SECTION

Be Cool Evo V1S

Digital micron vacuum gauge

13.0 GENERAL FEATURES

Be Cool Evo V1S is designed for use in the installation and/or maintenance of cooling systems and heat pumps as a tool for performing vacuum tests and leak tests.

The instrument is equipped with:

- Display OLED 128x32
- Battery powered (2x1.5 V size AA)
- 1/4 SAE fitting
- Measurement storage memory
- Bluetooth® interface

13.1 Package contents

The standard contents of the Be Cool Evo V1S digital vacuum gauge consist of:

- n°1 Be Cool Evo V1S digital vacuum gauge
- n°1 Brass T-fitting with central connection and 1/4" swivel union
- n°2 1.5 V AA batteries (alkaline - non-rechargeable)
- Quick guide
- WEEE Instructions
- Simplified declaration of conformity
- Test report

13.2 Typical use

- Vacuum execution and maintenance.

13.3 Maintenance

In order to ensure the correct functioning of the instrument and the accuracy of measurements, Seitron recommends performing an annual calibration or whenever necessary.
Calibration and any recalibration can be carried out at the Seitron Service Center.
The product is supplied with a test report.

14.0 PRODUCT DESCRIPTION

14.1 Main functions

The Be Cool Evo V1S is a professional dual-function vacuum gauge: in addition to accurately measuring the degree of vacuum in refrigeration circuits, it also detects the ambient temperature, providing essential data for correct vacuum execution. Its use is crucial during the installation and maintenance of cooling systems and heat pumps.
Performing a vacuum in a refrigeration system is a fundamental and mandatory procedure that must be carried out before introducing refrigerant gas into the system and consists of removing air and moisture from the pipes using a special vacuum pump.
Achieving the correct vacuum level, measured by the Be Cool Evo V1S vacuum gauge, guarantees the absence of non-condensable gases, thus ensuring ideal conditions for maximum system efficiency and durability and preventing condensation in the air from causing oxidation in the metal pipes of the system.
Designed for maximum versatility, the Be Cool Evo V1S can operate in standalone mode, in combination with the Be Cool Evo M4S digital manifold, or interfaced with the Seitron Smart Analysis app.

14.1.1 Data Recording and Storage

The Be Cool Evo V1S is equipped with an internal memory that stores all measurements and calculated data, associating each record with a date and time to create a complete history.
To enable this data logging function, you must pair the vacuum gauge with the Seitron Smart Analysis app and activate recording on the instrument's internal memory.
When activated, recording is indicated by the icon "◎" lighting up (on the upper portion of the display) and a flashing green LED (one flash every 5 seconds).
This setting remains configured in the vacuum gauge, automatically starting recording each time it is turned on. To disable recording, you must always use the app.
The Seitron Smart Analysis app also allows you to customize the sampling frequency, thus affecting the total memory capacity: ranging from one sample per second (for 46 hours of recording) to one sample per hour (for over 165,000 hours).
If the memory is full, recording is automatically interrupted; a warning (pop-up) appears on the display, the icon "◎" turns off, and the green LED stops flashing.
Finally, the app allows you to download all the data recorded by the device to create and share professional reports in .csv or .pdf format.
For a complete guide to settings, refer to the chapter "Seitron Smart Analysis App."

14.1.2 Bluetooth® connection

Be Cool Evo V1S is equipped with an internal Bluetooth® module, which allows communication with latest-generation smartphones or tablets running Google Android v.5.0 (Lollipop) or higher operating systems, after installing the dedicated "Seitron Smart Analysis" app available on the Play Store and App Store.
The maximum transmission range in open space is 100 meters, provided that the connected device has Class 1 Bluetooth® connectivity.

