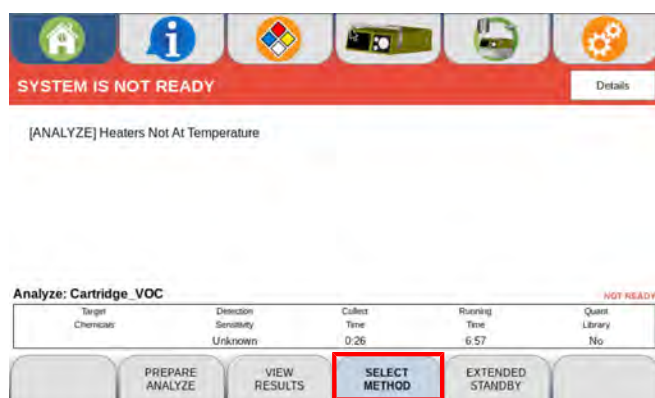
Closing the front panel door when the canisters are not properly installed may damage HAPSITE CDT and/or the canisters.



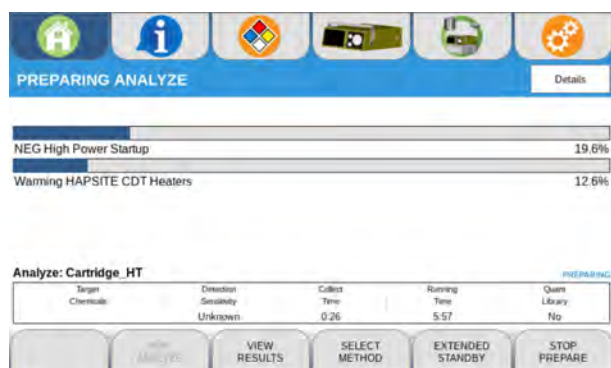
5 Touch End Standby.



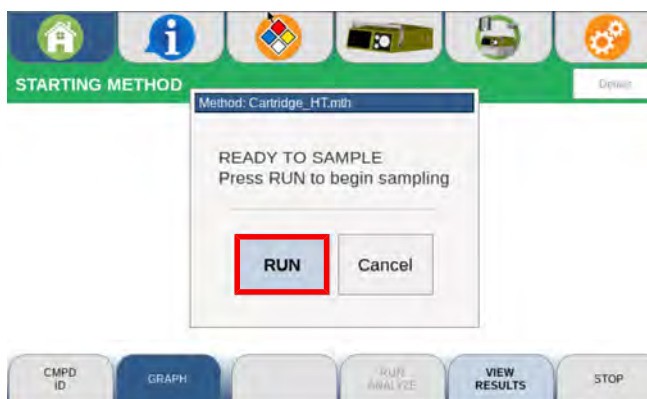
- 6 Ensure that the desired method is selected or select it from the list of methods in the method directory (sample method file: **Cartridge_HT.mth**). If **Cartridge_HT.mth** is not selected, touch **Stop Prepare**, then **Select Method**. Choose **Cartridge_HT.mth** from the list. Touch **Select**.



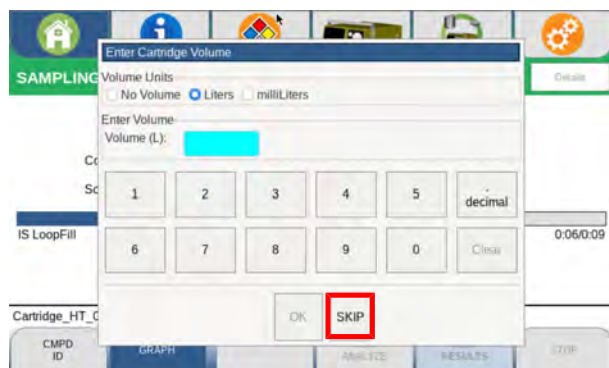
- 7 Then touch **Prepare Analyze** and the following window will pop up, indicating that the analysis preparation has begun.



- 8 When HAPSITE CDT has finished preparing, an "Analyze Ready" message is displayed. Touch **Run Analyze** and then select **Run** to start the method.



