ANALYT MESSTECHNIK



OPERATING MANUAL

SKC Leland Legacy Sample Pump

Charging, setup, flow rate verification and sampling with the Leland Legacy high flow sample pump, 5 to 15 L/min, with CalChek calibration, battery replacement, error codes, technical data and ordering information.

AMTC-MN-0043

Rev. 2 · October 2026

About this manual

The SKC Leland Legacy is a battery-powered dual diaphragm sample pump for constant flows from 5 to 15 L/min. It needs little power and runs quietly, and its Li-Ion battery pack is made for 24-hour run times. This manual takes you from unpacking to a finished sample: charging the battery, setting up the pump with its three-key keypad, verifying the flow rate by hand or with CalChek, and sampling. Later chapters cover the battery change and the CalChek full calibration you may do yourself, the CalChek error codes, the technical data and the order numbers of accessories and spare parts.

Read Safety (p. 6) before you use the pump for the first time: the Leland Legacy is not intrinsically safe and must not be used, or charged, in hazardous locations. To start sampling quickly, follow Commissioning (p. 9), Verifying the flow rate (p. 14) and Sampling (p. 17) in that order.

The manual applies to the Leland Legacy pump, Cat. No. 100-3002, and to the kits 100-3002K and 100-3002K5. Analyt-MTC supplies, services and supports the pump; for questions, repairs and spare parts see Service, warranty and contacts (p. 27).

Keep this manual for the lifetime of the product. The current revision is on the product page at analyt-mtc.com.

Conventions in this manual:

- Keys, buttons and menu entries are printed like this: ∗.
- A menu path such as **View** › **Calibration Info** means that you open each entry in turn.

Abbreviations

Abbreviation	Meaning
DPS	Deployable Particulate Sampler, an SKC sampling system
EMI	Electromagnetic interference
ETV	Environmental Technology Verification, a programme of the US EPA
LCD	Liquid crystal display
Li-Ion	Lithium-ion
MCE	Mixed cellulose ester
NIST	National Institute of Standards and Technology
PPI	Parallel Particle Impactor, an SKC sampler
PUF	Polyurethane foam
PVC	Polyvinyl chloride
RFI	Radio-frequency interference
STEL	Short-term exposure limit

How this manual marks information

⚠ WARNING

A hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

Practices not related to personal injury — damage to the product, the process or the sample.

Note
Information that helps understanding; never a hazard.

The three keys are shown as symbols: ∗ (star), ▲ (up) and ▼ (down). ▲+▼ means: press both arrow keys at the same time. ∗ ▲ ▼ ∗ means: press the four keys one after the other. Words that appear on the pump display are written in bold, as they appear: **SETUP**, **End**, **CLr**.

Document information

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Applies to	Leland Legacy sample pump, Cat. No. 100-3002, and kits 100-3002K and 100-3002K5
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Manufacturer	SKC Inc.

Revision history

Rev.	Date	Change
2	October 2026	Quality programme: new document type, number and identity pages.
1	October 2026	First issue.

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CHAPTER 1

Safety

Read this chapter before you use the pump for the first time. The Leland Legacy runs on a high-capacity lithium-ion battery pack and is not built for hazardous locations. The rules in this chapter protect the people working with the pump, the battery pack and the pump itself.

Where the pump may be used

The pump is designed for constant flows of 5 to 15 L/min against moderate back pressure (see Flow and performance (p. 24)). It is not intended for applications that need an intrinsically safe pump, or for media with a high back pressure.

⚠ WARNING

The pump is not intrinsically safe. In a hazardous location it can ignite an explosive atmosphere and cause a fire or an explosion. Never run it or charge it in a hazardous location — neither on its battery nor connected to the charger.

Battery pack and charger

The pump runs on a removable, rechargeable lithium-ion (Li-Ion) battery pack of 99.4 Wh (replacement pack Cat. No. P75692C). Handle it with the care due to any large Li-Ion battery, and follow the warnings below.

⚠ WARNING

A damaged, short-circuited or overheated lithium-ion battery pack is a fire hazard. It can catch fire or explode and cause burns. Do not open, disassemble, short-circuit or crush the battery pack. Do not heat it above 212 °F (100 °C) or put it in a fire. Tampering with the battery pack in any of these ways also voids the warranty. A short circuit destroys the battery pack at once. A charging plug inserted the wrong way, or with poor contact, short-circuits the battery. Check that the charging plug is the right way round before you push it into the charging jack.

NOTICE

Charging with a charger that is not approved for the pump, or using a repaired or rebuilt battery pack, damages the battery or the pump or voids the warranty. Use only the chargers in Chargers and data cable (p. 26), and do not use a repaired or rebuilt battery pack.

Approved parts

Use only original spare parts and accessories approved by the manufacturer, listed in Ordering information (p. 26). Other parts can impair the pump's performance and void the warranty. This manual describes how to change the battery pack (see Replacing the battery pack (p. 21)); for repairs, contact Analyt-MTC.

The warranty also lapses if the warnings and cautions in this manual are not followed.

CHAPTER 2

Product description

Checking the contents

Check the delivery against the table below. If anything is missing, contact Analyt-MTC (see Service, warranty and contacts (p. 27)).

Order code	Contents
100-3002	Pump with Li-Ion battery pack and screwdriver set
100-3002K	Single pump kit: pump with high-power Li-Ion battery pack, single charger for 100–240 V, hard-sided case
100-3002K5	Five-pump kit: 5 pumps, Take Charge 5 Multi-charger, DataTrac Software Cable for Leland Legacy, hard-sided case

You also need:

- Tygon tubing, 3/8 in. inside diameter, 1/2 in. outside diameter;
- a charger for the Li-Ion battery pack, if you ordered the pump on its own (see Chargers and data cable (p. 26));
- a flowmeter for 5 to 15 L/min to verify the flow rate — with the High Flow chek-mate, also the Pulsation Dampener (see Flowmeters and calibration accessories (p. 26)).