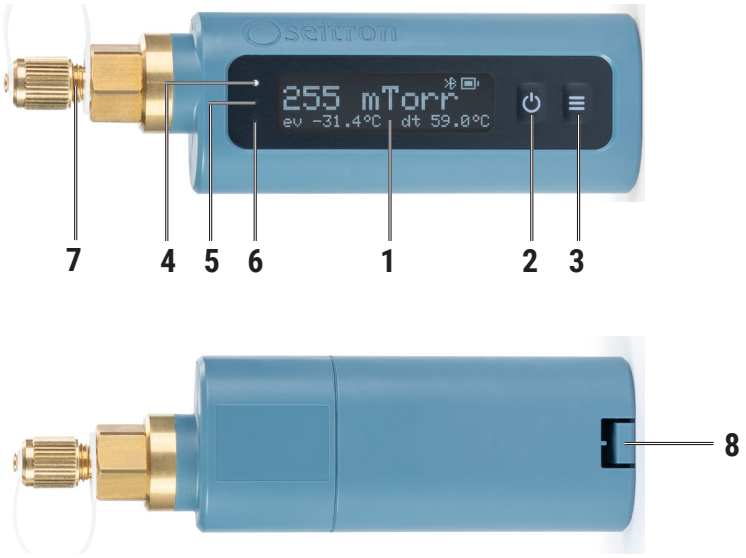
14.1.3 Available apps

Seitron Smart Analysis

The Seitron Smart Analysis mobile app is available for devices equipped with:
- Google Android operating system v.5.0 and later
- Apple iOS operating system v.12.2 and later

Features available with Be Cool Evo:
- Display of the license plate data of the associated instrument
- Instrument configuration (e.g., vacuum operation data, units of measurement)
- Firmware update
- Start of measurements and/or tests with one or more combined instruments
- Setting alarm thresholds
- Start recording on the memory of the smartphone or tablet you are using
- Remote viewing of measurements/tests in real time (data or chart format) and saving of acquired data
- Generation, modification, display, storage, and/or export (in CSV format, importable into Excel, and/or PDF) of reports
- Deletion of measurements in memory

14.2 Mechanical description



1	Display
2	Multifunction button - See paragraph "14.3 Definition of multifunction keys" on page 51.
3	Multifunction button - See paragraph "14.3 Definition of multifunction keys" on page 51.
4	White LED
5	Green LED
6	Red LED
7	1/4 SAE connection
8	Clip for accessing the battery compartment

14.3 Definition of multifunction keys

⏻	**Power On/Off** Press and hold the button until all LEDs briefly light up; then release the button. **Shutdown** Press and hold the button for more than 3 seconds. **In parameter configuration mode** Short press: exits the selected parameter, saving the setting made.
≡	**Parameter Display/Configuration Mode** Short pressure: Displays the parameters of Be Cool Evo V1S Each additional press of the button selects the next parameter. Press and hold (2 seconds): Enters the selected parameter edit mode. Each additional prolonged press of the button selects the value. **Turning on the display from power-saving mode** Short pressure.

14.4 Definition of LEDs

White	**Flashing (2 flashes per second + 3-second delay)** Bluetooth® turned on, waiting to be connected to the Seitron Smart Analysis app or the Be Cool Evo M4S manifold. **Flashing (1 flash every 5 seconds)** Be Cool Evo V1S is connected to the Seitron Smart Analysis app or to the Be Cool Evo M4S manifold.
Green	**Flashing (1 flash every 5 seconds)** Data recording in progress.
Red	**Flashing (2 flashes per second + 3-second delay)** Low battery: 2 hours of battery life (5% remaining charge)

14.5 Display interface

1	**Battery charge indicator** Indicates the battery charge level (for more details, see the section "16.2.1 Internal battery charge level" on page 55.
2	**Bluetooth icon** Indicates that Bluetooth® is turned on.
3	Indicates that the instrument is recording measurements to internal memory.
4	**Vacuum measurement display** Display the measured vacuum level. The unit of measurement (mbar, Pa, psi, mmHg, inHg, mTorr, Torr, µm) is configurable.
5	**Temperature display:** ev = Water evaporation temperature dt = Tamb - ev The temperature unit of measurement (°C or °F) is configurable. The ambient temperature value (Tamb) can be viewed under the NTC parameter by entering "Parameter Display/ Configuration Mode."

14.6 Wiring diagram

See the chapter "4.0 CONNECTION DIAGRAMS" on page 12.

ATTENTION!
- **RISK OF INJURY CAUSED BY HIGH-PRESSURE, HOT, COLD, OR TOXIC COOLANTS!**
- **WEAR PROTECTIVE EYEWEAR AND GLOVES.**
- **BEFORE TAKING ANY MEASUREMENTS, ENSURE THAT THE REFRIGERANT HOSES ARE INTACT AND CORRECTLY CONNECTED. TO CONNECT THE HOSES, AVOID USING TOOLS AND TIGHTEN THEM MANUALLY ONLY (MAX. TIGHTENING TORQUE 5.0NM / 3.7FT*LB).**
- **RESPECT THE PRESSURE MEASUREMENT RANGE INDICATED IN THIS MANUAL IN THE CHAPTER "TECHNICAL FEATURES."**
- **ESPECIALLY IN SYSTEMS CONTAINING R744 REFRIGERANT, KEEP IN MIND THAT THESE OFTEN OPERATE AT HIGHER PRESSURES!**
- **FOR THE EXECUTION AND MAINTENANCE OF THE VACUUM, THE SYSTEM MUST BE FREE OF REFRIGERANT GAS AND A DEDICATED FLEXIBLE HOSE MUST BE USED.**

