

USE AND MAINTENANCE



AACE01

External Cooler

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1.0 IMPORTANT INFORMATION

1.1 Information about this manual

- ◇ This manual describes the operation, the features and maintenance of the external Cooler AACE01.
- ◇ Read this maintenance and operation manual before using the device.
The operator must be familiar with the manual and follow its instructions carefully.
- ◇ This user and maintenance manual is subject to change as a result of technical improvements - the manufacturer assumes no responsibility for any errors in content or printing.



Respect your environment: think before printing the full manual on paper.

1.2 Safety warnings



WARNING - INJURIES HAZARD

To avoid the risk of fire or electric shock, connect the power cable to an electrical outlet with grounding and with the appropriate specifications, located near the appliance and easily accessible.



WARNING - INJURIES HAZARD

To avoid the risk of fire or electric shock, use only the power cables supplied with the product or replacement components authorized by the manufacturer.



WARNING

Do not install the device outdoors. The device is designed for indoor use.



WARNING! Disposal Indications

This device must not be disposed as a urban litter. Dispose of the device according to national standards.

2.0 SAFETY

2.1 Safety check

- Use the product as described in the chapter "Permitted use of the product".
- When using the device, comply with the applicable safety regulations.
- Do not use the device if damaged on the case, power supply or cables.
- Do not perform measurements on non-insulated voltage components/conductors.
- Keep the device away from solvents.
- For the maintenance of the device strictly follow the provisions described in this manual in the "Maintenance" section.
- All interventions not specified in this manual can only be performed by Seitron service centers.
- If this latest point is not complied with, Seitron declines all responsibility for the normal operation of the device and the validity of the relevant approvals.

2.2 Permitted use of the product

- This chapter describes the areas of application for which the AACE01 is intended to be used.
- AACE01 is a portable device which is not suitable for unsupervised continuous operation.
- This device is compatible with Seitron portable analyzers model Novo and Chemist 500 / 600.
- The product is supplied without the gas sampling probe because with some special adapters, which are provided with the product itself, it is possible to use the flue gas sampling probe featured with the analyzer.

2.3 Unauthorised use of the product

The use of the AACE01 external cooler in areas of application other than those mentioned in Chapter 2.1 "Permitted use of the product" is considered to be at the operator's risk and the manufacturer assumes no responsibility for the loss, damage or costs that could result. It is mandatory to read and pay attention to the instructions in this Owner's Manual.

The AACE01 device must not be employed:

- in ATEX classified areas.

3.0 PRODUCT DESCRIPTION

3.1 Operation

The Peltier cell condensation group (Cooler) has the function of cooling the gas sample very quickly to a temperature of 5 ° C. The gas condenses the water vapor contained in it and can reach the sensors without significant changes in its composition.

This system is particularly useful when water-soluble components are to be analyzed (e.g. SO₂, NO₂, NH₃, H₂S, etc.).

Under extreme ambient temperature conditions (+45°C) it is possible that the cooler internal temperature is not maintained at +5°C but it can tend to shift up to +10°C.

This internal temperature is however sufficient to obtain the drying of the gas; in these conditions it is possible to lose 10% of the drying efficiency.

For automatic emptying of condensation water, a peristaltic pump is used which is controlled directly by the microprocessor at alternating on/off intervals to preserve the durability of the neoprene tube, an essential part of the pump itself.

The duration of the switch on interval is 30 seconds, while the duration of the shutdown interval is 600 seconds and cannot be changed by the operator.

The tube has a service life of 500 hours of continuous operation. Considering a use of the device for 8 hours daily for 200 days per year, it is recommended to replace the peristaltic pump rotor every 2 years.

3.2 Preliminary operations

Remove the product from the packaging used for shipment and proceed to a first inspection of the device.

Verify the correspondence of the content with what ordered. If you notice tampering or damaging signs, immediately report the fact to the SEITRON Service Center or its agent, keeping the original packaging.

On the product label there is the serial number of the external cooler.

It is recommended to provide this number for any request for technical assistance, spare parts or technical information.

Seitron maintains updated at its headquarters an archive with the log of the data of each device.

3.3 Warranty

The user is guaranteed against the product's defects of conformity according to European Directive 2019/771 as well as the Seitron warranty terms, available online on the website www.seitron.com.

We invite the user to visit our website and check the latest version of technical documents, manuals and catalogs.

