863 Valley View Road, Eighty Four, PA 15330
724-941-9701
skcinc.com

AirChek Connect Sample Pump

Cat. No. 220-4000

Operating Instructions

Figure 1. AirChek® Connect Overview

Table of Contents

Checking Pump Kit/Contents

Use the following table to verify that you received all items associated with the Cat. No. ordered. If you are missing items, contact SKC at 800-752-8472 (U.S. only) or 724-971-9701.

If you ordered Cat. No.	Your package should contain
220-4000	**Pump only** with Li-Ion battery and screwdriver set, *requires Standard Charging Cradle and power supply; see kits or accessories below*
220-4000-S	**Starter Kit** includes pump as described above, Standard Charging Cradle, power supply with cord, 3 feet (0.9 meter) of Tygon tubing, and collar clip with cable tie **100-240 V**
220-4000-K	**Single High Flow Kit** includes pump as described above, Standard Charging Cradle, power supply with cord, and filter cassette holder, in a soft-sided nylon carry case **100-240 V**
220-4000-KD	**Single High/Low Flow Kit** includes pump as described above, Standard Charging Cradle, power supply with cord, filter cassette holders, All-in-One adjustable tube holder, and Type A protective tube cover, in a soft-sided nylon carry case **100-240 V**
220-4000-K3D	**3-pack High/Low Flow Pump Kit** includes 3 pumps as described above and 3 each: Standard Charging Cradles and power supply with cord, filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers, in a Pelican case **100-240 V**
220-4000-K5	**5-pack High Flow Pump Kit** includes 5 pumps as described above and 5 each: Standard Charging Cradles and power supply with cord, and filter cassette holders, in a Pelican case **100-240 V**
220-4000-K5D	**5-pack High/Low Flow Pump Kit** includes 5 pumps as described above and 5 each: Standard Charging Cradles and power supply with cord, filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers in a Pelican case **100-240 V**

Charging the Battery Pack

Set up the charging train (*Figure 2*) and completely charge the battery pack(s) before operating the pump.

1. Prepare charging cradle(s).
    a. **Single cradle**: Insert connector on Single Cradle Power Supply Cat. No. 220-600 into power port on side of Standard Charging Cradle Cat. No. 220-800 or Charging e-Cradle Cat. No. 220-900. Insert wall cube into a 100 to 240-volt wall outlet.
    b. **Up to five cradles**: Press together the connector on the side of the first cradle with the connector on the side of the next cradle. Repeat the connection to chain up to five Standard Charging Cradles. Insert the connector of Multi Cradle Power Supply Cat. No. 220-700 into the power port on the side of the last cradle in the chain. Insert the wall cube into a 100 to 240-volt wall outlet.
2. Align the contacts on the bottom edge of the pump with the contacts inside the cradle and insert the pump in the cradle. Repeat for each additional pump/cradle.
3. Charge the battery completely (approximately 3 hours). The left LED on the cradle will indicate charging status. S*ee Reading Charge Status on Cradle LED and LED Activity Description*.

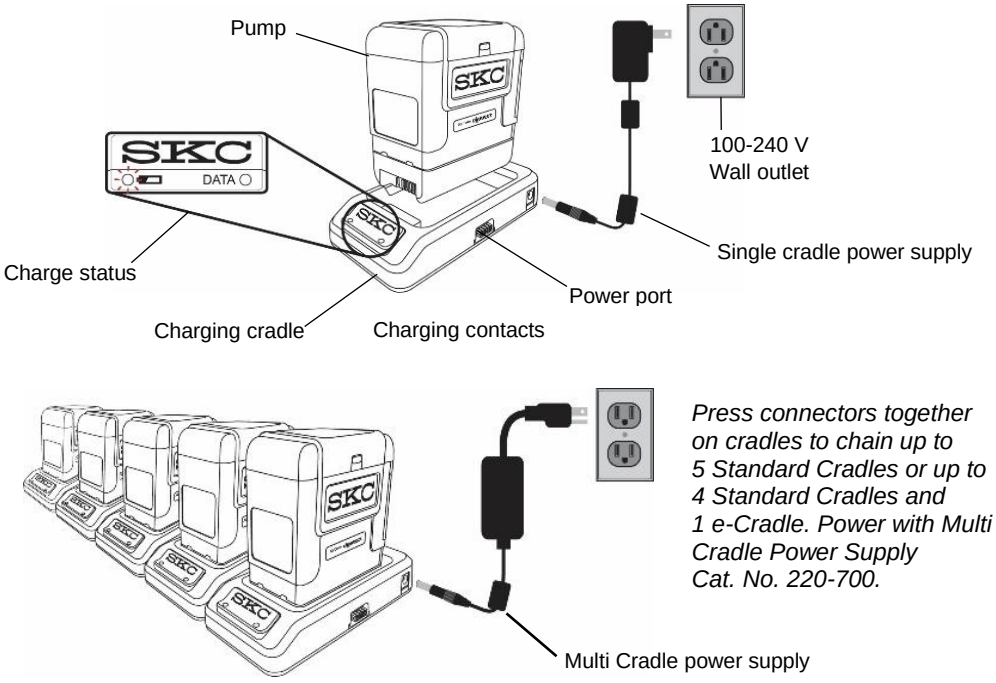


Figure 2. Charging Train, Single and Multiple Cradles

Reading Charge Status on Cradle LED

LED Action			Charge Status
Red ● steady			Charge in progress
Red ● 3 sec	Green ● 1 sec	(Pattern repeats)	Approximately 75% charged
Green ● steady			Charge completed/trickle charge

Notes and Cautions

- Power off pump before removing battery.
- Use only the SKC charging cradle Cat. No. 220-800 or 220-900 for pump.
- Failure to follow warnings, notes, and cautions may cause injuries and voids any warranty.
- WARNING: Substitution of components may impair intrinsic safety. AVERTISSEMENT: La substitution de composants peut compromettre la Sécurité Intrinsèque.
- CAUTION: The battery used in this device may present a risk of fire or explosion when heated above 212 F (100 C) or incinerated. Replace battery with SKC Battery Pack model P75718 only. Use of another battery may present a risk of fire or explosion.
- WARNING: To prevent ignition of a hazardous atmosphere, batteries must only be changed [removed and replaced] in an area known to be non-hazardous. AVERTISSEMENT: Afin de prévenir l'inflammation d'atmosphères dangereuses, ne changer les batteries que dans des emplacements désignés non dangereux.
- Maximum charge input voltage is U_m = 12 V
- CAUTION: Risk of Fire and Burns. Do Not Disassemble, heat above 212 F (100 C), or incinerate. Keep battery out of reach of children and in original package until ready to use. Dispose of used batteries promptly according to [all state and] local recycling or waste regulations.
- User may replace external components such as the inlet filter, battery, protective screen cover, and/or belt clip. Service must be done by SKC to maintain performance and IS rating. Warranty is void if pumping compartment is opened by user.

For more information on SKC pump lithium-ion (Li-Ion) battery packs, visit skcinc.com/catalog/pdf/instructions/1918.pdf.

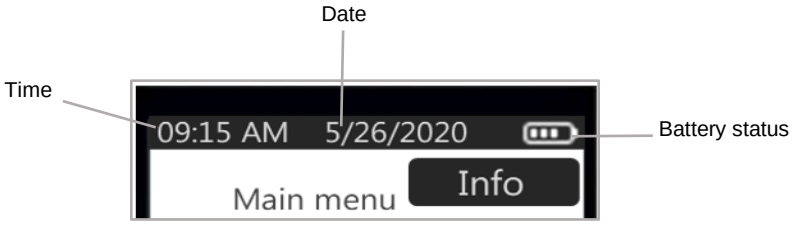
Turning Pump Power On/Off

Turn on: Press the recessed power on/off button on the side of the pump (*Figure 1*). The screen will light up and the Flow screen will be displayed. *See Navigating Menus and Screens.*

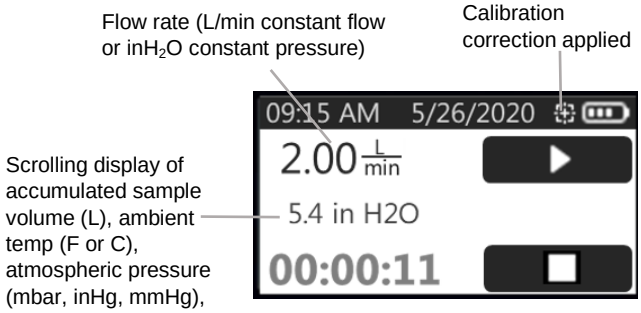
Turn off: Press the recessed power on/off button on the side of the pump. ***Note****: To conserve battery power, a non-running pump will power off automatically after 5 minutes of inactivity. Also see Auto-Dim feature/setting in Modifying Device Settings, Changing Security (Lock Out) and Auto-Dim.*

Note*: The power on/off button also locks/dims and unlocks/undims the touch screen during sampling. (See Options on pump screen during sample run on page 26.)*

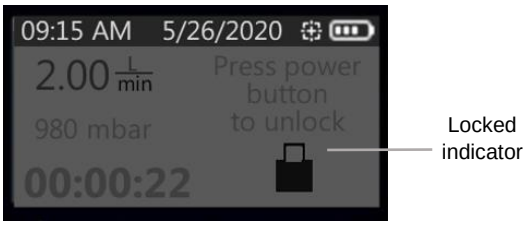
Interpreting the Display



***Constant display at top of every screen**: Time (12 or 24-hr display), Date (3 format options), and Battery Status icon (charge remaining)*



Displays while pump is running and screen lock/dim is not activated.