Parts of the pump



Figure 1. Pump parts (front view).
1 Inlet with filter retainer and protective cover · **2** Run indicator LED (flashes while the pump runs) · **3** Liquid crystal display (LCD) · **4** Battery status symbol · **5** Keypad · **6** Soft rubber overmoulding · **7** Li-Ion battery pack
Not shown: belt clip (back), battery charging jack and data port (top).



Figure 2. Top of the pump.
1 Data port, for the CalChek cable and the DataTrac cable · **2** Inlet with filter

The pump draws air in through the inlet on top (1 in Figure 1). The battery charging jack is also on top, under the protective cover.

The display shows the flow rate, volume, temperature, atmospheric pressure, time of day, run time and pump status, and the Setup menu. It also shows the pump's serial number and software revision.

The soft rubber overmoulding protects the case against knocks. The battery pack forms the lower front of the case and is held by three screws.

The keypad

Three keys on the front of the pump operate it. Each key has its own job; pressed together or in a fixed order, they give the commands in the second table.

Key	What it does
∗	Star: scrolls through the run data and through the Setup options.
▲	Up: increases a value, such as the flow rate.
▼	Down: decreases a value, such as the flow rate.

Keys	What they do
▲+▼	Press together: selects or enters the item on the display. Outside Setup, starts the pump or places a running pump in Hold.
∗ ▲ ▼ ∗	Press one after the other: the security code that opens Setup (see Opening, using and leaving Setup (p. 11)).

Switching on and off

To…	Do this
Switch on	Press any key.
Start the pump, or place it in Hold	Press ▲+▼.
Switch off	Place the pump in Hold, then press and hold ∗.

A pump in Hold switches itself off after 5 minutes (Auto Off).

Battery status

The battery symbol at the left of the display shows the charge remaining in bars.



Bars	Charge remaining
3	approx. 75–100 %; normally shown after charging
2	approx. 25–75 %; enough to run the pump
1	approx. 1–25 %; charge the battery
none, outline flashing	Low battery fault: the pump goes into Hold

CHAPTER 3

Commissioning

Charge the battery pack completely before you use the pump, and again before each flow rate verification and sample. A full charge takes about 15 hours; a new pack may need a few charges to reach its full capacity.

⚠ WARNING

Charging the pump in a hazardous location can ignite an explosive atmosphere. An ignition can cause fire, explosion or injury. Never charge the pump in a hazardous location. Charge only with the approved chargers listed in Chargers and data cable (p. 26), within 0 to 45 °C.

Charging with the single charger

The steps below use the Single Charging Kit, Cat. No. 223-241 (charging unit, 100–240 V power supply, interchangeable wall plugs). For up to five pumps there is the Take Charge 5 Multi-charger, Cat. No. 223-441; follow its own instructions. For a complete charge, do not run the pump while it charges.

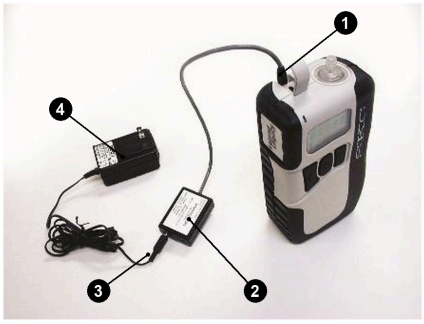


Figure 3. Charging with the single charger.
1 Battery charging jack (top of the pump, under the protective cover) · **2** Charging unit with charge status LED · **3** Jack on the charging unit · **4** Power supply

NOTICE

A plug pushed in the wrong way, or with poor contact, short-circuits and destroys the battery. Check that the plug is the right way round before you push it in.

1. Lift the protective cover on top of the pump and push the plug of the charging unit into the battery charging jack (1).
2. Plug the power supply cable into the jack on the charging unit (3).
3. Slide the wall plug for your country onto the power supply (4) and plug it into a mains outlet.
4. Leave the pump on the charger until the LED shows that charging is complete (about 15 hours).

Reading the charge status

The LED on the Li-Ion charging unit of the single charger blinks in a pattern (Figure 4). Watch it for more than 5 seconds before you read it.

LED on the charging unit	Charge status
On, steady	Charging
On 2 s, off 0.25 s, repeating	About 80 % charged
Off 2 s, on 0.25 s, repeating	Fully charged

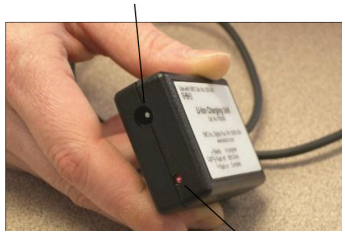


Figure 4. Charging unit of the single charger. Upper line: power supply jack · Lower line: charge status LED

After charging

- The battery pack may stay on an approved charger indefinitely. For long runs, the pump may also sample while connected to it — outside hazardous locations only.
- Let a freshly charged pump run for about 5 to 15 minutes before you verify the flow: the battery is then in a steadier state, and the readings before and after sampling agree better.

CHAPTER 4

Operation

Operation runs from the settings to the finished sample: set the flow rate, sampling time, delayed start, clock and display units in the Setup menu; verify the flow with a flowmeter before and after every sample; then take the sample by hand, for a set sampling time or from a program loaded with DataTrac.

Flow rate, sampling time, delayed start, clock and display units are set from the keypad in the pump's Setup menu, or from a PC with DataTrac (see Programming the pump from a PC (p. 18)).