4.0 TECHNICAL FEATURES

4.1 Technical features

Power supply:	110-240 Vac or 12-16 Vdc 5A
Power absorption:	< 50 W
Drying gas method:	water is condensed by rapidly cooling down the gas using a cyclonic system (vortex)
Method of condensate separation:	Peltier unit
Set point temperature:	+5 °C
Temperatura di isteresi:	±2 °C
autom. condensate drain :	peristaltic pump 38ml/min
Duration of peristaltic pump cycle:	30 s on - 600 s off
Cooling down time:	~ 15 .. 20 minutes
Working temperature:	-5 °C to +45 °C
Working flow:	up to 2,5 l/min
Volume exchange per hour:	120ml/h
Maximum temp. deviation from set point:	+5 °C from set point

4.2 Green LED behavior

- Slow blinking: System cool down phase
- Still lit: System OK; the Cooler has reached the operating temperature of +5 °C
- Fast blinking: Error in temperature measurement

4.3 Electrical connections

- Power plug at 110-240 Vac through IEC 320 with fuse-holder socket containing 2 protection fuses size 5x20 mm 4 A retarded.
- Power plug at 12-16 Vdc through DC connector 5,5 x 2,1, that allows to power the device in low voltage, also through a "car battery starter" at 12 Vdc.

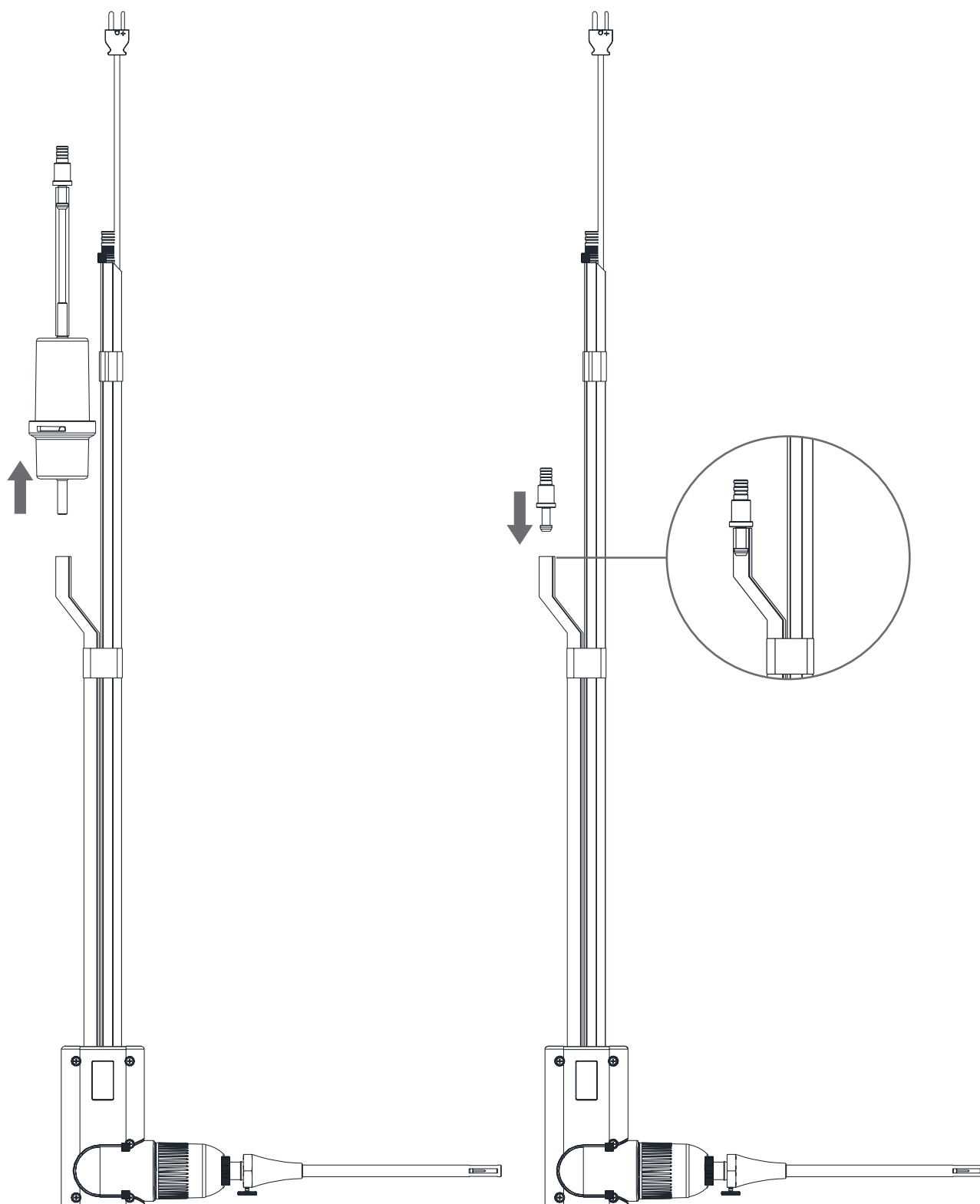
4.4 Pneumatic connections

- Non-condensed gas inlet connector input
- Condensed gas output connector
- Water drain outlet connector