***Displays while pump is running and screen is locked** to prevent accidental tap errors or tampering. Shown with Dim also activated.*

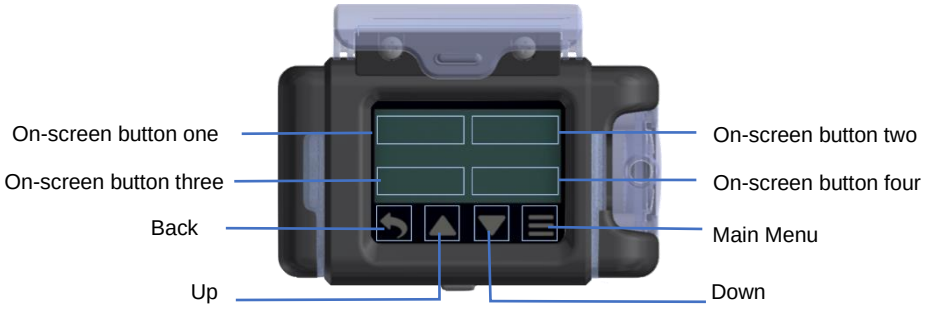
Determining Battery Charge Status

The battery status icon at the top right of the pump display screen has four bars that decrease in number as battery charge is depleted. Use the table below to interpret the battery status.

Icon Displayed	Battery Charge Remaining
Four bars 	Full battery charge, approximately 75 to 100%
Three bars 	Approximately 50 to 75%
Two bars 	Approximately 25 to 50%
One bar 	Approximately 5 to 25%
No bars 	Low battery fault is imminent. Pump will stop and power off eventually. Run time data will be retained in history. A fault icon will appear on the screen once the pump is restarted.

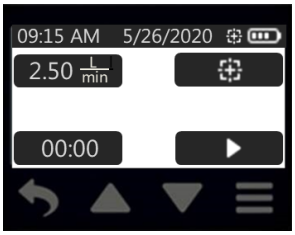
Using the Touch Screen

Use fingertip to gently touch screen buttons in the active zones indicated below.



Navigating Menus and Screens

AirChek Connect operates through a series of menus and screens. When the pump is powered on, the Flow screen displays (*see right*), allowing you to calibrate and sample immediately. For more details, start at *Setting Pump Flow Rate.*



Immediately below the display are four navigation buttons that access previous screens and Main Menu, and increase/decrease values:

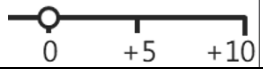
Back button	**Up Arrow button**	**Down Arrow button**	**Main Menu button**
Returns to previous screen 	Increases selected value or moves up a list/range/display  Touch and hold to speed increment of flow or pressure settings.	Decreases selected value or moves down a list/range/display  Touch and hold to speed decrement of flow or pressure settings.	Returns to Main Menu, from which you can access all options. 

See the following Menu/Screen overview.

Menu/Screen Overview

Device	Info	Sample
History Menu • List of sample runs/summaries **Clock Menu** • Set Time • Set Date • Select Clock display • Select Date display **Units Menu** • Select Temp display • Select ATM display **Screen Menu** • Select Dim • Select Secure Lock • Select Auto Lock	• Firmware version number • Lifetime run time and volume • Pump serial number • Pump manufacture date	**Flow Menu** • Set Flow • Calibrate (constant flow mode) • Set Duration (timer) • Run button **Presets** • Select presets P1 – P4 (created in DataTrac Pro, uploaded to pump) **Advanced Menu** • Set Pressure • Set Duration (timer) • Run button

Menus and screens contain the following navigational touch buttons.

Button	General Function
Check mark 	Saves a selected item
Left and right movement 	Allows horizontal movement on a scale (see below) or moves left or right through fields, activating each for entry of value 
Calibration/flow adjustment 	Allows selection of an adjustment to flow during calibration
Run (start) 	Runs the pump for sampling
Pause 	Pauses a running pump. Elapsed time and volume accumulation pause. When Run is touched, time and volume will continue to accumulate.
Stop 	Stops a running pump and resets elapsed time and volume to zero. Run time information will be available in Sample Summary and History.

Determining Pump Status

The status LEDs that bracket the screen display (*Figure 1*) indicate pump status:

Green, flashing = Running

Red, flashing = Flow fault

***Note**: Status LEDs will flash red/green to indicate that the pump is out of flow tolerance just before entering flow fault mode and during each auto-restart attempt while in flow fault mode.*

Modifying Device Settings

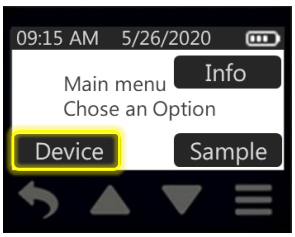
***Note about default settings**: AirChek Connect is shipped with the default settings listed below that may be changed by the user from the Device submenus:*

- *Dim**: On***
- *Auto Lock**: Off***
- *Secure Lock**: Off***
- *Temperature Units**: F***
- *Atmospheric Pressure Units**: inHg***
- *Time Format**: 12 Hour***
- *Date Format**: mm/dd/yyyy***

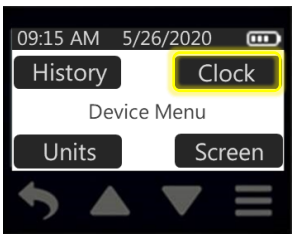
Clock Menu

To change time on pump

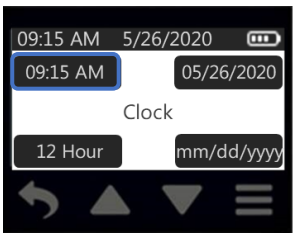
From Main Menu:



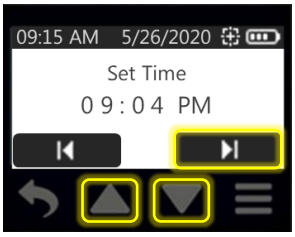
Touch Device



>Touch Clock



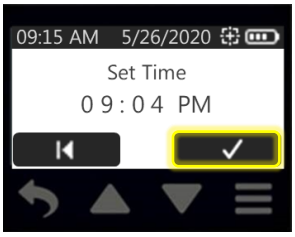
>Touch time displayed



Hour digits will flash.

Touch up/down arrow buttons to increment/decrement hours.

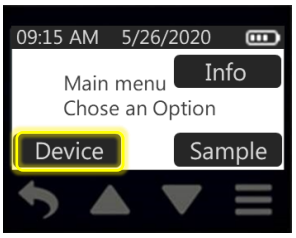
Touch right arrow to advance to minutes (will flash) and up/down arrow buttons to toggle AM/PM.



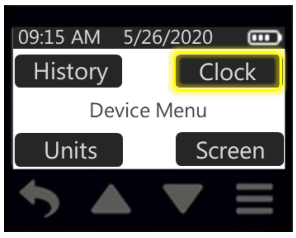
Touch check mark to accept new time and return to Clock Menu. New time setting will display.

To change clock display format

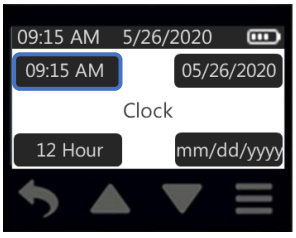
From Main Menu:



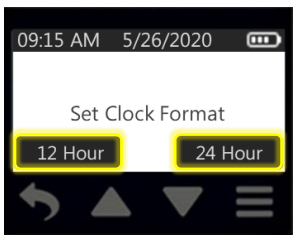
Touch Device



>Touch Clock



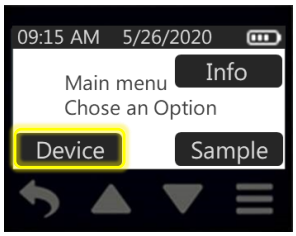
>Touch 12 or 24 Hour



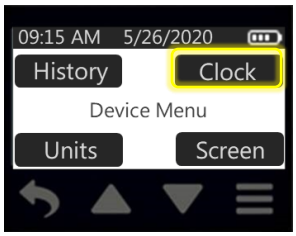
12 Hour and 24 Hour buttons are displayed. Touch desired setting to select and return to Clock Menu. New clock display format will be displayed.

To change date and date display

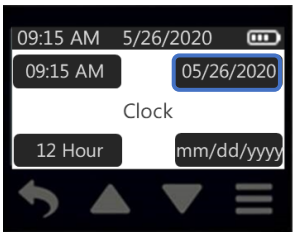
From Main Menu:



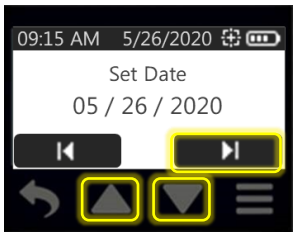
Touch Device



>Touch Clock



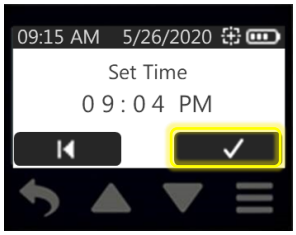
> Touch Date



Month digits will flash. Touch up/down arrow buttons to increment/decrement month.

Touch right arrow to advance to day (will flash) and up/down arrow buttons to increment/decrement day.

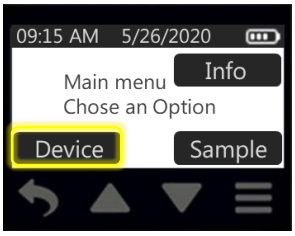
Touch right arrow to advance to year (will flash) and up/down arrow buttons to increment/decrement year.



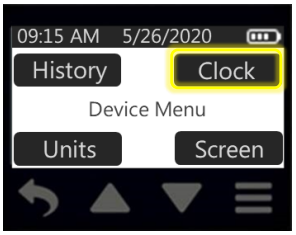
Touch check mark to accept new date and return to Clock Menu. New date will display.