Opening, using and leaving Setup

To…	Do this
Open Setup	Press ▲+▼, then the security code ∗ ▲ ▼ ∗. **SETUP** appears briefly. 
Move on	Press ∗ to go to the next option. After **End**, the options start again from the top until you leave Setup.
Save and leave	Press ∗ until **End** appears, then press ▲+▼. The new settings are saved and the pump is in Hold.
Leave without saving	Press ∗ until **ESC** appears, then press ▲+▼.

The Setup options

The options appear in this order. In each option, ▲ and ▼ change the value and ∗ moves on to the next option. The temperature and pressure displays below show US units.

Display	Option	What it does
	**1** Flow set	Sets the flow rate. The pump starts running while you set it.
	**2** ADJ	Adjusts the flow during manual flow rate verification until the flowmeter shows the required flow (see Manual verification (p. 15)). Not used with CalChek.
	**3** CALCh	CalChek only. ▲+▼ starts a single-point flow rate verification (see CalChek single-point verification (p. 15)); ▲ pressed seven times starts a full calibration (see Calibration and verification (p. 19)).
	**4** Clock / delayed start	▲ or ▼ switches between **12 Hr** (factory setting), **24 Hr** and **dELA** (delayed start); ∗ selects. For a delayed start, see Programming a delayed start (p. 13).
	**5** Time of day	Set the flashing hours with ▲ or ▼, press ∗, then set the flashing minutes the same way.
	**6** ST (sampling time)	Sets a run time in minutes, up to 99 999 minutes (see Setting a sampling time (p. 12)).
	**7** Temperature	Switches the temperature display between Celsius (C, factory setting) and Fahrenheit (F).
	**8** Atmospheric pressure	Switches the pressure display between millimetres of mercury (mm, factory setting), millibar (mb) and inches of mercury (In).
	**9** CLr	▲+▼ resets the accumulated run time and volume to zero (see Clearing the run data (p. 13)).

Display	Option	What it does
ESC	**10** ESC	▲+▼ leaves Setup without saving the new settings.
End	**11** End	▲+▼ saves the new settings and leaves Setup.
PrOFF	PrOFF	Appears only when a program is loaded in the pump. ▲+▼ deletes it (see Deleting a program or delayed start (p. 13)).

Setting the flow rate

1. Open Setup: ▲+▼, then ∗ ▲ ▼ ∗. The flow rate and **SET** flash, and the pump runs.
2. Press ▲ to increase or ▼ to decrease the flow rate.
3. Press ∗ until **End** appears. The pump stops.
4. Press ▲+▼ to save the flow rate and leave Setup.

Then verify the flow with a flowmeter, as described in Verifying the flow rate (p. 14).

Setting a sampling time

With a sampling time (ST) set, the pump runs for that many minutes — from 1 to 99 999 — and then goes into Hold by itself. The sampling time can also be programmed from a PC with DataTrac.

1. Open Setup: ▲+▼, then ∗ ▲ ▼ ∗.
2. Press ∗ repeatedly until **ST L min**, a flashing time and **SET** appear.
3. Set the sampling time in minutes with ▲ or ▼.
4. Press ∗ until **End** appears, then ▲+▼ to save and leave Setup.
5. Press ▲+▼ to start sampling. The display counts the time down in minutes; at zero the pump goes into Hold and shows the total sampling time.



Sampling time set, here 6 minutes (step 3).

Deleting a sampling time

1. Open Setup and press ∗ until **ST L min** appears.
2. Press ▼ until **0** appears.
3. Press ∗ until **End** appears, then ▲+▼ to leave Setup.

> **Note**
> After the sampling time is deleted, the display still shows a time: the run time accumulated since the run data were last cleared. To set it to zero, clear the run data (see Clearing the run data (p. 13)).

Programming a delayed start

A delayed start lets the pump begin a timed sample of 1 to 99 999 minutes at a time of day you choose, within the next 12 hours. It needs a sampling time: without one, a delayed start does not run. A delayed start can also be programmed from a PC with DataTrac; the steps below use the keypad.

> **Note**
> While a program or a delayed start is set, the pump cannot be run by hand. To return to manual operation, let the program run to its end, or delete it (see Deleting a program or delayed start (p. 13)).

1. Open Setup: ▲+▼, then ∗ ▲ ▼ ∗.
2. Press ∗ until the clock option appears. If a delayed start is already programmed, it shows **dELA** instead of **12 Hr**. Otherwise press ▲ or ▼ until **dELA** flashes.
3. Press ∗: the hours of the time of day flash. Set the hour at which sampling is to start with ▲ or ▼, press ∗, and set the minutes the same way.
4. Press ∗ until **ST** appears, and set the run time in minutes with ▲ or ▼.
5. Press ∗ until **End** appears, then ▲+▼ to save and leave Setup.
6. **PROG** and a flashing **HOLD** appear in the upper left corner of the display: the pump is set for a delayed start.



Delayed start selected (step 2).



Start time set, here 7:30 (steps 2 and 3).



Pump set for a delayed start (step 6).

> **Note**
> The start time has no a.m. or p.m.: the pump starts at the next time the clock reaches the hour and minute you entered, within 12 hours of programming.

Deleting a program or delayed start

1. Open Setup: ▲+▼, then ∗ ▲ ▼ ∗.
2. Press ∗ until **PrOFF** flashes, then press ▲+▼.
3. Press ∗ until **End** appears, then ▲+▼ to leave Setup. The **PROG** symbol disappears.

Clearing the run data

Clearing sets the accumulated run time and volume to zero — for example after a manual flow rate verification, before you sample.

1. Open Setup: ▲+▼, then ∗ ▲ ▼ ∗.
2. Press ∗ until **CLr** appears, then press ▲+▼.
3. Press ∗ until **End** appears, then ▲+▼ to leave Setup. The run data are cleared and the pump is in Hold.