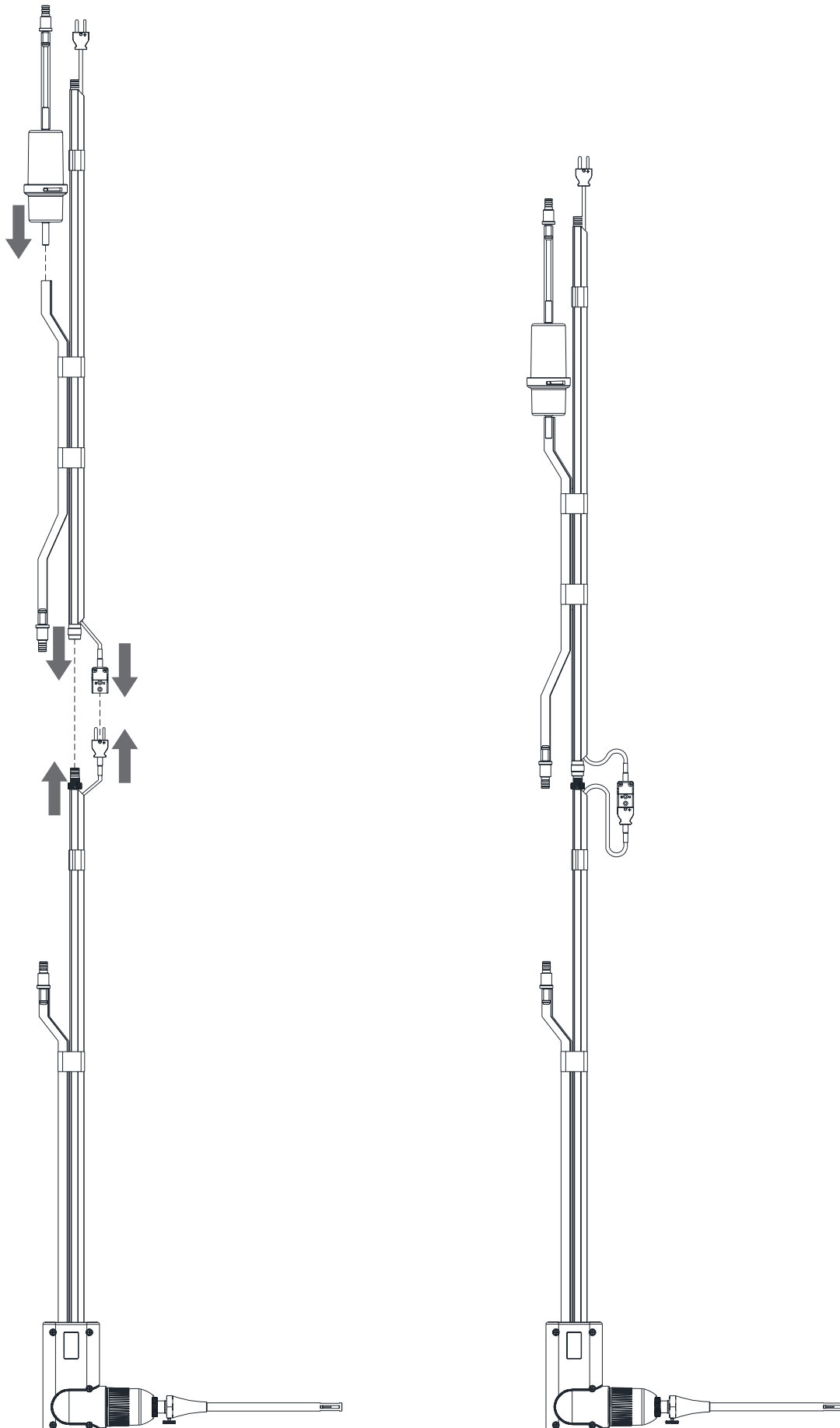
5.0 WIRING DIAGRAM SHOWING HOW TO USE THE PRODUCT WITH CHEMIST SERIES ANALYZERS

The following images refer to the smoke probe with interchangeable tip (AASJ- + AJPT-).
All operations described are identical for the smoke probes of the series AASF-.