To change date display format

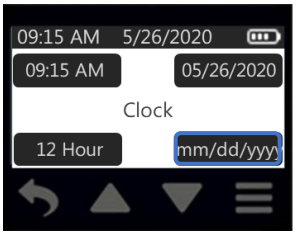
From Main Menu:



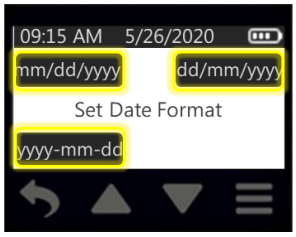
Touch Device



>Touch Clock



>Touch Date display format

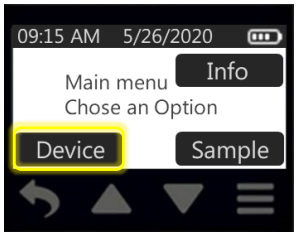


Touch desired date/display format to select and return to Clock Menu. New date display format will be displayed.

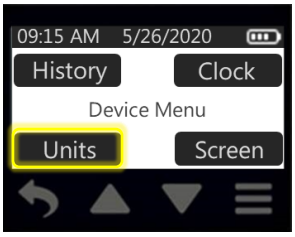
Units Menu

To change temperature units

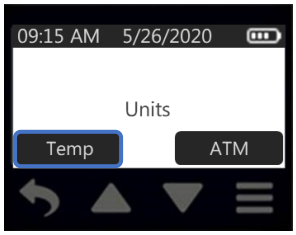
From Main Menu:



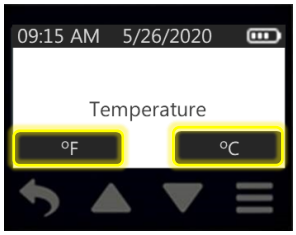
Touch Device



>Touch Units



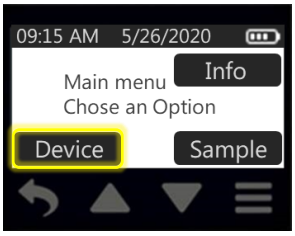
>Touch Temp



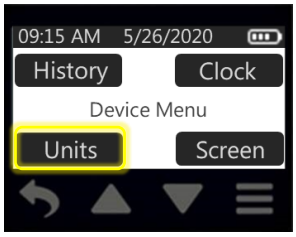
ºF and ºC buttons display. Touch desired button to select and return to Units Menu.

To change atmospheric display units

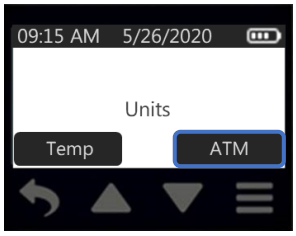
From Main Menu:



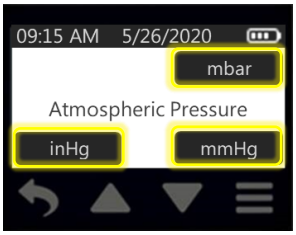
Touch Device



>Touch Units



>Touch ATM



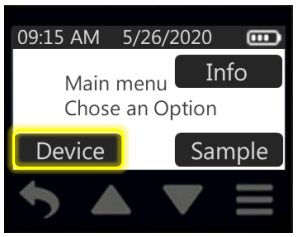
mbar, inHG, and mmHg buttons display. Touch desired button to select and return to Units Menu.

***Note**: Changing the display units affects only the display of atmospheric pressure on the pump screen and in Sample Summary and History. Back pressure (inlet pressure) will always display in "inH2O" on the pump screen and in Sample Summary and History.*

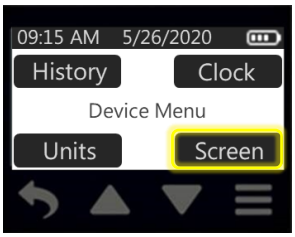
Screen Menu

To set Dim to on or off

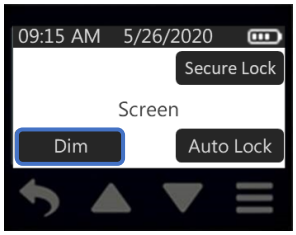
From Main Menu:



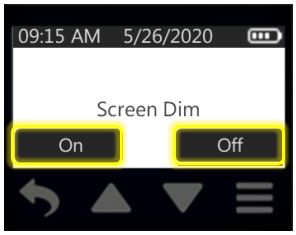
Touch Device

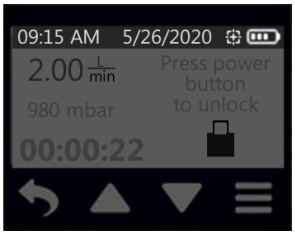


>Touch Screen



>Touch Dim





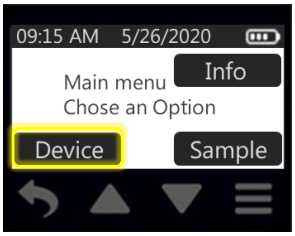
Touch desired button to select and return to Screen Menu.

If Dim is set to **On**, the user can dim and lock the screen of a running pump by pressing the On/Off button. If Auto Lock is set to **On** in combination with Dim, the screen will dim and lock automatically when the pump is run. The screen can be undimmed and unlocked by pressing the power on/off button. *For more information on Auto Lock and Secure Lock, see below.* This setting helps conserve battery usage.

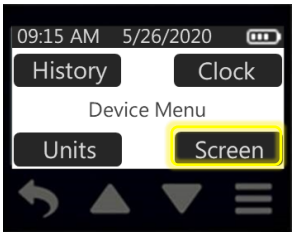
If Dim is set to **Off**, the screen backlight will stay on during the entire sample run.

To set Auto Lock to on or off

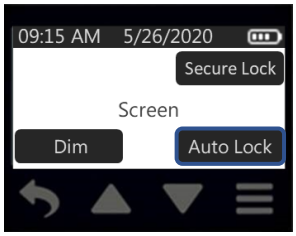
From Main Menu:



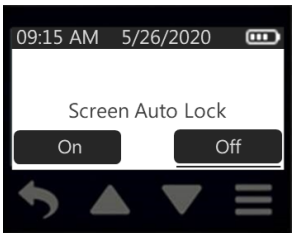
Touch Device

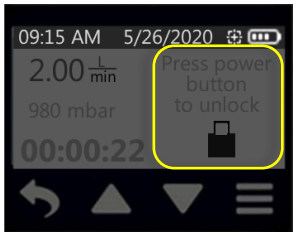


>Touch Screen



>Touch Auto Lock





Touch desired button to select and return to Screen Menu.

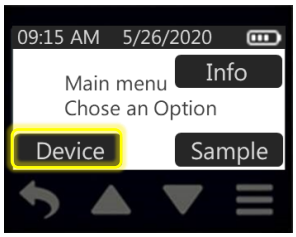
If Auto Lock is set to On, the screen will lock (become inactive) as soon as the pump starts running a sample. A lock icon and “Press power button to unlock” will appear on the screen. If Dim is set to On, the screen will both lock and dim when the pump starts running a sample.

I**f Auto Lock is set to Off**, the screen will remain active. The screen may be locked (made inactive) manually at any time during a sample run by pressing the power on/off button on the side of the pump.

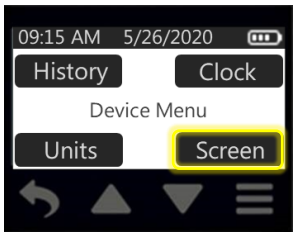
To unlock and reactivate the screen, press the power on/off button on the side of the running pump. This setting helps to prevent accidental tap errors during sample runs.

To set Secure Lock to on or off and set passcode

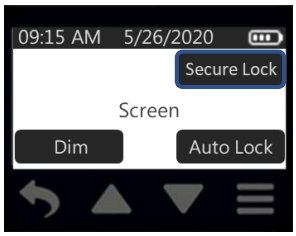
From Main Menu:



Touch Device

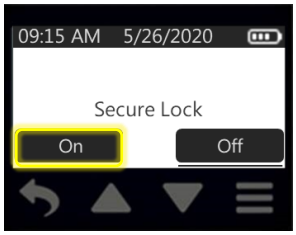


>Touch Screen

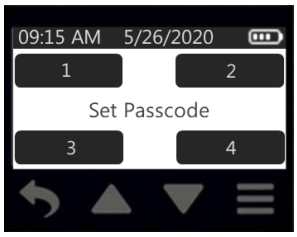


>Touch Secure Lock

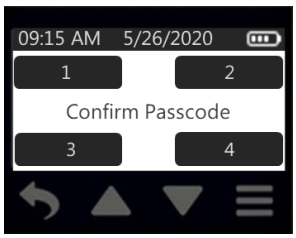
Secure Lock helps to prevent tampering during a sample run. Touch desired button. **If Secure Lock was set previously to On and you select Off**, you will be prompted to enter the previously set passcode. Once the passcode is entered, you will be returned to the Screen Menu.



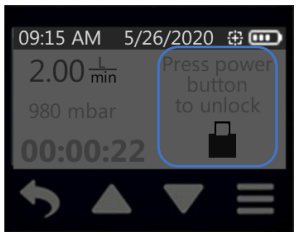
If you select **On**, proceed as follows.



You will be prompted to enter a four-digit passcode of your choosing. Touch the screen keypad to enter the desired four-digit combination. ***Note**: Entered digits will display as ***.*



You will be prompted to confirm the passcode. Touch the screen keypad to enter the same four-digit number combination. Upon entering the last digit, the passcode will be saved, and you will be returned to the Screen Menu.



If Secure lock is set to **On**, the user can lock the screen of a running pump by pressing the power on/off button. If Auto Lock is set to **On** concurrently, the screen locks when the pump is run.

To unlock and reactivate the screen, press the power on/off button on the running pump and touch the screen keypad to enter the previously set four-digit passcode.

Master Unlock Feature: If you cannot remember the Secure Lock passcode, touch

1 2 3 ☰ ▲ ▼ ☰ when prompted for the passcode.

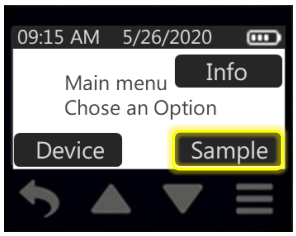
This will override Secure Lock but will not disable it.