Note
CLr does not delete a sampling time you have set. To remove it, see Deleting a sampling time (p. 12).

How the pump keeps flow and volume

The flow rate on the display is the flow to which the pump was verified. During sampling, the pump measures the ambient temperature and atmospheric pressure and adjusts its flow when they differ from the conditions at verification, so the flow stays at the verified value; the display does not change. If the pump cannot hold the verified flow, it goes into flow fault (see Faults during sampling (p. 18)).

The volume on the display is a corrected volume: the pump continually multiplies the corrected flow rate by the elapsed time. The pressure correction covers weather changes and altitudes from at least 5000 ft below to 7500 ft above sea level, relative to the pressure at verification. Above 99 999 litres the volume is no longer shown (see Faults during sampling (p. 18)).

Verifying the flow rate

The sample volume is flow rate times time, so the result is only as good as the flow rate. Verify the flow with a flowmeter before and after every sample, through the complete sampling train with a representative sample medium in line — the same type of filter, impactor or tube you will sample with — because its resistance changes the flow the pump delivers.

Before you verify

- Charge the battery completely (see Commissioning (p. 9)).
- If the pump has come from a much colder or warmer place, let it adjust to the room temperature first.
- Let the pump run for 5 to 15 minutes before you start.
- If your sampler needs a calibration adapter, fit it.
- Choose the method:

Method	You need
Manual verification (p. 15)	A flowmeter for 5–15 L/min, e.g. the High Flow chek-mate Flowmeter; Pulsation Dampener 375-150
CalChek single-point verification (p. 15), automatic	High Flow chek-mate Flowmeter with CalChek; CalChek Communication Cable 375-200; Pulsation Dampener 375-150

Note
With the High Flow chek-mate Flowmeter, the Pulsation Dampener, Cat. No. 375-150, must always be in line between flowmeter and pump — for manual and CalChek verification, and for the CalChek full calibration. The order numbers are in Flowmeters and calibration accessories (p. 26).

Connecting the sample medium

The pump needs tubing of 3/8 in. inside diameter. Media with 1/4 in. inlets and outlets, such as filter cassettes, need both 3/8 in. and 1/4 in. tubing, joined by tubing adapters (Cat. No. P31211). The Sioutas Cascade Impactor connects directly with 3/8 in. tubing and needs no adapters.

Manual verification

1. Make sure the pump has run for 5 to 15 minutes.
2. Connect the flowmeter outlet to the pump inlet, with the Pulsation Dampener and the representative sample medium in line, as in Figure 5.
3. Press ▲+▼, then the security code ✱ ▲ ▼ ✱. The flow rate and **SET** flash.
4. Set the required flow rate with ▲ or ▼.
5. Press ✱. **ADJ** appears.
6. Compare the flowmeter with the required flow. If the flowmeter reads higher, press ▼; if it reads lower, press ▲; continue until the two agree to within 10 mL. The display shows the correction you have made, in L/min.
7. Press ✱ until **End** appears.
8. Press ▲+▼ to save the adjusted flow and leave Setup.
9. Clear the run data (see Clearing the run data (p. 13)).

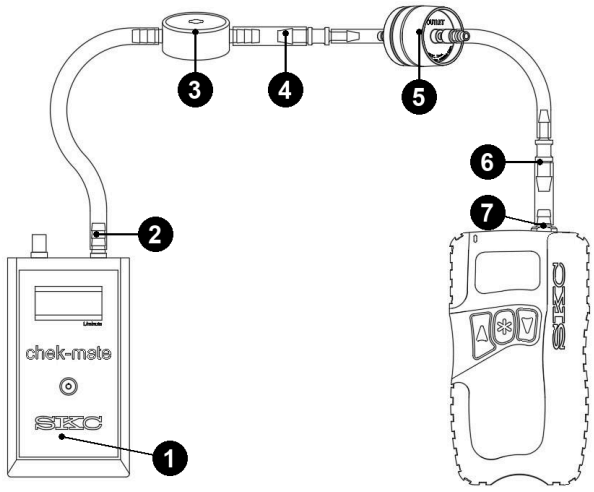


Figure 5. Manual flow rate verification train (filter cassette shown).
1 Flowmeter (High Flow chek-mate shown) · **2** Flowmeter outlet · **3** Pulsation Dampener · **4** Tubing adapter · **5** Representative sample medium, inlet towards the flowmeter · **6** Tubing adapter · **7** Pump inlet

Note
A pump that was programmed with DataTrac and then switched to manual operation may still hold a program: **PROG** shows in the upper left corner of the display. Delete the program as described in Deleting a program or delayed start (p. 13).

CalChek single-point verification

With CalChek, the chek-mate flowmeter reports the measured flow to the pump through a cable, and the pump corrects itself at the set flow. A verification usually takes less than a minute. Use it to set the flow before sampling, and to check the flow through the sampling train after each sample. For best accuracy, start only when the pump has stood at room temperature for several hours.

1. Make sure the pump has run for 5 to 15 minutes. Leave it switched on.
2. Switch the flowmeter on.
3. Plug one end of the CalChek Communication Cable into the CalChek interface socket of the flowmeter (8; Figure 7), and the other end into the data port on top of the pump (Figure 2).
4. With flexible 3/8 in. tubing, connect the flowmeter outlet to the pump inlet with the Pulsation Dampener and the representative sample medium in line, as in Figure 6.
5. Press ▲+▼, then the security code ∗ ▲ ▼ ∗ to open Setup.
6. Set the required flow rate.
7. Press ∗ until **CALCh** appears. If **no** flashes, the pump has not yet adjusted to the ambient conditions: wait until **no** disappears.
8. Press ▲+▼ to start the verification. When the chek-mate detects flow, it sends a reading at 3.5-second intervals. The pump shows **1CAL** and, briefly, the flows it receives.
9. When the verification is finished, the pump keeps running. If it succeeded, the display shows the run time **0.0**. If it failed, an error code **E4…** appears (see Troubleshooting (p. 23)); press ∗ to clear it.
10. Place the pump in Hold with ▲+▼. Disconnect the pump, the representative sample medium and the Pulsation Dampener from the flowmeter.
11. Let the pump go to sleep, then continue with Sampling (p. 17).