15.0 TECHNICAL FEATURES

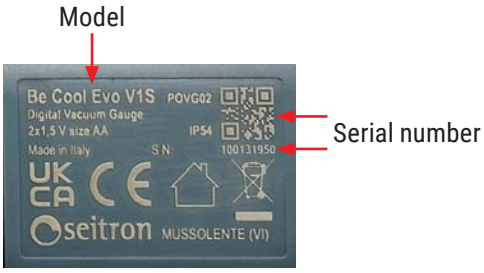
Battery Power:	2 x 1.5 V AA Alkaline (included) or NiMH Rechargeable
Battery Life:	200 hours of continuous operation
Display Type:	OLED 128x32
Recording Time:	1382 hours (30-second intervals)
Measurement Range:	1 - 20000 micron (1 - 2666 Pa)
Accuracy:	±10% rdg ±10 micron (1 .. 10000 micron) ±20% rdg (10001 .. 20000 micron)
Resolution:	1 micron [0 - +9999 micron] - 0,1 Pa [0 - +1333,2 Pa] 10 micron [+10000 - +20000] - 1 Pa [+1333,3 - +2666,6 Pa]
Vacuum Units:	micron, inHg, Torr, psia, mbar, mbar, mTorr, Pa, kPa
Fitting:	1/4 SAE
Connectivity:	Bluetooth: Class 1 / Range: <100 meters (open field)
Protection Rating:	IP54
Operating Temperature:	-14 - +122 °F / -10 - +50 °C
Storage Temperature:	-4 - +140 °F / -20 - +60 °C
Operating Humidity:	20% - 80% RH non-condensing
Storage Humidity:	10% - 90% RH non-condensing

16.0 COMMISSIONING

16.1 Preliminary operations

Remove the instrument from the packaging used for shipping and proceed with an initial inspection. Verify that the contents match what was ordered. If you notice any signs of tampering or damage, immediately report the fact to the SEITRON Service Center or its representative agent, retaining the original packaging.
The serial number and model of the instrument are shown on the instrument's nameplate.
Please provide both pieces of information for any technical assistance or technical and application clarifications. Seitron keeps an archive of historical data for each instrument at its headquarters.

Data marking example:



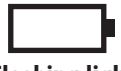
16.2 Instrument power supply

The device is powered by two 1.5 V AA batteries. Two alkaline batteries (non-rechargeable) are included in the package, but rechargeable NiMH batteries can also be used as an alternative.

ATTENTION
- If the instrument is not going to be used for a long period of time, it is advisable to remove the batteries before storing it.
- For battery insertion/replacement, refer to the maintenance section of this manual.

16.2.1 Internal battery charge level

The display constantly shows the charge status of the internal battery via the symbol at the top right of the display.
Pay particular attention to the following symbols:

SYMBOL	BATTERY STATUS	RED LED
	**Battery charged (100%).**	**Off**
	**75% remaining charge.**	**Off**
	**50% remaining charge.**	**Off**
	**25% remaining charge.**	**Off**
 **Flashing light**	**5% remaining charge.** **Battery life: 2 hours.**	**Flashing light:** **2 flashes per second + 3-second wait.**

The device will not start if the battery charge is less than 4.8%; when the power button is pressed, the system will start with the display off, the red LED will flash for 10 seconds with 1 pulse of 100 ms every second, then turn off.

17.0 OPERATION

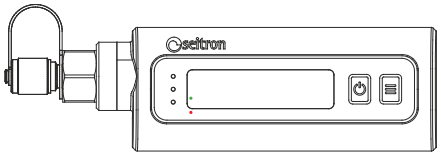
17.1 Power On/Off

Turning on the instrument
With the device turned off (OFF), press and hold the button ⏻ until all LEDs light up briefly; then release the button.
The instrument turns on and begins the startup phase.