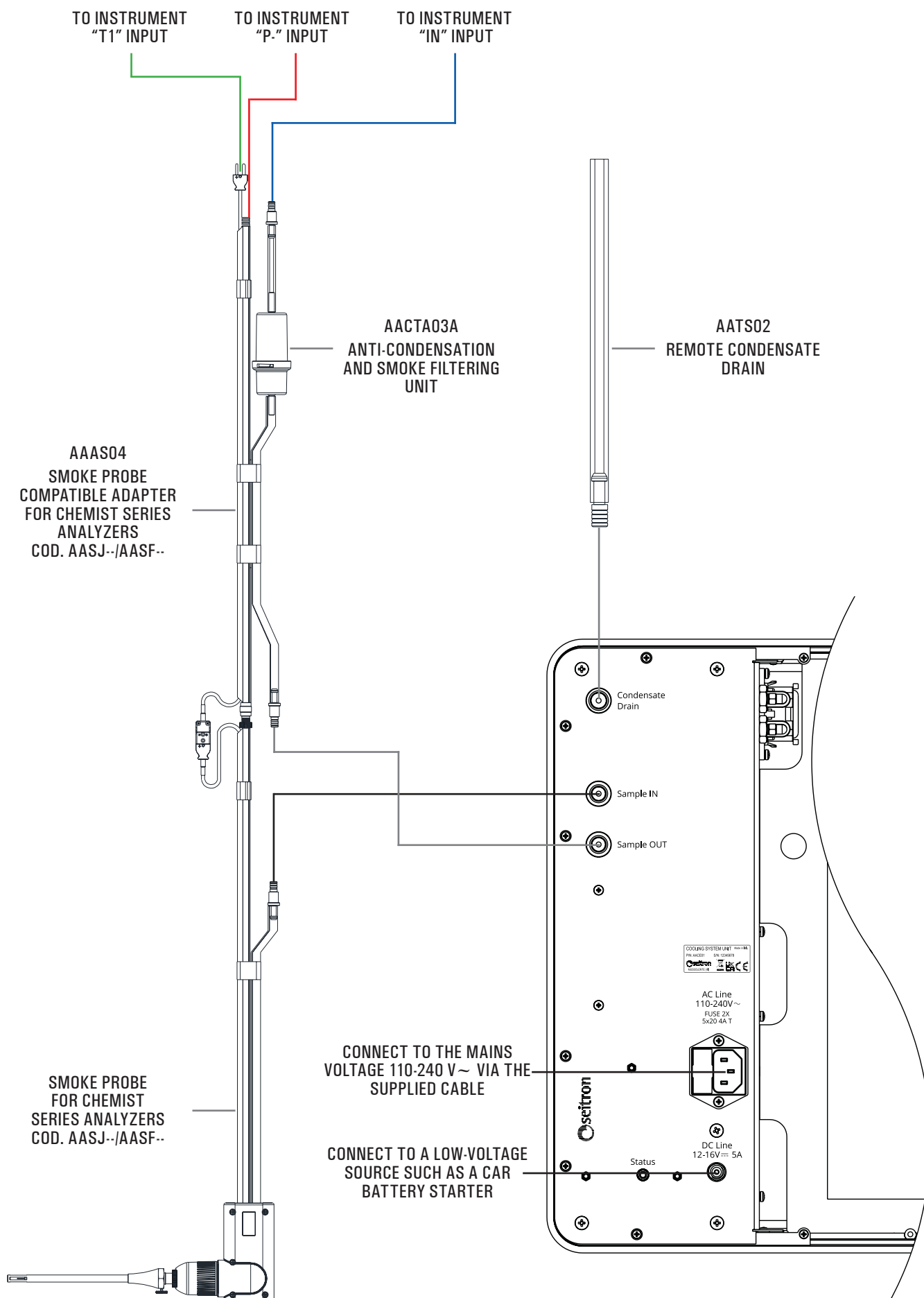
5.1 Preparation of the smoke probe supplied with the analyzer