9 Touch **Skip** for blank analysis.

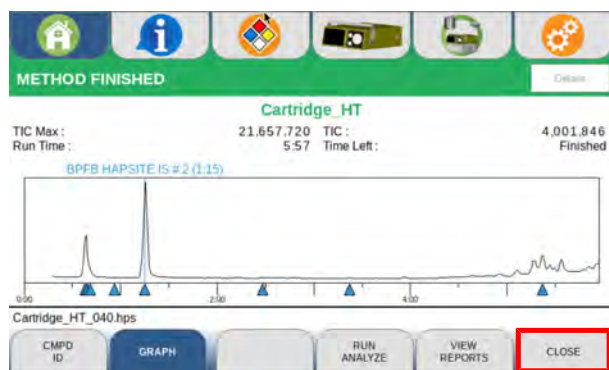


10 When the method is finished, look for a flat baseline with an intensity of less than 10% of BPFB HAPSITE #2 peak height. Look for the two internal standard peaks:

- ⇒ Locate PFOB HAPSITE #1
- ⇒ Locate BPFB HAPSITE #2

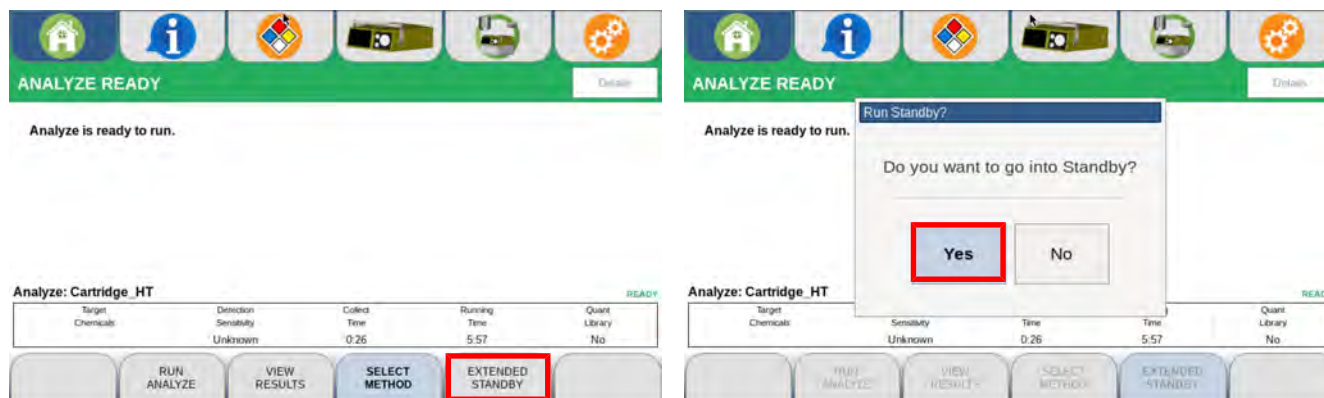


11 After the blank analysis data has been verified, HAPSITE CDT can be put into Extended Standby. Touch **Close**.



Other small peaks may be present in the background. However, if the background peaks are greater than 10% of the BPFB peak, continue to run blanks until only the internal standard peaks remain. If peaks remain after several blank analyses and do not decrease in area, these compounds may be from a source of contamination or may be present in the room air. Try sampling in a ventilated area or from a clean air source; additionally, try a different cartridge.

12 Touch **Extended Standby**. When prompted "Do you want to go into Standby?", touch **Yes**.



13 Remove the gas canisters by pressing the PUSH lever while twisting the gas canister. Close the front panel door.

Remote Sample Collector Operation



NOTICE

Calibrate the sample pump prior to use. Refer to the GilAir Plus Operation Manual, available online at <https://sensidyne.com/product/gilair-plus/>.