Setting flow rate, calibrating flow rate, and sampling are done through the **Sample Menu**.

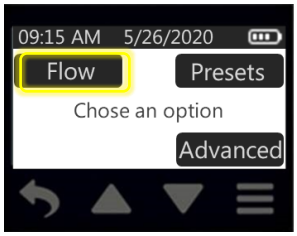
Viewing run history is done through the **Device Menu**.

Setting Pump Flow Rate

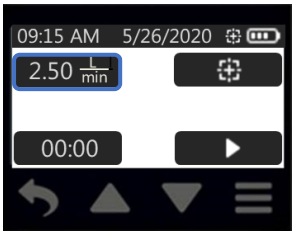
From Main Menu:



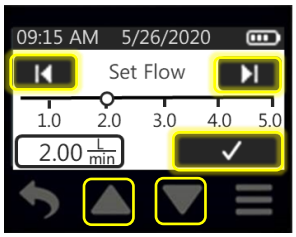
Touch Sample



>Touch Flow



>Touch flow display



Touch left/right arrow buttons to set gross flow setting; flow changes by 0.5 L/min. Touch up/down arrow buttons to fine-tune setting.
***Note**: A sustained touch on the up/down arrow buttons will speed up increment/decrement of flow setting*.

Touch check mark to accept selection and return to Flow Menu with new flow setting displayed.

Setting/Calibrating Flow Rate from 1 to 5 L/min

- *Allow pump to equilibrate after moving it from one temperature extreme to another.*
- *Charge pump battery completely before calibration and sampling.*
- *To achieve the best results, run the pump for 10 to 15 minutes before calibration.*

1. Turn on the pump.
2. Prepare the calibrator. *See calibrator instructions.*
3. Set up a calibration train with representative sample medium in line (*Figure 3*).

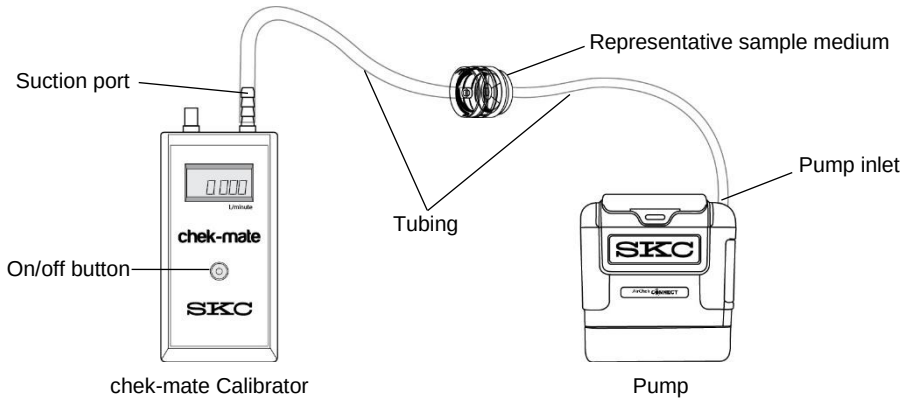
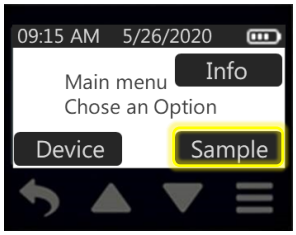


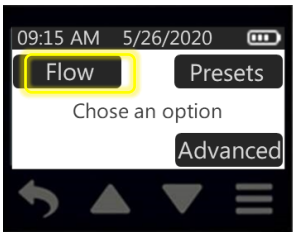
Figure 3. Calibration Train (1 to 5 L/min)

4. Set flow rate on pump. *See Setting Pump Flow Rate*.
5. Calibrate flow rate as follows:

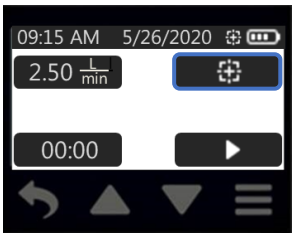
From Main Menu:



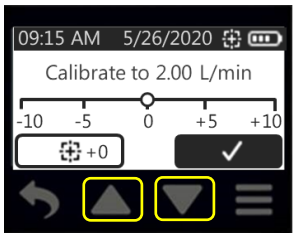
Touch Sample



>Touch Flow

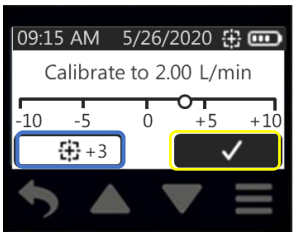


>Touch calibration icon



Pump will start running when you touch the calibration icon. **It is good practice to allow the pump to run for 10 to 15 minutes before calibrating the flow rate.**

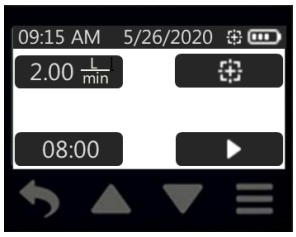
Touch up/down arrow buttons to increment/decrement calibration adjustment.



The calibration adjustment value will display beside the calibration icon.

***Note**: The flow rate displayed on the calibrator will change as a result of this adjustment.*

Touch check mark to accept the calibration adjustment value and return to the Flow Menu.



The flow rate displayed on the pump will remain unchanged.

6. Disconnect the pump from the representative sample medium and calibrator. Go to *Sampling*.

Setting/Calibrating Flow Rate from 5 to 500 ml/min — Constant Flow Mode

- *Allow pump to equilibrate after moving it from one temperature extreme to another.*
- *Charge pump battery completely before calibration and sampling.*
- *Single-tube sampling requires All-in-One adjustable tube holder; see All-in-One operating instructions for details on operation.*
- *Multiple-tube sampling can be done using a Constant Pressure Controller (CPC) (Figure 5) and a Dual, Tri, or Quad Adjustable Low Flow Tube Holder accessory. See CPC and Adjustable Low Flow Tube Holder operating instructions for details on operation.*
- *Calibrate/verify pump flow rate before and after each sampling operation using the tube holder and pump to be used for sampling.*
- *To achieve the best results, run the pump for 10 to 15 minutes before calibration.*

Prepare Sorbent Tube(s)

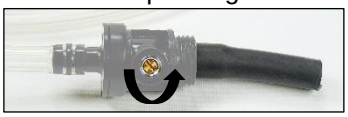
1. Determine number and type of sorbent tubes needed for pre-sample calibration and sampling.
2. Break tips off representative sorbent tubes for pre-sample calibration.
3. If performing multiple-tube sampling, label tubes.

Prepare Pump

1. Turn on the pump.
2. Prepare the calibrator per calibrator instructions.
3. Using flexible tubing, connect the calibrator outlet (suction port) to the pump inlet.
4. Set pump flow rate to the following as appropriate (*see Setting Pump Flow Rate*):
    - **Single-tube sampling**—1.5 L/min.
    - **Multiple-tube sampling**—the sum of all flows +15%. ***Note****: Do not exceed 500 ml/min flow rate per tube for multiple-tube sampling*
5. Disconnect tubing from the pump inlet.

Prepare All-in-One Adjustable Tube Holder (single-tube sampling)

1. On the tube holder, insert an opened representative sorbent tube (arrow on tube pointing toward the pump) into the rubber sleeve on the port. *See Figure 4*.
2. Using a small flat-head screwdriver, turn counterclockwise the brass flow adjust screw directly beneath the port.



Prepare Dual, Tri, or Quad Adjustable Low Flow Tube Holder (multiple-tube sampling)

1. On the tube holder, insert an opened representative sorbent tube (arrow on tube pointing toward the pump) into the rubber sleeve on the port. Repeat for the desired number of tube samples. *See Figure 5*.
   Note*: Place an unopened (inactive) tube in any unused port to "seal" it*.
2. Label ports on the adjustable tube holder to match labels on tubes.
3. Using a small flat-head screwdriver, turn counterclockwise the brass flow adjust screw directly beneath the port holding the first active tube to be calibrated.

Set Up Calibration Train — Constant Flow Mode

Connect the calibrator to the single sorbent tube or the first of multiple sorbent tubes as shown in Figures 4 and 5, respectively.