5.2 Connection of the smoke probe with the adapter and anti-condensation trap

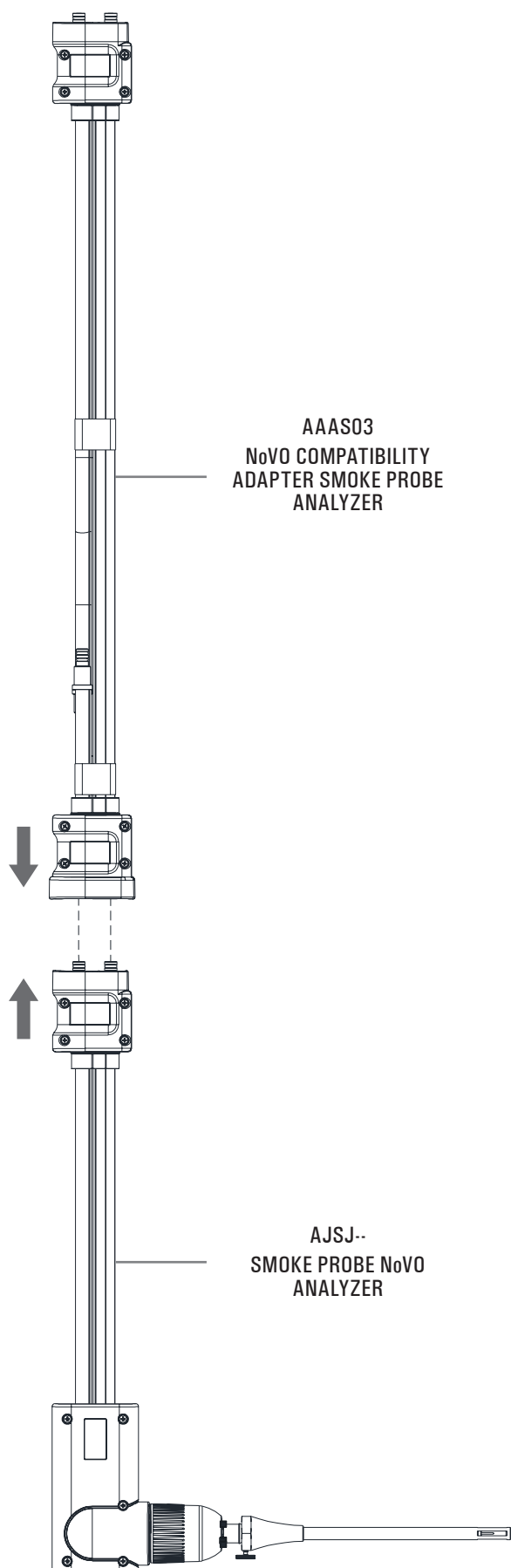


5.3 Wiring diagram using the external cooler