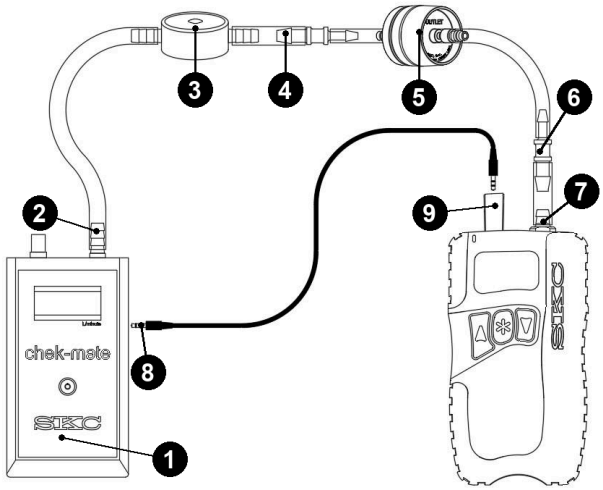


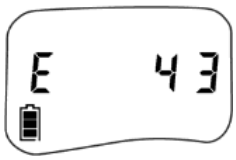
Figure 6. CalChek single-point verification train (filter cassette shown).
1 High Flow chek-mate Flowmeter with CalChek · **2** Flowmeter outlet · **3** Pulsation Dampener · **4** Tubing adapter · **5** Representative sample medium · **6** Tubing adapter · **7** Pump inlet · **8** CalChek interface socket · **9** CalChek Communication Cable, into the pump's data port



Figure 7. Plugging the CalChek Communication Cable into the CalChek interface socket of the flowmeter.



Verification running.



Error code, here E43.

Note
A successful verification is recorded in the pump history, which you can view with DataTrac for Leland Legacy. The pump writes the record only when it goes to sleep, so always let it go to sleep after a verification.

Sampling

The pump samples in one of three ways: started and stopped by hand, for a set sampling time, or from a program loaded with DataTrac. In every case it keeps the verified flow and records the run data for later recovery.

Before you sample

- Charge the battery completely, and let the pump adjust to the ambient temperature if it has come from a much colder or warmer place.
- Set and verify the flow with a representative sample medium (see Verifying the flow rate (p. 14)).
- Outdoors, protect the pump from the weather.

Taking a sample

WARNING

The pump is not intrinsically safe. In a hazardous location it can ignite an explosive atmosphere and cause a fire or an explosion. Never run it or charge it in a hazardous location — neither on its battery nor connected to the charger.

1. Replace the representative sample medium with a new, unexposed one.
2. Press ▲+▼ to start the pump, and note the start time. If you have set a sampling time, the pump stops by itself when it has elapsed (see Setting a sampling time (p. 12)).
3. Sample for the time your method specifies.
4. Press ▲+▼ to place the pump in Hold, and note the stop time.
5. Remove the sample medium and handle it as your method specifies. Fit the representative medium again and verify the flow after sampling.



Figure 8. Pump with a filter cassette in its holder.

The run data stay in the pump's memory after the sample. Press ✱ to scroll through them on the display.

Note

If **PROG** shows in the upper left corner of the display, a program from a PC is loaded and the pump does not run by hand. To return to manual operation, delete the program (see Deleting a program or delayed start (p. 13)).

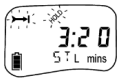
Reading the run data

Press ∗ repeatedly to step through the run time (or the sampling time, ST), sample volume, flow rate, temperature, atmospheric pressure and time of day.

- **Started and stopped by hand:** the run time counts up, and at the end the display shows the cumulative run time.
- **With a sampling time:** the time counts down from the set value to zero, and the display then shows the completed sampling time.

Faults during sampling

The pump keeps the flow constant as the back pressure rises. When it can no longer compensate, or the battery runs low, it goes into Hold and keeps the data recorded so far.

Fault	What the pump does	What to do
Flow fault 	If the pump cannot compensate for more than 15 seconds because the back pressure is too high, the flow fault symbol flashes and the pump goes into Hold. After 20 seconds it tries to restart and continue sampling; if the flow is still restricted, it returns to flow fault. It tries again every 20 seconds, up to 10 times. Time spent in flow fault is not added to the run time or the volume.	Remove the cause of the restriction. When the flow is restored, press ▲+ ▼ to clear the symbol. The delay before Hold (5–30 s) and the number of restarts (0–25) can be changed in DataTrac.
Low battery	No bars in the battery symbol, outline flashing: the pump goes into Hold.	Charge the battery (see Commissioning (p. 9)).
O_FlO on the display	The sampled volume has passed 99 999 litres. The pump keeps running normally and keeps counting the volume internally.	Read the total volume in the DataTrac Real Time Monitor, or multiply the flow rate by the cumulative run time. Clearing the run data removes **O_FlO** (see Clearing the run data (p. 13)).