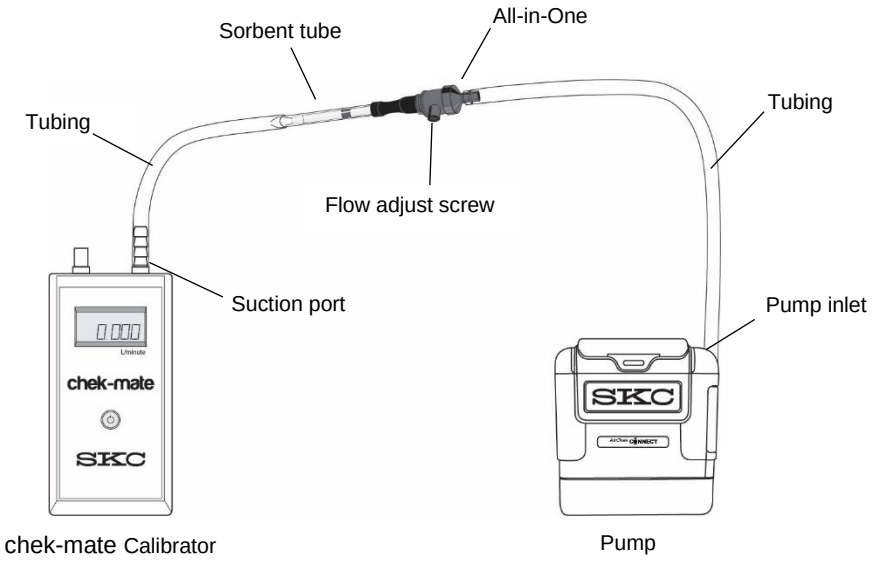


Figure 4. Calibration Train (5 to 500 ml/min) for Single Tube — Constant Flow

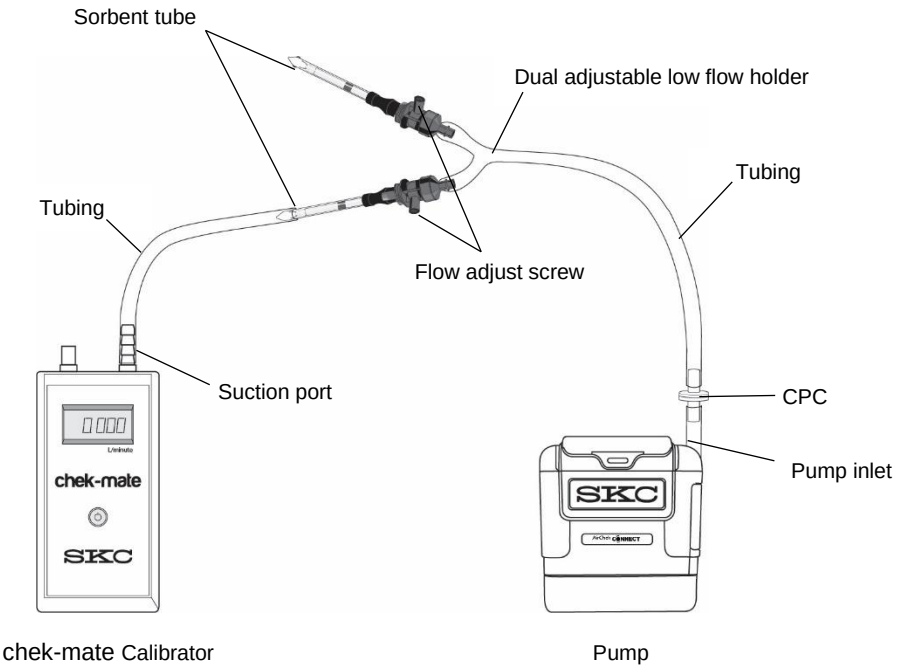


Figure 5. Calibration Train (5 to 500 ml/min) for Multiple Tubes — Constant Flow

Calibrate Flow Rate with All-in-One (single tube) — Constant Flow Mode

1. In the Flow menu, touch the Run button to run the pump. ***Note****: It is good practice to allow the pump to run for 10 to 15 minutes before calibrating flow rate.*
2. Using a small flat-head screwdriver, turn the flow adjust screw on the port **clockwise to decrease** flow or **counterclockwise to increase** flow until the method-specified flow rate is indicated on the calibrator.
3. Once flow is calibrated for the tube, it is recommended practice to recheck the flow rate before removing the tube. Any adjustment should be minimal.
4. Stop the pump and return to the Flow screen.
5. Disconnect the pump from the representative sample tube and calibrator. Replace representative sorbent tube with a newly opened unexposed method-specified sorbent tube to complete the sampling train. Proceed to *Sampling*.

Calibrate Flow Rate with Dual, Tri, or Quad Adjustable Low Flow Tube Holder — Constant Flow Mode

- *See appropriate adjustable flow holder instructions.*

1. In the Flow menu, touch the Run button to run the pump. ***Note****: It is good practice to allow the pump to run for 10 to 15 minutes before calibrating flow rate.*
2. Using a small flat-head screwdriver, turn the brass flow adjust screw on the first active port **clockwise to decrease flow** or **counterclockwise to increase** flow until method-specified flow rate is indicated on the calibrator.
3. Remove calibrator tubing from the current tube and install it on the next active tube. Use small flat-head screwdriver to turn counterclockwise the brass flow adjust screw directly beneath the port holding the tube to be calibrated and repeat Step 2.
4. Repeat Steps 2 and 3 for each remaining active tube.
5. Stop the pump and return to the Flow menu.
6. Disconnect the pump from the representative sample tube and calibrator. Replace representative sorbent tubes with newly opened unexposed method-specified sorbent tubes to complete the sampling train. Proceed to *Sampling*.

Setting/Calibrating Flow Rate from 100 to 1000 ml/min — Constant Pressure Mode (*No All-in-One or CPC required)*

About Constant Pressure Mode

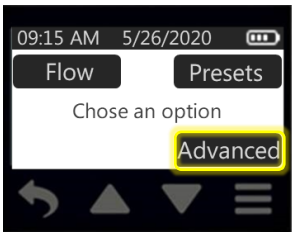
In Constant Flow mode, the pump adjusts to the set flow and maintains it by directly measuring the flow. In **Constant Pressure mode**, the pump will adjust to the set inlet pressure and maintain it for the duration of the sampling run. Flow through the sampling train depends on set pressure and overall pressure drop in the sampling line. Flow rate can be increased or decreased by adjusting inlet pressure – higher inlet pressure will correspond to higher flow and vice versa. For a set inlet pressure value, flow will remain constant if resistance in the sampling line remains constant during the entire sampling period.

Constant Pressure mode may be conveniently used with single and multiple-tube holders; in some situations, the single tube can be connected directly to the pump without a tube holder for sampling at flows as low as 100 ml/min. Although Constant Flow mode is recommended if sampling requires a flow higher than 1000 ml/min, the pump can be used in Constant Pressure mode for flows up to 5 L/min if the pressure drop does not exceed 20 inches H_2O. To use the pump in Constant Pressure mode, the pressure drop across the sampling train should be between 1 and 20 inches H_2O. ***Note**: The pump will not work in Constant Pressure mode without a sampling medium connected to its inlet*.

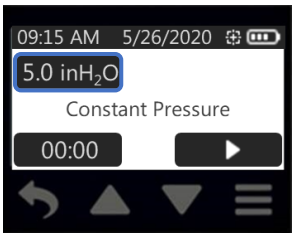
Set Pump in Constant Pressure Mode

Before setting/calibrating pump flow in Constant Pressure mode, connect the sorbent tube or other sample medium to the pump inlet. *See Figure 6. Note: The pump will fault if there is no sample medium or if the load is too low.*

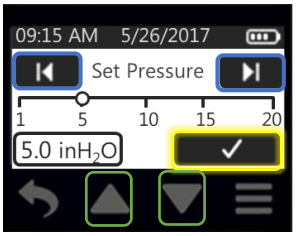
From Sample Menu:



Touch Advanced

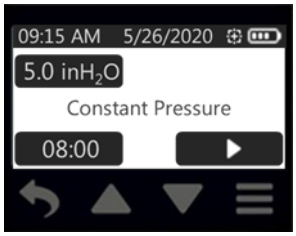


>Touch pressure display



Touch left/right arrow buttons to set gross pressure setting. Touch up/down arrow buttons to fine-tune setting. ***Note**: A sustained touch on the up/down arrow buttons will increment/decrement pressure setting.*

***Note**: Set pressure value will blink and left LED will blink yellow-orange. When set pressure is achieved, the pressure value will stop blinking and the left LED will turn green. This may take up to 90 seconds.*



Touch check mark to accept selection and return to Constant Pressure screen.

Set Up Calibration Train — Constant Pressure Mode

1. Prepare pump and sorbent tubes per Setting/Calibrating Flow Rate from 5 to 500 ml/min — Constant Flow Mode.
2. Set up the calibration train (Figures 6 and 7). The All-in-One and CPC are not needed in Constant Pressure mode. Using tubing, connect the calibrator to the single sorbent tube or the first of multiple sorbent tubes.

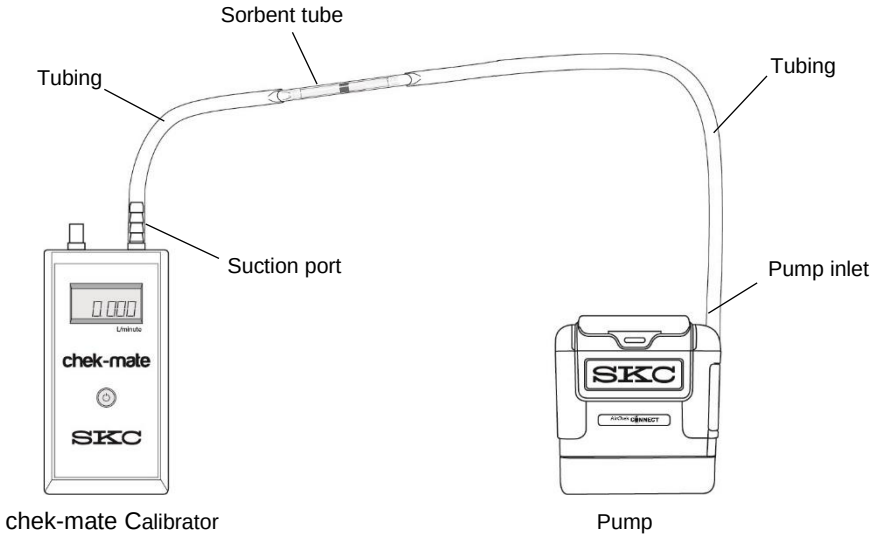


Figure 6. Calibration Train (100 to 1000 ml/min) for Single Tube — Constant Pressure Mode