Key Pad Overview

	Escape		Power/Enter
	Navigation		Increase/Decrease
			

Power Controls

Power pump on

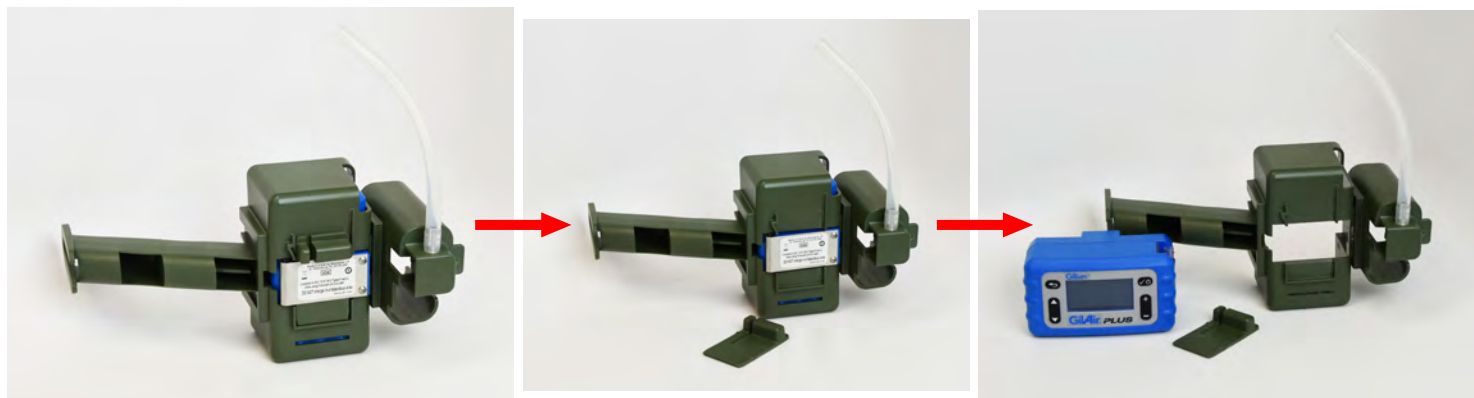
Power the pump on. Press and hold the **Power/Enter** key until the pump displays the startup screen.

Power pump off

When the pump is not running or is in a program pause, press and hold the **Power/Enter** key. Continue to hold **Power/Enter** until the power-down window appears and the countdown completes.

Sample Pump Removal

- 1 To remove the tubing from the sample pump inlet along the right side, pull the tubing straight up, off of the hose barb.
 - 2 Grasp the handle with your left hand, apply pressure forward and up to the pump with your thumb while squeezing the clip fastener tab together and pulling it to the right, out of the sample pump clip.
 - 3 Once the clip fastener is removed from the sample pump clip, the sample pump should slide free of the remote sample collector.
- ⇒ The sample pump can now be docked onto its charging station.



Flow Set

Flow Set allows the flow rate at which the pump will operate in constant flow control mode to be set.

Flow Rate Selection

NOTICE

This operation is required only if the pump flow rate is changed. If a previously set flow rate is being used, it is only necessary to verify it using a calibrated reference flow meter.

- 1 At the main menu screen, use the Navigation buttons to move the cursor to **Flow Set**.
 - 2 Use the **Increase/Decrease** buttons to set the desired rate of flow.
 - 3 Press the **Power/Enter** button to accept the flow rate.
- ⇒ Flow set is now complete.

NOTICE

Flow rates between 20 and 445 cc/min require the flow control valve to be set for low flow operation (the **Lo** indicator is displayed in the bottom status line). For Tenax cartridges, flow settings from 20 to 150 cc/min are recommended. Higher flow settings may result in a pump error.

Above 445 cc/min the flow control valve must be set for high flow operation (the **Hi** indicator is displayed in the bottom status line). The pump will not operate unless the flow control valve is in the correct **Hi** or **Lo** position for the corresponding flow rate setting.

Flow Rate Range Adjustment

The flow rate range is set by using the hex key (provided with pump, standard 2 mm or 5/64 in. size) to change the position of the flow control valve.



For cartridge sample collection, the flow rate range should be set to the **Lo** position.

Cartridge Sample Collection

- ✓ The sample pump should be fully charged prior to use.
- ✓ Ensure the remote sample collector is properly assembled prior to use.
 - 1 Power on the pump by pressing the **Power/Enter** button.
 - 2 Set **Flow** to the desired sampling flow rate. Follow the directions in Flow Set [▶ 14] to adjust the flow rates.
 - 3 Open the cartridge storage cap and install the cartridge into the remote sample collector.
 - 4 Begin sampling by navigating to **Run**, then pressing the **Power/Enter** button.
 - 5 Once the desired volume is reached, stop sampling by pressing the **Power/Enter** button. Navigate to **Stop** and then press the **Power/Enter** button again.
 - 6 Remove the cartridge and close the cartridge storage cap.