Programming the pump from a PC

Besides the keypad, the pump can be programmed from a PC with the free DataTrac for Leland Legacy software, which makes every function programmable. Install DataTrac on the PC and connect the PC to the pump's data port with the DataTrac Software Cable (USB). With DataTrac you can:

- create a run schedule and save it in the pump's memory for later use in the field;
- program a sampling strategy of up to 26 sampling sequences and flow rates;
- program a delayed start or a timed shutdown, and take STEL and replicate samples;
- set how often the pump logs its history: from every 3 seconds (15.4 minutes of data) to every 8 hours (more than 102 days of data);
- create a sample and analysis sheet with all critical information;
- print the complete history of run data, or save it to a file on the PC;
- create a worker exposure profile with sample and analysis information and the pump history, and import it into a text document;
- document CalChek flow rate verifications and full calibrations.

The operating manual of the DataTrac software is AMTC-MN-0022.

CHAPTER 5

Calibration and verification

The CalChek full calibration (multi-point calibration) calibrates the pump's flow at every flow rate across its operating range of 5 to 15 L/min against a flowmeter with CalChek. The manufacturer recommends it during pump maintenance and after any repair not made by the factory; before and after each sample, verify the flow as described in Verifying the flow rate (p. 14). With DataTrac, the calibration also gives you a record for maintenance and quality purposes.

You need the High Flow chek-mate Flowmeter with CalChek, the CalChek Communication Cable (375-200) and the Pulsation Dampener (375-150); see Flowmeters and calibration accessories (p. 26).

NOTICE

A full calibration completely clears the pump history, the run time parameters and the DataTrac Scheduler. History that you have *not* saved is lost. Save the history with DataTrac first if you need it. Do not put a sample medium in the verification train: the Pulsation Dampener alone sits between flowmeter and pump.

- Charge the battery completely.
- If the pump has come from a much colder or warmer place, let it adjust; for best accuracy, start only when it has stood at room temperature for several hours.

1. Make sure the pump has run for 5 to 15 minutes. Leave it switched on.
2. Switch the flowmeter on.
3. Connect the CalChek Communication Cable between flowmeter and pump. With flexible 3/8 in. tubing, connect the flowmeter outlet to the pump inlet with the Pulsation Dampener in line, as in Figure 9.
4. Check that the battery symbol shows at least two bars. If not, charge the battery first.
5. Open Setup with the security code and press ∗ until **CALCh** appears (see The Setup options (p. 11)). Press ▲ seven times: the pump enters full calibration.
6. When the chek-mate detects flow, it sends a reading at 3.5-second intervals. The pump shows **FCAL**, then **CS1** and briefly a flow rate, then **CS2** and a flow rate, and so on, until all flow rates between 5 and 15 L/min are calibrated. To abort, press ▲+▼: the pump goes into Hold.
7. The pump then checks the calibration: **CCAL** counts down to one, and the pump stops.
8. The pump goes into Hold. If the calibration succeeded, the display shows the run time **0.0**. If it failed, an error code **E4…** appears (see Troubleshooting (p. 23)); press ∗ to clear it.

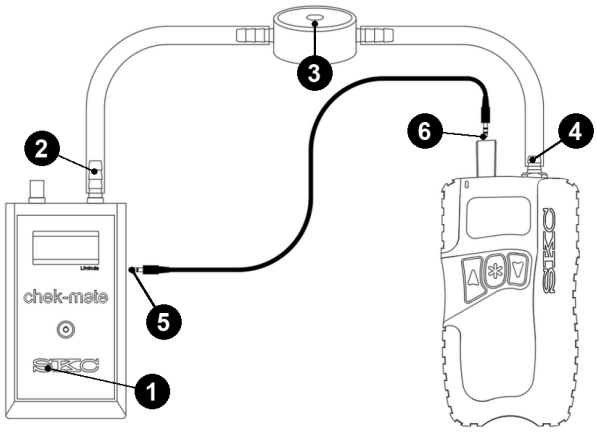
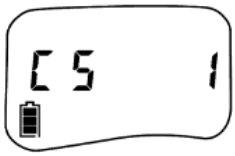


Figure 9. Verification train for the CalChek full calibration — no sample medium.
1 High Flow chek-mate Flowmeter with CalChek · **2** Flowmeter outlet · **3** Pulsation Dampener · **4** Pump inlet · **5** CalChek interface socket · **6** CalChek Communication Cable, into the pump's data port



Full calibration started.

9. Let the pump go to sleep: only then is the calibration written to its memory.



First calibration step.

Calibration records in DataTrac

In DataTrac for Leland Legacy, open the Pump Manager window and choose **View › Calibration Info**. It shows the calibration results, the pump serial number and the date of the last full calibration, and a button prints them. The printed report also carries the pump version, the print date and a validation code.

To check later that a printed report has not been altered, choose **Tools › Confirm Validation Code** in the Calibration Info window and enter the data from the report, including the validation code. DataTrac tells you whether all the data are valid or a parameter has been changed. Enter the date in the form *mmm dd, yyyy*, for example *Aug 18, 2021*.

CHAPTER 6

Maintenance

The maintenance task that is yours is replacing the battery pack; the CalChek full calibration, which resets the pump's flow correction across its whole range, is described in Calibration and verification (p. 19). Use only the original spare parts listed in Spare parts (p. 26).

Replacing the battery pack

You need a Phillips screwdriver and the new battery pack, Cat. No. P75692C. Read Battery pack and charger (p. 6) first.

NOTICE

Removing the battery pack while the pump is on or running can corrupt the pump history. The history is saved only when the pump goes to sleep after its last run. Let the pump go to sleep, then switch it off before you remove the battery pack.

1. Lay the pump down with the belt clip facing up.
2. Remove the three screws on the lower half of the pump. The top screw is longer than the two bottom screws.



Figure 10. Screws, belt clip and battery pack.

3. Take hold of the battery pack and pull it up and away from the pump body.



Figure 11. Removing the battery pack.