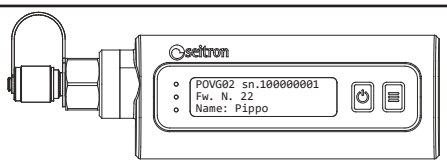
Turning off the instrument
With the device turned on (ON), press and hold the button ⏻ for 2 seconds.

17.1.1 Instrument startup phase

The display remains off and for a few moments the white LED lights up first, followed by the green and red LEDs.

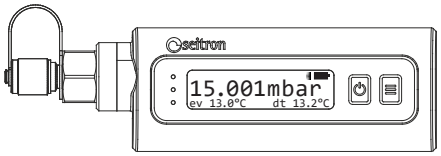


All LEDs turn off and the display shows:
Device code
Serial number (SN) of the device
Firmware version (Fw)
Device name



The white LED flashes (2 flashes per second + 3-second wait) to indicate that Bluetooth® is on and waiting to be connected to the Seitron Smart Analysis App or the Be Cool Evo M4S manifold, indicated by the symbol "ᛒ" lighting up.

The display shows the vacuum measurement screen.



17.1.2 Instrument configuration

Once the device has finished booting up, you can set the available user parameters:
LCD Eco Mode: Sets the time since the last key press, after which Be Cool Evo V1S switches to energy-saving mode (the screen turns off) while continuing to function correctly.
Auto shutdown: Be Cool Evo V1S switches off after the set time under the following conditions:
- LCD Eco Mode activated (display off)
- Data recording is not active
- Not connected to any device

Udm Temp.: Set the temperature measurement unit.
Udm Press.: Set the pressure measurement unit.
Lingue: Set the language

To configure the parameters:
Directly from the device or from a smartphone or tablet after installing the dedicated "Seitron Smart Analysis" app.

17.2 Pairing

Be Cool Evo V1S offers the flexibility to connect to the Seitron Smart Analysis App or to the Be Cool Evo M4S manifold. The connection is exclusive: the vacuum gauge connects to only one device at a time.
The same logic applies to automatic reconnection: if both known devices are nearby, the Be Cool Evo V1S immediately connects to the first one it detects. Immediately afterwards, it interrupts its signal and becomes "invisible" to other devices.

17.2.1 Be Cool Evo V1S - App Seitron Smart Analysis Pairing

- Download and install the Seitron Smart Analysis app on your smartphone or tablet.
- To pair, follow the step-by-step instructions on the app screen.
- You will be asked to select the instrument corresponding to a specific serial number; the serial number is marked on the back of the instrument followed by "S/N:".

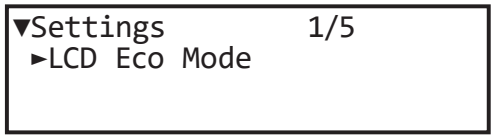
For more information, see the section "Seitron Smart Analysis" on page 77.

17.2.2 Be Cool Evo V1S - Be Cool Evo M4S (Manifold) Pairing

For detailed instructions, please refer to the product quick start guide.

18.0 MENU

To access the Be Cool Evo V1S menus to configure the available user parameters, briefly press the button ☰; the display will show the first available parameter:

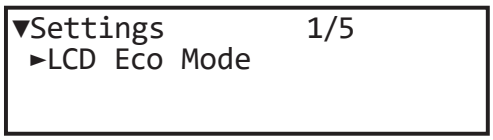


- To scroll through the available user parameters, briefly press the button ☰.
- To enter the editing mode for the selected user parameter, press and hold the button ☰ for 2 seconds.
- To modify the user parameter, press and hold the button ☰ for 2 seconds.
- To exit the user parameter editing mode and save the setting, briefly press the button ⏻.
- To exit the user parameter menu, briefly press the button ⏻.

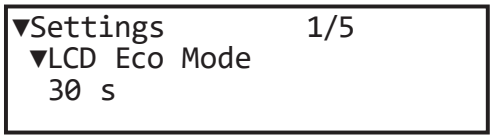
18.1 LCD Eco Mode

Set the time after which, since the last key press, Be Cool Evo V1S switches to energy-saving mode; the display turns off while the instrument continues to operate, keeping any LED indicators active.
This mode is useful for preserving battery life.

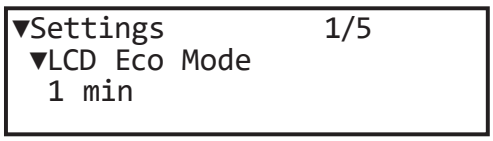
Once the LCD Eco Mode parameter is selected, press and hold the button ☰ for 2 seconds to enter the parameter editing mode.