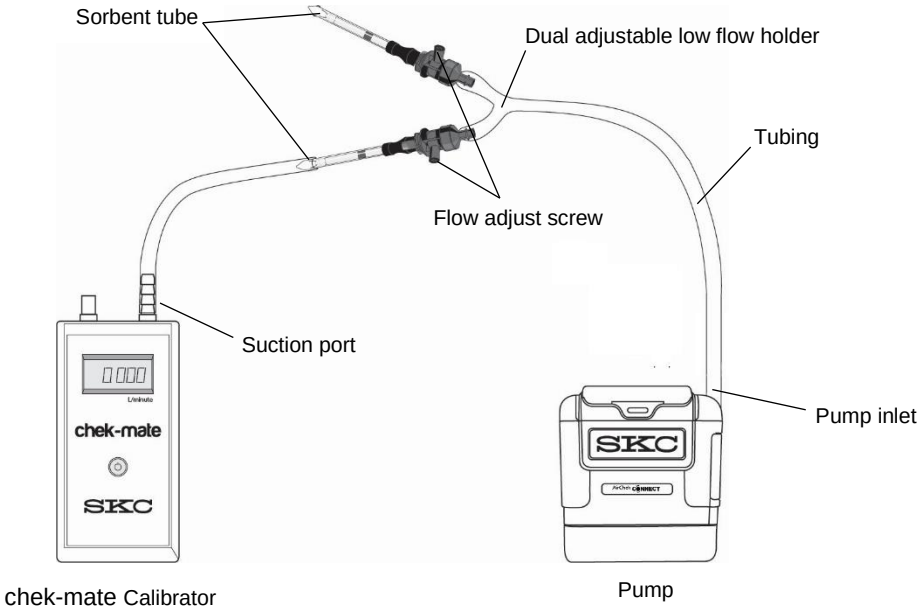
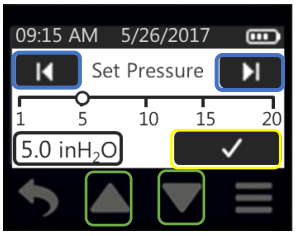


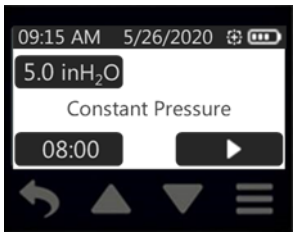
Figure 7. Calibration Train (100 to 1000 ml/min) for Multiple Tubes — Constant Pressure Mode

Calibrate Flow Rate with Single Tube — Constant Pressure Mode

1. In Set Pressure screen:



Using left/right and up/down arrow buttons, adjust inlet pressure and flow to achieve required flow. Increasing pressure will increase the flow and vice versa. If required flow cannot be achieved while inlet pressure is changed from 1 to 20 inches H_2O, use a single low flow tube holder and follow instructions below for calibrating flow rate with single or multiple low flow tube holder in Constant Pressure mode.



Touch check mark to accept selection and return to Constant Pressure screen with the new pressure setting displayed.

2. Disconnect representative sorbent tube from the calibrator. Replace representative sorbent tube with newly opened unexposed method-specified sorbent tube to complete the sampling train. Proceed to *Sampling*.

Calibrate Flow Rate with Single or Multiple Low Flow Tube Holder — Constant Pressure Mode

If pressure needed to achieve required flow rates is unknown, set pressure to 20 inches H_2O and start pump. Follow instructions in *Calibrate Pump Flow Rate with the Dual, Tri, or Quad Adjustable Low Flow Tube Holder — Constant Flow Mode*.

Sampling

- *Allow pump to equilibrate after moving it from one temperature extreme to another.*
- *Charge pump battery completely before sampling.*
- *Use of an unapproved battery and/or charging cable could damage the pump and will void any warranty.*
- *Use of any device (including charging cradle) or battery pack other than Cat. No. P75718 to power the pump voids intrinsic safety certifications and any warranty.*
- *Pump can be operated from cradle.*
- *If using sample tubes as media, calibrate/verify pump flow rate before and after each sampling operation using the tube holder and pump used for sampling.*

1. After setting/calibrating flow rate, ensure that calibrator and tubing have been removed and representative method-specified sample medium used for calibration has been replaced with newly opened unexposed method-specified sample medium to complete the sampling train. *See Figure 8*.
2. Choose from a manual sample, timed sample, or sample preset (presets are uploaded to the pump from DataTrac Pro Software). *See Manual Sample, Timed Sample, or Presets below.*

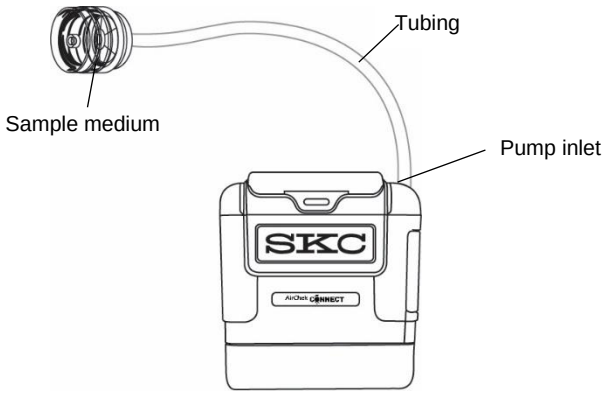
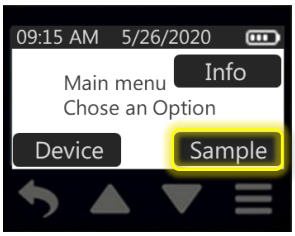


Figure 8. High Flow Sample Train

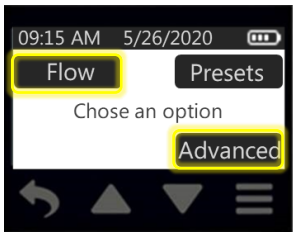
Set Up and Run a Manual Sample

1. Set up the sampling train. *See Sampling, Step 2.*
2. Run the sample as follows:

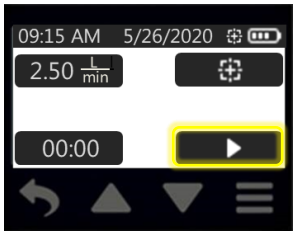
   From Main Menu:



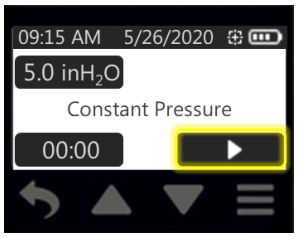
Touch Sample



>Touch Flow or Advanced



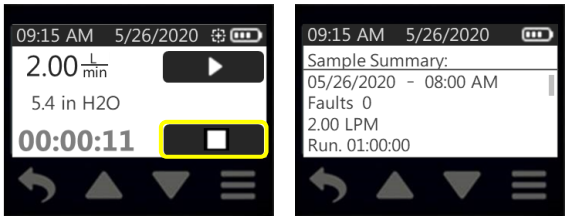
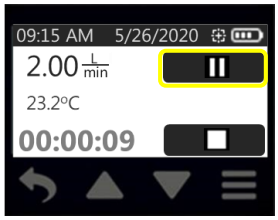
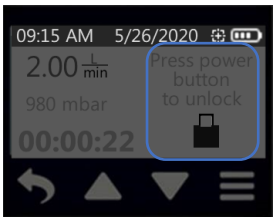
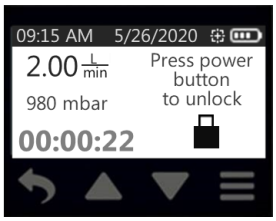
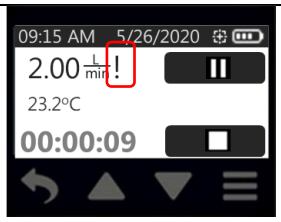
>Touch Run button in Flow Menu to run pump in constant flow.



>Touch Run button in Advanced Menu to run pump in constant flow.

3. When the required sampling period is complete, touch the Stop button on the screen to stop sampling. A Sample Summary will be displayed; accumulated data will be reset. ***Note****: If pump is shut off or goes to sleep after a sample is completed and is powered on again, the initial display will show the Sample Summary of the previous sample run.*

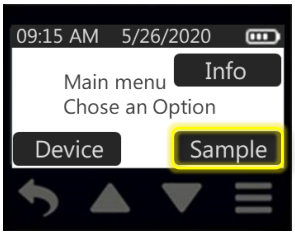
Options on pump screen during sample run:

	**Touch the Stop button** to stop sampling, reset accumulated data display, and view Sample Summary.
	**Touch the Pause button** to pause sampling and retain accumulated data display. When touched, pause changes to Run button. **Touch Run button** to resume sampling and data accumulation.
	**Dim (set to On)** dims a screen that has been locked when you press the power on/off button on a running pump or through Auto Lock as soon as the pump starts running. **To resume normal backlighting,** press the power on/off button on the side of the pump (*Figure 1*). *See Modify Device Settings, Screen Menu.* This feature may be used concurrently with Auto Lock and Secure Lock
	**Auto Lock (set to On)** locks (inactivates) the pump touch screen when the pump starts running. A lock icon and “Press power button to unlock” message appears on the screen. **If Auto Lock is set to Off**, the screen remains inactive. The screen may be locked (made inactive) at any time during sampling by pressing the power on/off button on the side of the pump. **To unlock and reactivate the screen**, press the power on/off button on the side of the pump. This feature helps to reduce tap errors during sample runs.
Need display for secure lock code: Enter CODE to unlock	**Secure Lock (set to On)** locks (inactivates) the pump touch screen when the power on/off button is pressed. A lock icon and “Press power button to unlock” message appears on the screen. **To unlock Secure Lock and reactivate the screen,** press the power on/off button on the side of the pump and touch the screen keypad to enter the previously set four-digit passcode. **If Auto Lock and Secure Lock are set to On concurrently,** the pump touch screen will lock when the pump is run but will require the user to enter a passcode to unlock the screen.
	**Flow fault** may occur when there is a restriction in airflow (e.g., kinked tubing) that remains uncorrected and the pump can no longer compensate flow. *See Flow Fault Mode and Display for details on pump operation during flow fault*.