4. Line up the connector of the new battery pack with the connector in the pump body.



Figure 12. Battery connector in the pump body.

Note
Do not overtighten the screws.

5. Press the pack gently into the pump body until it is flush with the case, then fit the three screws: the long screw goes into the top hole.

Note
After a battery change, reload any DataTrac program, and enter again the sampling time, delayed start and other settings you made on the keypad.

CHAPTER 7

Troubleshooting

CalChek reports a failed verification or calibration with an error code **E4…** on the display; press ∗ to clear it. The tables list each code, its cause and the remedy. If a remedy does not help, contact Analyt-MTC (see Service, warranty and contacts (p. 27)).

Errors in single-point verification

Code	Cause	Remedy
E41	The correction needed is too large: the flow set on the pump and the flowmeter reading differ grossly.	Run a full calibration (see Calibration and verification (p. 19)). If it fails, contact Analyt-MTC.
E48	No successful verification within five flow readings.	Repeat the verification. If the error persists, run a full calibration.

Errors in full calibration

Code	Cause	Remedy
E44	The first flow reading is above 5 L/min: the pump delivers more flow than it should, although the calibration routine supplied only a very small voltage.	Have Analyt-MTC check that the pressure sensor tubing is not pinched or blocked (see Service, warranty and contacts (p. 27)).
E45	The pump cannot reach 15 L/min. Possible causes: a blocked inlet filter or flow tube, or an air leak inside the pump.	Check the inlet filter for debris and the flow tube for blockage. If that does not help, contact Analyt-MTC.
E46, E49	Analysis error in the data (rare).	Repeat the full calibration. If the error persists, contact Analyt-MTC.
E47	The battery is too low: fewer than two bars in the battery symbol. A full calibration needs at least two.	Charge the battery.
—	After the full calibration, the pump does not verify to within 5 %.	• The pump had not been at ambient conditions for at least 2 hours: wait 2 hours, then repeat. • The pump had not run for 5 to 15 minutes before the calibration: run it for 5 to 15 minutes, then repeat.

Errors in both modes

Code	Cause	Remedy
E42	Unstable average: the flow readings vary too much.	Repeat the verification or calibration. If the error persists, contact Analyt-MTC.
E43	Serial time-out: the flowmeter does not communicate with the pump.	Check the CalChek cable connections at the flowmeter and the pump; reconnect any loose or disconnected plug.
E4A	The verification or calibration was started before the pump had adjusted to the ambient conditions.	Press ∗. Let the pump run until **no** disappears from the display. If the error persists, contact Analyt-MTC.

CHAPTER 8

Specifications

Flow and performance

Pump type	Dual diaphragm pump; not intrinsically safe
Flow range	5–15 L/min, constant flow
Flow control	Closed loop. An internal isothermal flow sensor measures the flow directly and continuously; a flow monitoring algorithm uses its readings to hold the set volumetric flow. Built-in temperature and atmospheric pressure sensors correct the volumetric flow when conditions change from those at flow setting.
Compensation range	15 L/min at 5 in. H_2O back pressure 10 L/min at 12 in. H_2O 5 L/min at 20 in. H_2O
Flow accuracy	±5 % of set-point
Flow fault	After more than 15 s without compensation: symbol flashes, pump in Hold, history kept; restart every 20 s, up to 10 times (adjustable in DataTrac)
Sound level	62.5 dBA without case; 52 dBA in the noise-reducing pouch 224-89 (measured at 3 ft (1 m), 10 L/min, 12 in. H_2O back pressure)
Tubing	3/8 in. inside diameter

Typical back pressure of sampling media

Compare the back pressure of your medium at the planned flow with the compensation range above to judge whether the pump suits the application.

Filter, pore size	5 L/min	8 L/min	10 L/min	12 L/min	15 L/min
37 mm MCE, 0.8 µm	14.7 in. H_2O	23.4 in. H_2O	29.4 in. H_2O	35.4 in. H_2O	44.4 in. H_2O
37 mm PVC, 5.0 µm	6.9 in. H_2O	11.0 in. H_2O	14.0 in. H_2O	16.9 in. H_2O	21.3 in. H_2O

Typical run time

Sioutas Impactor	24 h at 9 L/min (back pressure about 13 in. H_2O)*
IMPACT Sampler	24 h at 10 L/min*
Low-volume PUF tube	24 h at 5 L/min*
DPS Sampler (PM2.5 or PM10)	24 h at 10 L/min*
8 L/min Respirable PPI	24 h at 8 L/min*
Longer runs	The pump may run while connected to an approved charger

* Measured with a new pump and a new, fully charged battery. Run time in use may differ.

Power

Battery	Removable, rechargeable Li-Ion battery pack: 7.2 V, 13.8 Ah, 99.4 Wh
Charger	Input 100–240 V AC
Charging time	15 hours with approved chargers; varies with battery capacity and state of discharge

Operating conditions

Temperature	Operating 32–104 °F (0–40 °C) · charging 32–113 °F (0–45 °C) · storage −4 to 95 °F (−20 to 35 °C)
Humidity	Operating 0–95 % RH, non-condensing
Pressure correction	For weather and altitude, from at least 5000 ft below to 7500 ft above sea level

Display and data

Display	LCD: serial number, software revision, flow rate, volume, temperature, atmospheric pressure, time of day, run time, pump status (Hold, Run) and Setup
Volume display	Continuously updated: corrected flow rate × sampling time. Above 99 999 L the pump runs on normally and shows **O_FlO**
Clock	Hours and minutes, 12- or 24-hour, with AM and PM indicators
Timer range	1–99 999 minutes (69 days); after 69 days the timer display rolls over
Accuracy	Time 1 min per month at 25 °C · atmospheric pressure ±0.3 inHg
User-adjustable	Sample run time, flow rate verification, clock display, flow rate, time of day, delayed start, temperature and pressure display units
Recorded values	Start date and time, stop date and time, total sample time, flow rate, sample volume, temperature, atmospheric pressure, changes of pump mode
Logging interval	3 s (15.4 min of data) to 8 h (more than 102 days of data); set in DataTrac