The display shows the current setting.
The display shows the current setting. To set a new value, press and hold the button ☰ for 2 seconds; each change is automatically saved.
Alternatively, briefly press the button ⏻ to exit the editing mode.



Briefly press the button ⏻ to exit the parameter editing mode and save the setting.



Briefly press the button ☰ to select the next parameter, otherwise, briefly press the button ⏻ to exit the instrument menu.

18.2 Auto Power Off (Auto Shutdown)

Set the time after which Be Cool Evo V1S switches off.
This mode is useful for preserving battery life in case you forget to turn off the instrument.

Once the Auto Power-Off parameter is selected, press and hold the button ☰ for 2 seconds to enter the parameter editing mode.

The display shows the current setting.
To set a new value, press and hold the button ☰ for 2 seconds; each change is automatically saved.
Alternatively, briefly press the button ⏻ to exit the editing mode.

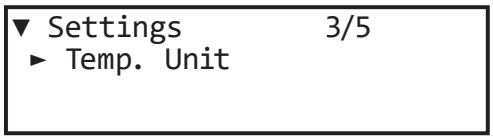
Briefly press the button ⏻ to exit the parameter editing mode and save the setting.

Briefly press the button ☰ to select the next parameter, otherwise, briefly press the button ⏻ to exit the instrument menu.

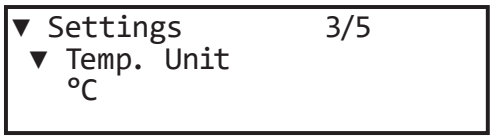
18.3 Temp. Unit.

Set the measurement unit for temperature: °C or °F.

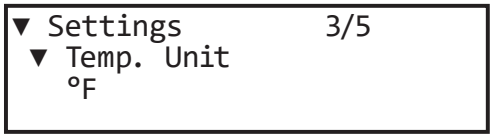
After selecting the Temp. unit parameter, press and hold the ☰ button for 2 seconds to enter parameter edit mode.



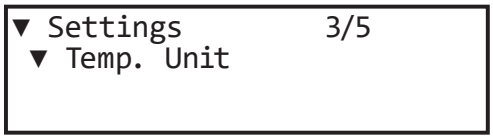
The display shows the current setting.
To set a new value, press and hold the ☰ button for 2 seconds; each change is automatically saved.
To exit edit mode, briefly press the button ⏻.



Briefly press the button ⏻ to exit parameter editing mode and save the setting.



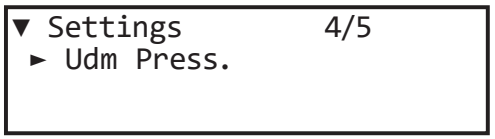
Briefly press the button ☰ to select the next parameter, otherwise briefly press the button ⏻ to exit the instrument menu.



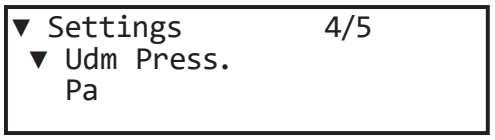
18.4 Press. Unit

Set the pressure measurement unit.

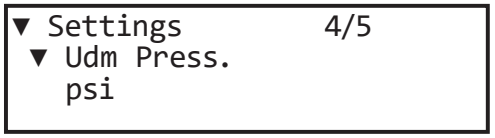
Once the Pres. unit parameter is selected, press and hold the button ☰ for 2 seconds to enter the parameter editing mode.



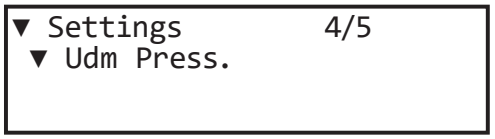
The display shows the current setting.
To set a new value, press and hold the button ☰ for 2 seconds; each change is automatically saved.
Alternatively, briefly press the button ⏻ to exit the editing mode.



Briefly press the button ⏻ to exit the parameter editing mode and save the setting.



Briefly press the button ☰ to select the next parameter; otherwise, briefly press the button ⏻ to exit the instrument menu.



18.5 Languages

Set the language.

Once the Language parameter is selected, press and hold the button ☰ for 2 seconds to enter the parameter editing mode.

The display shows the current setting.
To set a new value, press and hold the button ☰ for 2 seconds; each change is automatically saved.
Alternatively, briefly press the button ⏻ to exit the editing mode.

Briefly press the button ⏻ to exit the parameter editing mode and save the setting.