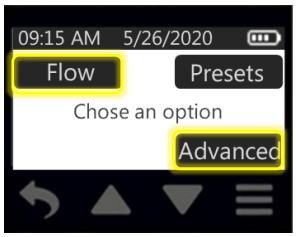
Set Up and Run a Timed Sample

1. Set sample duration as follows:

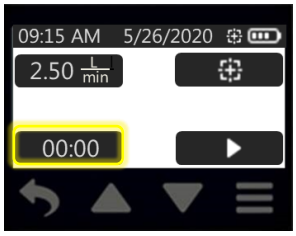
   From Main Menu:



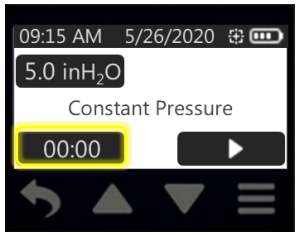
Touch Sample



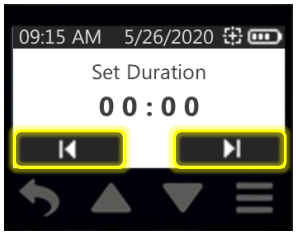
>Touch Flow or Advanced



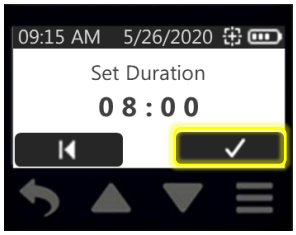
>Touch Time button in Flow Menu to set sample duration.



>Touch Time button in Advanced Menu to set sample duration.



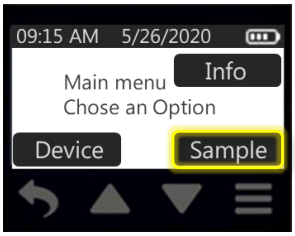
Hour digit 1 will flash.
Touch up/down arrow buttons to increment/decrement hour.
Touch right arrow to advance to hour digit 2 (will flash) and up/down arrow buttons to adjust hour digit 2. Repeat through minutes.



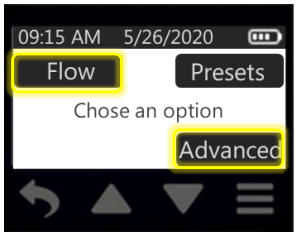
Touch check mark to accept new time and return to Clock Menu. New time setting will display.

2. Connect pump to sample train. *See Figure 8.*
3. Run sample as follows:

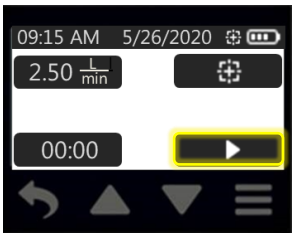
From Main Menu:



Touch Sample



>Touch Flow or Advanced

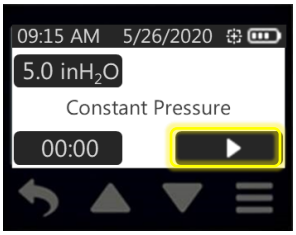


>Touch Run button in Flow Menu to run pump in constant flow.

See Options on pump screen during a sample run on page 26.

4. When the Timed sampling period is complete, the pump will stop sampling automatically. A Sample Summary will be displayed and accumulated data automatically reset.

***Note**: If pump is shut off or goes to sleep after a sample is completed and is powered on again, the initial display will show the Sample Summary of the previous sample run*.

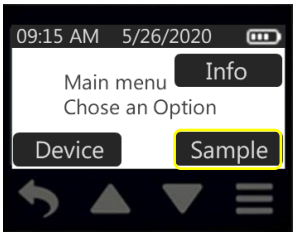


>Touch Run button in Advanced Menu to run pump in constant flow.

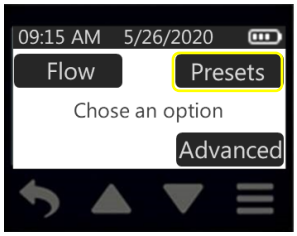
Presets (uploaded to pump from DataTrac Pro Software)

1. Connect pump to sampling train. *See Figure 8*.
2. Select sample preset as follows:

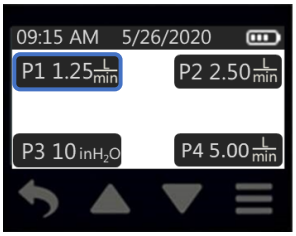
From Main Menu:



Touch Sample

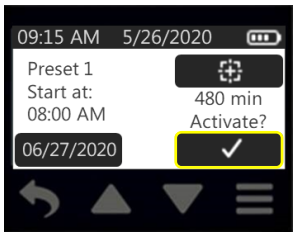


>Touch Presets

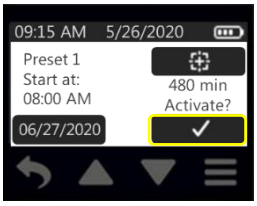


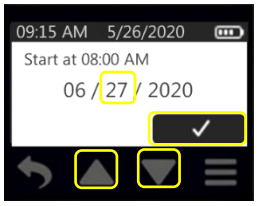
>Touch desired Preset (programmed in DataTrac Pro Software and uploaded to pump)

Presets are created by the user in DataTrac Pro for Bluetooth-connected Pumps Software and uploads them to the pump. *See DataTrac Pro for Bluetooth-connected Pumps Software for details*. The start date for a preset with delayed start can be changed on the pump by touching the date on the Preset screen. The pump can also be calibrated from this screen.

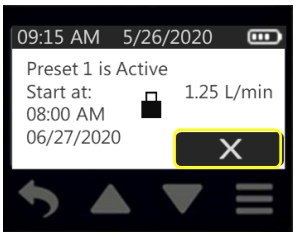


To run a preset sample with a delayed start, touch check mark to activate the preset.

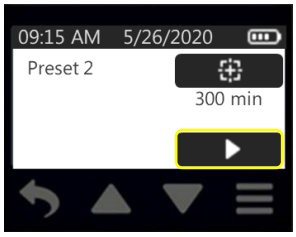




***Note**: The day of a preset with delayed start can be changed from the pump screen. Touch the delayed start date, touch the up and down arrow buttons to change the desired start day, and touch check mark. This can be changed to a future day only*.



The pump will display a screen showing a summary of the preset and a cancel (X) button. Touch the X if you wish to cancel the activated preset.



To run a preset sample without a set delayed start, touch the Run button.

See Options on pump screen during a sample run on page 26.

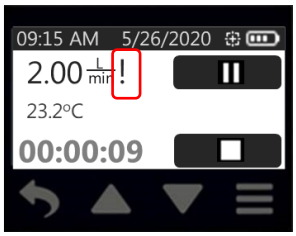
3. When the Preset sampling period is complete, the pump will automatically stop sampling, which displays a Sample Summary and automatically resets the accumulated data. ***Note**: If pump is shut off or goes to sleep after a sample is completed and is powered on again, the initial display will show the Sample Summary of the previous sample run*.

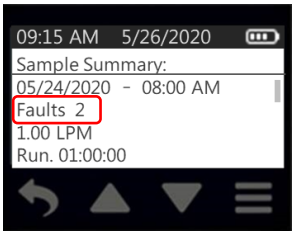
Flow Fault Mode and Display

During a sample run, overloaded sampled media or kinked tubing can restrict airflow and cause back pressure to build to a point at which the pump can no longer compensate flow within ± 5%. If this condition is sustained for 3 to 10 seconds, the pump will go into flow fault mode as follows:

1. Pump stops running and status LEDs on pump flash red. Elapsed time stops.

2. An exclamation point icon appears on the display next to the flow rate (*see right*).
3. After 20 seconds in fault, the pump will attempt to restart up to 5 times.
    a. If full airflow is restored during the restart attempts, the pump will continue the sample run.
    b. If full airflow is **not** restored during 5 restart attempts within 5 minutes, the pump will end the sample run and display the Sample Summary. The Sample Summary will indicate the number of faults (*see right*). The LEDs will flash red with decreasing frequency.
4. To clear a flow fault, touch any button on the display. ***Note**: A flow fault will also be cleared when the battery charge is depleted.*

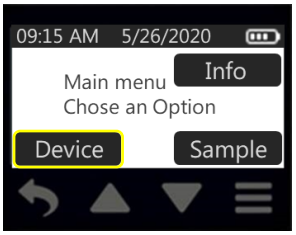




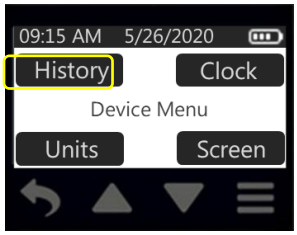
Viewing History (History Menu)

Review specific sample run summaries directly on the pump screen as follows:

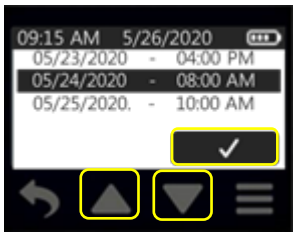
From Main Menu:



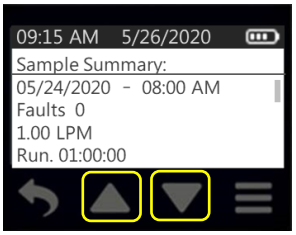
Touch Device



>Touch History



>Touch arrows to scroll
>Touch check mark to select



>Touch arrows to scroll selected summary info

Note: The last 16 sample runs can be viewed as Sample Summaries on the pump. A maximum of 4416 data entries can be held in pump memory. This equals approximately 70 hours of one-minute averages or 360 hours of 5-minute averages. To access this data, upload it to DataTrac Pro for Bluetooth-connected Pumps Software on your PC.

Using Pump with DataTrac Pro for Bluetooth-connected Pumps Software

AirChek Connect communicates with a laptop/PC via USB Bluetooth adapter Cat. No. 877-94 and DataTrac Pro for Bluetooth-connected Pumps Software, which is available as a download (requires Internet connection). Access Data for Bluetooth-connected Pumps Software as follows:

1. Check that the PC meets DataTrac Pro system requirements.
2. Install the USB Bluetooth Adapter or “dongle” on laptop/PC according to the instructions included with the adapter.
3. Browse URL provided in adapter instructions and download and install the DataTrac Pro Installer on the laptop/PC. (A flash drive option is available for users without an Internet connection.)
4. Upon successful installation, DataTrac Pro will launch automatically and attempt to find any active AirChek Connect pumps within the area.