Mechanical and approvals

Dimensions	8 × 3.9 × 2.6 in (20 × 10 × 7 cm)
Weight	36 oz (1 kg)
Case	Thermoplastic with soft rubber overmoulding
RFI/EMI shielding	CE marked
Approvals	Performance of the Leland Legacy with the Sioutas Impactor verified by the US EPA Environmental Technology Verification (ETV) programme

CHAPTER 9

Ordering information

Order from Analyt-MTC with the order codes. For the pump kits, see Checking the contents (p. 7). Use only these original parts: other parts can impair the pump's performance and void the warranty.

Chargers and data cable

Description	Order code
Single Charging Kit, 100–240 V AC, 50/60 Hz: charging unit, power supply and interchangeable wall plugs	223-241
Take Charge 5 Multi-charger, for Leland Legacy and AirChek XR5000 Li-Ion pumps: charging unit and power cable, 100–240 V AC	223-441
Battery Charging Adapter, for charging battery packs outside the pump	223-248
DataTrac Software Cable, for Leland Legacy, USB	Ask Analyt-MTC

Flowmeters and calibration accessories

Description	Order code
High Flow chek-mate Flowmeter with CalChek, 5–30 L/min, larger hose nipple for high flow pumps, with 9-volt alkaline battery; calibration certificate traceable to NIST, UK or ISO standards	375-50300N (NIST) 375-50300 (UK) 375-50300S (ISO)
Kit: High Flow chek-mate Flowmeter with Pulsation Dampener 375-150; certificate traceable to NIST or ISO standards	375-50300-KN (NIST) 375-50300-KNS (ISO)
Pulsation Dampener, required with the High Flow chek-mate for flow rate verification of high flow pumps and for the CalChek full calibration of the Leland Legacy	375-150
CalChek Communication Cable, for the High Flow chek-mate with CalChek; required for CalChek single-point verification and full calibration of the Leland Legacy	375-200

Sampling and carrying accessories

Description	Order code
Tubing Adapter, from 3/8 in. to 1/4 in. inside diameter tubing	P31211
Noise-reducing pouch, black nylon, lined, with waist belt and shoulder strap; lowers the pump noise from 62.5 to 52 dBA (see Flow and performance (p. 24))	224-89
Single kit case, hard-sided, with foam insert	224-912

Spare parts

Description	Order code
Battery pack, Li-Ion*	P75692C
Filter and O-ring set: 5 filters and 1 O-ring	P40021B
Inlet filters, pack of 50	P40021A

* Li-Ion batteries are subject to special shipping regulations (see Shipping lithium-ion batteries (p. 27)). A repaired or rebuilt battery pack voids the warranty: replace a worn pack with a new P75692C.

CHAPTER 10

Service, warranty and contacts

Analyt-MTC is your contact for everything concerning the Leland Legacy: technical questions, spare parts and accessories, the DataTrac software, repairs and warranty claims. Any work beyond the tasks in Maintenance (p. 21) and Calibration and verification (p. 19) is service work; contact Analyt-MTC.

Contact

ANALYT-MTC Messtechnik GmbH

German Headquarters

Klosterrunsstraße 18, 79379 Müllheim
Germany

+49 7631 5545

info@analyt-mtc.de

French Subsidiary

175 Avenue d'Alsace, 68000 Colmar
France

+33 3 89 41 47 78

info@analyt-mtc.fr

www.analyt-mtc.com

Before you contact Analyt-MTC

Have the following at hand so that Analyt-MTC can help you quickly:

- the catalogue number and the serial number of the pump (the serial number is also shown on the display);
- what happened, and any error code shown on the display;
- if you use DataTrac, the pump history and the latest calibration report (see Calibration records in DataTrac (p. 20)).

Returning a pump

Before you send a pump for repair or under warranty, ask Analyt-MTC how to return it and what to include. The pump contains a lithium-ion battery, so the shipping rules below apply.

Shipping lithium-ion batteries

The pump's Li-Ion battery packs have passed the tests of the UN Manual of Tests and Criteria, Part III, subsection 38.3, and are rated below 100 Wh. Pumps and battery packs are nevertheless subject to the special shipping regulations for lithium batteries (UN 3480 and UN 3481). Ask your carrier before you ship them.

Warranty

Make warranty claims to Analyt-MTC; Analyt-MTC's warranty terms apply, and you can ask for them at any time. Warranty cover can be lost if the warnings and cautions in this manual are not followed, in particular if:

- a charger not approved for the pump, or other unapproved parts, have been used;
- the battery pack has been tampered with — opened, disassembled, short-circuited, crushed, or exposed to fire or temperatures above 212 °F (100 °C);

- the battery has been short-circuited by a wrongly inserted charging plug;
- a repaired or rebuilt battery pack has been used.

Disposal

Do not dispose of the pump with household waste. Dispose of it as electrical and electronic equipment under local regulations (WEEE). Remove batteries first where fitted and dispose of them separately.

ANALYT-MTC Messtechnik GmbH

Sales, service and calibration

German Headquarters
Klosterrunsstraße 18, 79379 Müllheim
Germany
+49 7631 5545
info@analyt-mtc.de

French Subsidiary
175 Avenue d'Alsace, 68000 Colmar
France
+33 3 89 41 47 78
info@analyt-mtc.fr

www.analyt-mtc.com

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