Briefly press the button ☰ to select the next parameter; otherwise, briefly press the button ⏻ to exit the instrument menu.

19.0 MAINTENANCE

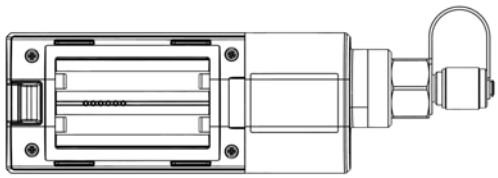
19.1 Inserting/Replacing Batteries

To insert/replace the batteries, proceed as follows:

Open the battery compartment door by pressing the lever indicated by the arrow inward.

When replacing the batteries, remove them using a tool if necessary.

Insert the new batteries (2 x 1.5 V size AA), observing the polarities indicated.



ATTENTION

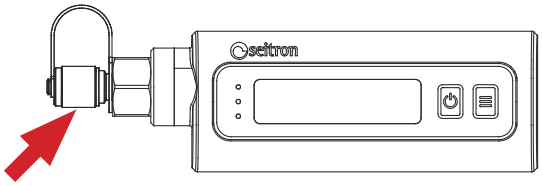
- **WHEN REPLACING BATTERIES, DISPOSE OF THEM IN THE APPROPRIATE CONTAINERS FOR SEPARATE COLLECTION.**

19.2 Cleaning the instrument

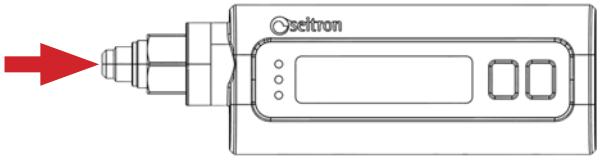
If the vacuum gauge case is dirty, clean it using neutral detergents or simply soap and water.
Do not use aggressive detergents or solvents!

19.3 Cleaning the entrance

Unscrew the knurled ring nut.



Keep the vacuum gauge inlet free of grease, oil, and other deposits; clean with a damp cloth if necessary.



19.4 Cleaning the inside of the entrance and replacing the filter

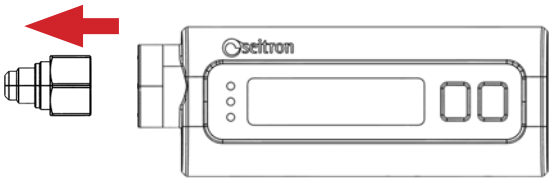
ATTENTION!

POSSIBLE DAMAGE TO THE SENSOR!

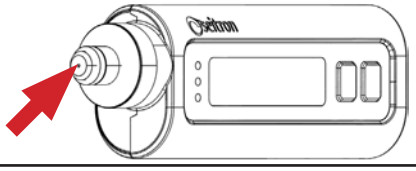
- DO NOT USE SHARP OR POINTED OBJECTS TO PERFORM THE OPERATIONS DESCRIBED BELOW.

Turn off the instrument.

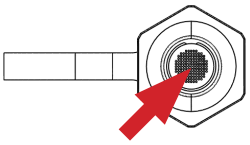
Unscrew the hexagonal fitting, separating it from the vacuum gauge body.



If the sensor inlet is visibly dirty with oil or grease, clean it as described in section 17.5 Cleaning the sensor.



Using long-nose pliers, remove the black filter.

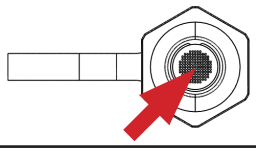


Check if the filter is dirty and clean it with a paper towel if necessary.
If it cannot be cleaned, replace it with a new one, which must be purchased separately.

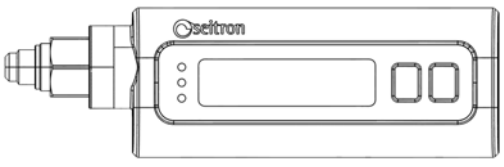
Clean the inside of the fitting using neutral detergents or simply soap and water, then leave it to dry before reassembling it.
Do not use aggressive detergents or solvents!

Check the integrity of the O-ring and replace it if damaged.
Check that the O-ring is well lubricated; if not, lubricate the O-ring with silicone grease.

Reinsert the black filter into its slot.



Screw the hexagonal fitting onto the vacuum gauge body.



19.5 Firmware Update

The firmware can only be updated using the Seitron Smart Analysis App.
See the section "Seitron Smart Analysis" on page 77.

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