For further instructions, see the DataTrac Pro for Bluetooth-connected Pumps User Manual.

Replacing the Battery Pack

Ensure that pump is turned off before removing the battery pack and that no tubing or media are attached to the pump.

1. Turn the pump off by pressing the on/off button.
2. Remove the existing battery pack.
    a. Use a 2.5-mm hex driver (Allen wrench) to loosen two screws on the bottom of the battery pack housing.
    b. Pull the battery pack housing away from the pump case.
    c. If replacing the battery pack with a new Cat. No. P75718, dispose of the used battery promptly.

Do not disassemble the battery pack. Do not dispose of in fire. Dispose of used batteries promptly according to all state and local recycling of waste regulations.

3. Install a new battery pack or reinstall the existing battery pack.
    a. Align the battery pack with the bottom of the pump case. ***Note****: The connector on top of the battery pack should align with the protruding power control board contacts on the bottom of the pump case*.
    b. Press the two parts together until snug. ***Note****: When the battery pack is attached, the pump screen will display a 20-second countdown as the zero setting of the flow sensor is performed.*
    c. Use a 2.5-mm hex driver (Allen wrench) to tighten two screws on the bottom of the battery pack housing. Tighten the screws in an alternating fashion.
    d. Charge the new battery pack completely before use; if reinstalling the existing battery pack, ensure that it is charged to at least 25% (battery status icon upon startup shows two bars). *See Charging the Battery Pack*.

Replacing the Screen Cover

1. Remove the two screws from the top of the screen cover mounting block.
2. Lift off the screen cover and mounting block.
3. Align and press-fit the mounting block onto the new screen cover posts (i.e., with the underside of the mounting block facing up and its straight edge facing away from the cover). Rotate the mounting block away from the screen cover until it is stopped by the inside edge of the screen cover.
4. Align the screen cover/mounting block with the holes in the top of the belt clip/top pump case.
5. Gently insert the two screws through the mounting block into the belt clip. Tighten until snug.
6. Ensure that the screen cover closes properly.

Replacing the Belt Clip

1. Remove the screen cover.
    a. Remove the two screws from the top of the screen mounting block.
    b. Lift off the screen cover and mounting block. ***Note****: Do not remove the two lower hex nuts from the main case.*
2. Remove the screw from the bottom of the belt clip and pull the screw through the opening in the clip.
3. Lift the belt clip away from the pump. Ensure that the hex nut in the top of the case does not fall out.
4. Push the new belt clip into place until it fits snugly.

5. Gently insert the belt clip screw through the opening in the belt clip and into the pump case. Tighten the screw until engaged. Do not tighten completely.
6. Replace the screen cover.
    a. Place the screen cover and mounting block so that the two holes are aligned with the holes in the top of the belt clip. Insert the two screws into the mounting block and tighten until snug.
    b. Ensure that the screen cover closes properly.
7. Tighten the screw under the belt clip until snug.

Replacing the Inlet Housing and/or Inlet Filter

1. Remove the four screws from the inlet housing.
1. Pull the inlet housing away from the pump.
2. Remove the O-ring and filter.
3. Insert the new or existing filter and O-ring into the inlet recess. Ensure that the O-ring is fully flat.
4. Align the new or existing inlet housing with the inlet recess.
5. Insert the four screws into the inlet housing. Tighten the screws only until the gap between the inlet housing and pump is closed.

TROUBLESHOOTING

If the pump is not responding to touch or the pump screen displays uncommon characters, remove and reinstall the battery (*see Replacing the Battery Pack*). If these problems persist, contact SKC.

Pump Service

Pumps under warranty should be sent to SKC Inc. for servicing. See Limited Warranty and Return Policy.

User may replace external components such as the inlet filter, battery, screen protector, and/or belt clip. Service must be performed by SKC to maintain performance and intrinsic safety rating. Warranty is void if pumping compartment is opened by user.

ACCESSORIES/REPLACEMENT PARTS

Accessories	**Cat. No.**
Standard Charging Cradle, requires power supply see below	220-800
Single Cradle Power Supply, for use with one charging cradle, 100-240 V	220-600
Multi Cradle Power Supply, for use with 2 to 4 charging cradles, 100-240 V	220-700
Low Flow (5 to 500 ml/min) Kit includes All-in-One adjustable tube holder and Type A protective tube cover	210-500
Constant Pressure Controller for multiple-tube sampling	224-26-CPC
Protective Pouch, nylon, with adjustable waist belt and shoulder strap, black	224-911
DataTrac Pro for Bluetooth-connected Pumps USB Bluetooth Adapter, *required for free software download and use of DataTrac Pro software*	877-94
chek-mate Calibrator, 0.50 to 5 L/min, includes 9-volt battery, and NIST-traceable calibration certificate	375-0550N

Replacement Parts	**Cat. No.**
Replacement Battery Pack, Li-Ion*	P75718
Belt Clip	P51824
Inlet	P20423
Inlet Filter/O-rings, pk/3	P4001
Screen Cover	P20422

***Li-Ion Battery Testing and Shipment**
Rechargeable lithium-ion (Li-Ion) batteries for use with SKC sample pumps have been tested in accordance with the UN Manual and are proven to meet requirements of each test in the *UN Manual of Tests and Criteria*, Part III, subsection 38.3. The batteries are rated below 100 watt-hours (Wh).

AirChek Connect pumps contain Li-Ion batteries and are subject to special shipping regulations. Consult with your carrier for more information on Lithium Battery Shipping Regulations UN 3480 and UN 3481 or visit SKC's website for more information at skcinc.com/catalog/pdf/instructions/1921.pdf

- **Use only SKC-approved parts to ensure reliable performance and to maintain the UL Listing for intrinsic safety. Failure to do so voids any warranty.**
- **Use of a repaired or rebuilt battery pack VOIDS ANY WARRANTY.**

SKC Limited Warranty and Return Policy
SKC products are subject to the SKC Limited Warranty and Return Policy, which provides SKC's sole liability and the buyer's exclusive remedy. To view the complete SKC Limited Warranty and Return Policy, go to http://www.skcinc.com/warranty.

APPENDIX: PERFORMANCE PROFILE

Flow range	Constant flow from 1000 to 5000 ml/min (5 to 500 ml/min requires low flow holder)
Compensation range in Constant Flow Mode	5000 ml/min at 20 inches water column 4000 ml/min at 30 inches water column 3000 ml/min at 40 inches water column 2000 ml/min at 50 inches water column 1000 ml/min at 60 inches water column
Pressure Range in Constant Pressure Mode	1 to 20 inches water column
Flow control system	Isothermal, corrects for changes in back pressure, temperature, and atmospheric pressure
Flow fault/Auto-restart	After 3 to 10 seconds of restricted flow, pump stops running, elapsed time stops, status LEDs flash red, and pump displays fault icon. After 20 seconds in fault, auto-restart is attempted up to 5 times unless full airflow is restored prior to that. If full airflow is not corrected during 5 restart attempts within 5 minutes, the pump ends the run.
Power	Removable rechargeable lithium-ion (Li-Ion), 7.4 V, 2.6 Ah, 19.2 Wh or AC using cradle
Run time	40+ hours at 2000 ml/min* 15+ hours at 5000 ml/min* Indefinite run from charging cradle
Charging method	Cradle, available as a single unit using Single Cradle Power Supply Cat. No. 220-600; chainable up to 5 units using a Multi Cradle Power Supply Cat. No 220-700
Charging time (*varies with battery capacity and level of discharge*)	Approximately 3 hours
Accuracy	Flow control: ± 5% of set-point after calibration to desired flow Atmospheric pressure: ± 0.3 inHg Temperature: ± 1.0 C
Temperature ranges	Operating: 32 to 104 F (0 to 40 C) Charging: 32 to 113 F (0 to 45 C) Storage: -4 to 113 F (-20 to 45 C)
Humidity ranges	Operating: ≤ 95% RH, non-condensing Storage: ≤ 95% RH, non-condensing
Altitude	Corrects flow for changes in temperature (32 to 104 F [0 to 40 C]) and ambient pressure up to 15,000 feet (4572 meters) above and down to 4500 feet (1372 meters) below sea level
Display/parameters	High-contrast backlit LCD/Time, date, battery status, flow rate, sample volume, temperature, atmospheric pressure, back pressure, programmed run remaining time, and elapsed run time
User interface	Eight-area capacitive touch screen with auto-dim and locking options
Status LEDs	Dual LED, blinking green = running pump, blinking red = flow fault
Sound level	Average 51.7 dB at 3-ft (1-m) distance using a 37-mm, 0.8-µm MCE filter cassette
Tubing	Requires ¼-inch ID tubing
Dimensions	4.1 x 3.7 x 2.8 in (10.4 x 9.4 x 7.1 cm)
Weight	19.4 oz
Certifications	• Intrinsic safety (SKC Cat. No. 220-4000 operated with SKC Battery Pack P75718) Class I, Groups A, B, C, D; Class II, Groups E, F, G; Class III, T4; Class I, Zone 0, AExia IIC T4 Ga; Exia IIC T4 Ga; -20°C ≤ Ta ≤ 45°C; Ex II 1G Exia IIC T4 Ga; IECEx UL 19.0100 • DEMKO 19ATEX 2288 • CE 0539 • RoHS compliant • Designed to meet ISO 13137:2013 c UL us LISTED E62011
Case material	Polycarbonate with rubberized anti-static overmolding
Features	On-screen battery status display, ergonomic case design, secure clip, cradle for charging, ultra-quiet operation
Media	Use to sample with sorbent tubes, filters, size-selective particulate samplers, and impingers
Communications with PC	Low-energy Bluetooth, requires DataTrac Pro for Bluetooth-connected Pumps USB Bluetooth Adapter 877-94
Warranty	1-year limited warranty

**Tested using 37-mm 0.8-µm MCE filter with new pump and battery. Pump performance may vary.*