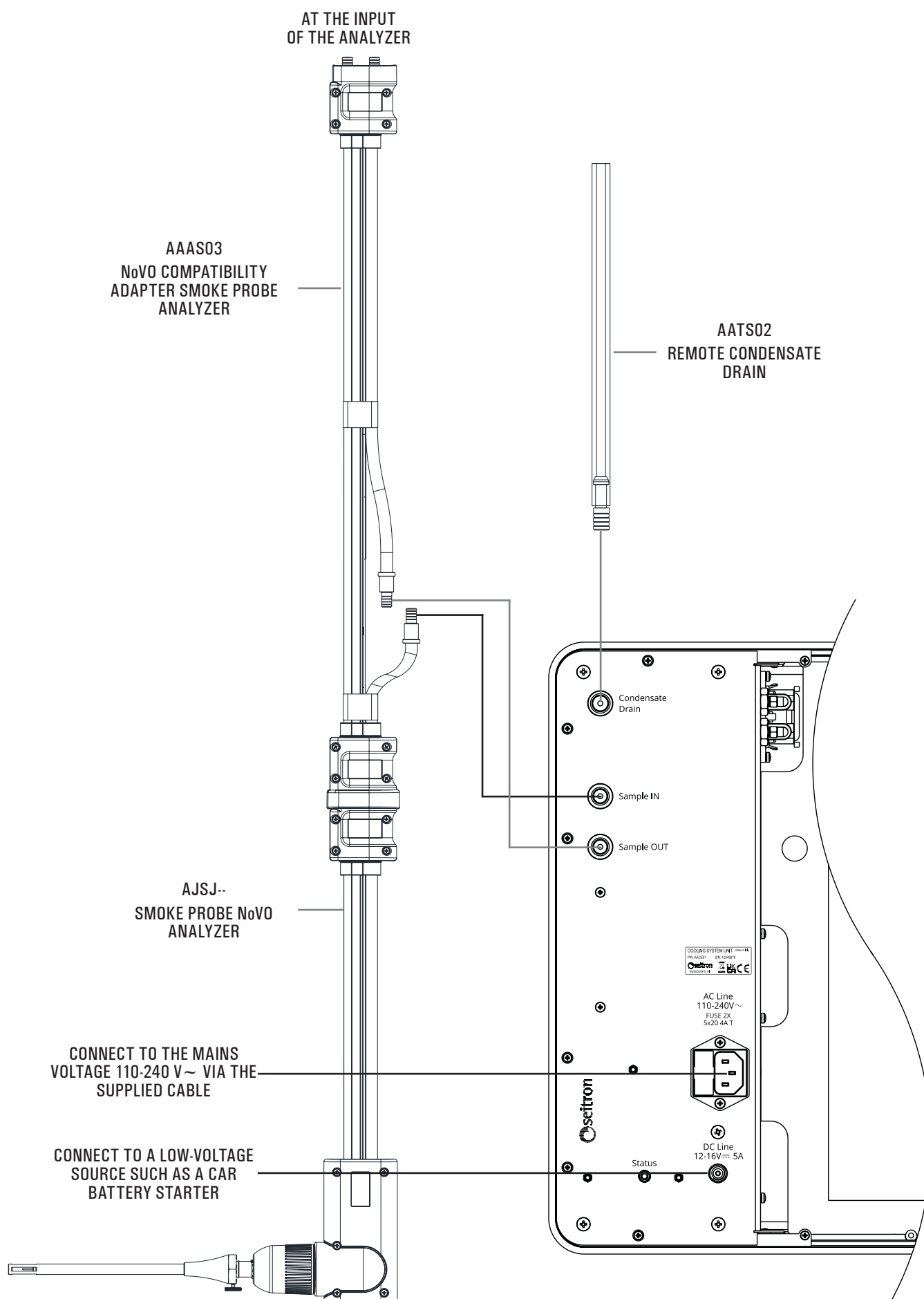


6.0 WIRING DIAGRAM FOR CONNECTING THE NoVO ANALYZER

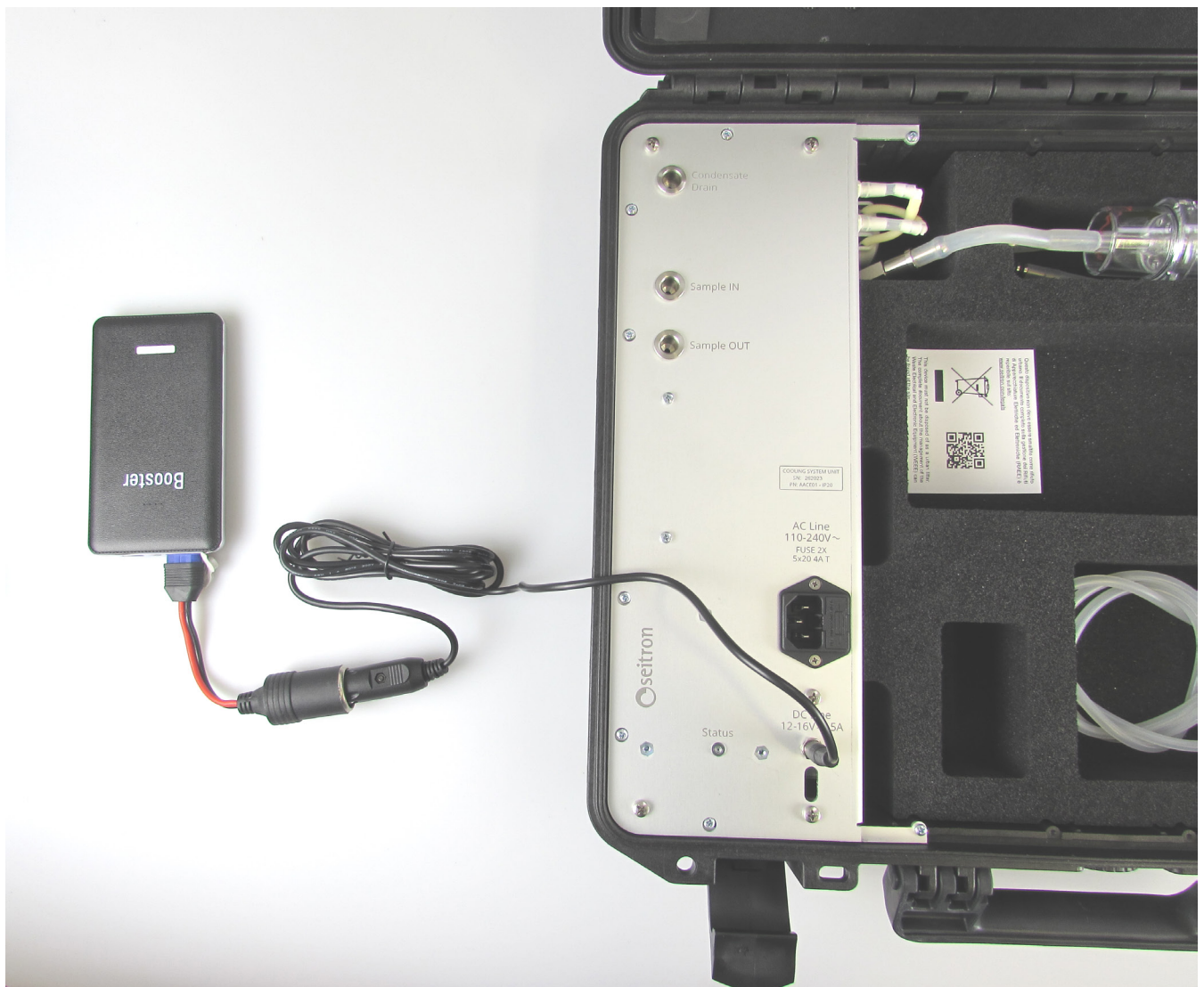
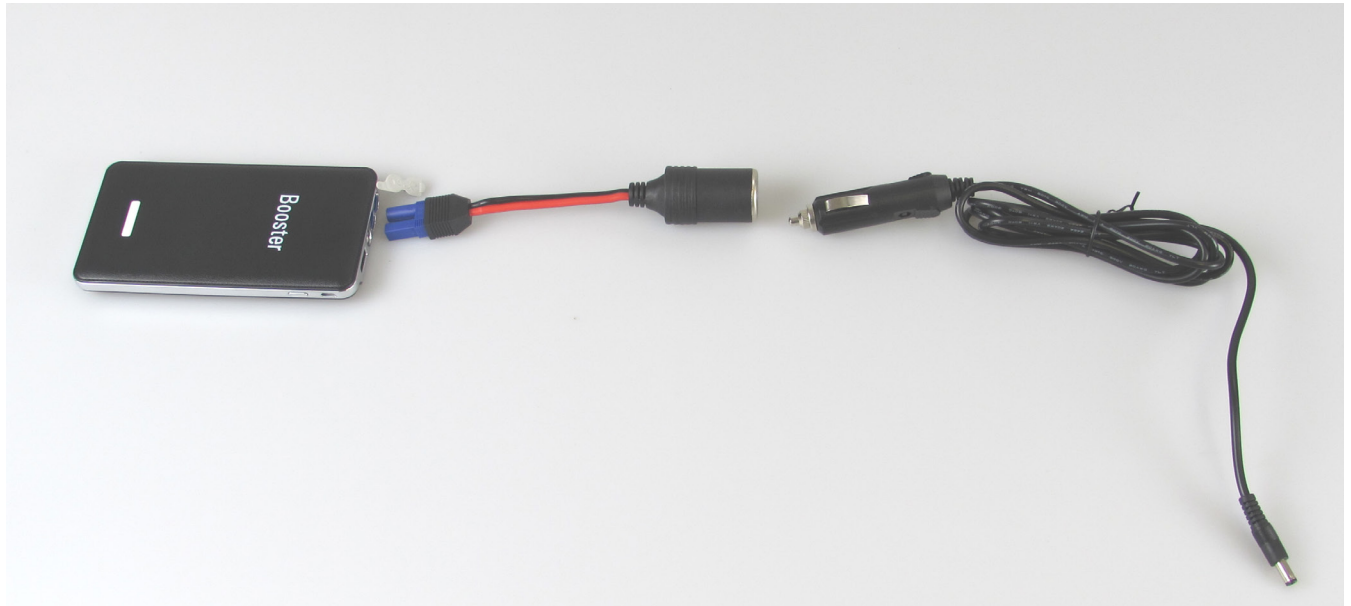
6.1 Smoke probe to adapter connection



6.2 Connection diagram using the external cooler



7.0 EXAMPLE OF CONNECTION TO A CAR BATTERY STARTER



8.0 OPERATION

In order to operate the entire system, proceed as follows:

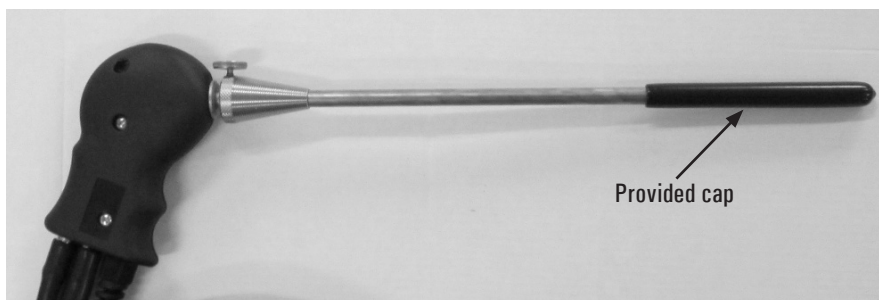
1. Carry out the connections, as shown in chapters 5.0 or 6.0.
2. Switch on the analyzer.
3. Power the Cooler using the supplied cable.
4. Wait for the green LED on the front panel to stop flashing and remain on with a steady light (for more details on the status of the green LED, see section 4.2 Green LED Behavior).
5. Insert the smoke probe into the stack and take the measurement.

9.0 MAINTENANCE

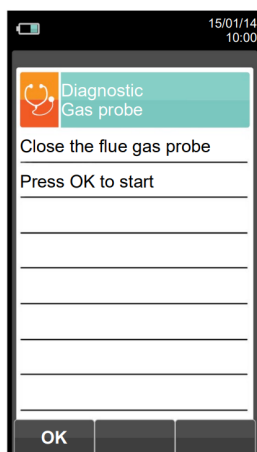
9.1 Leak test of the entire cooling system

In order to verify the tightness of the whole Cooler system (Cooler=> Smoke sampling probe=> condensation trap), aiming to exclude pressure leaks because of some damaged or broken parts, do as follows:

1. Run all connections mentioned in the chapters 5.0 or 6.0.
2. Fully insert the black cap into the tip of the supplied smoke sampling probe, as shown below.



3. Power on the external Cooler.
4. Power on the analyzer and access the menu "Configuration => Diagnostic => Smoke probe".

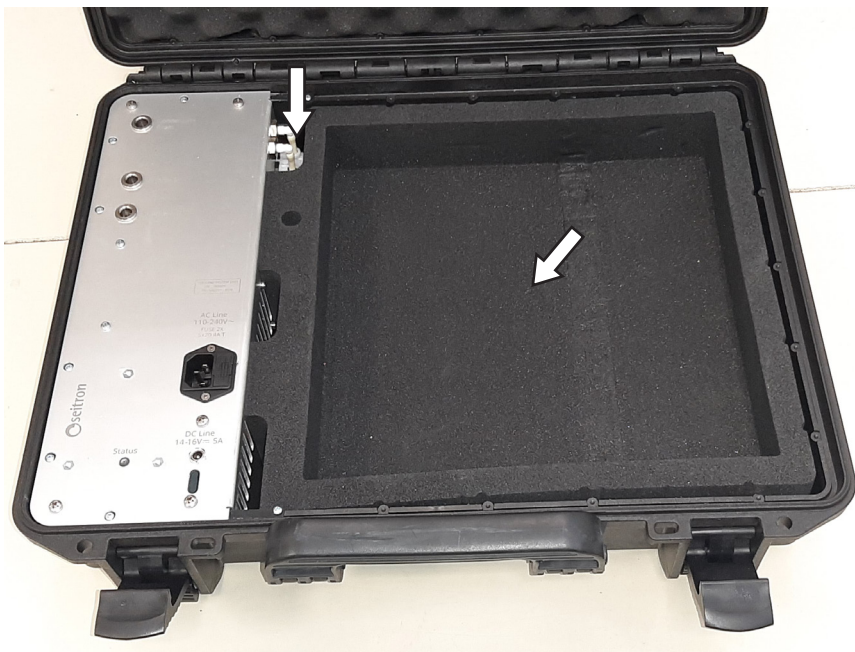


5. Start with the smoke probe tightness test, which in this case is considered as the tightness test for the whole Cooler system.
For more details see the complete instruction manual of the combustion analyzer.
6. At the end of the leakage test, the analyzer shall display the test result:
 - Tight:** The whole system is tight.
 - Error:** Check the pneumatic connections, the peristaltic pump tube, the tightness O-ring on the junctions, the O-ring on the filter holder and in general all the connections that are between the rubber on the tip of the probe and the input of the analyzer.

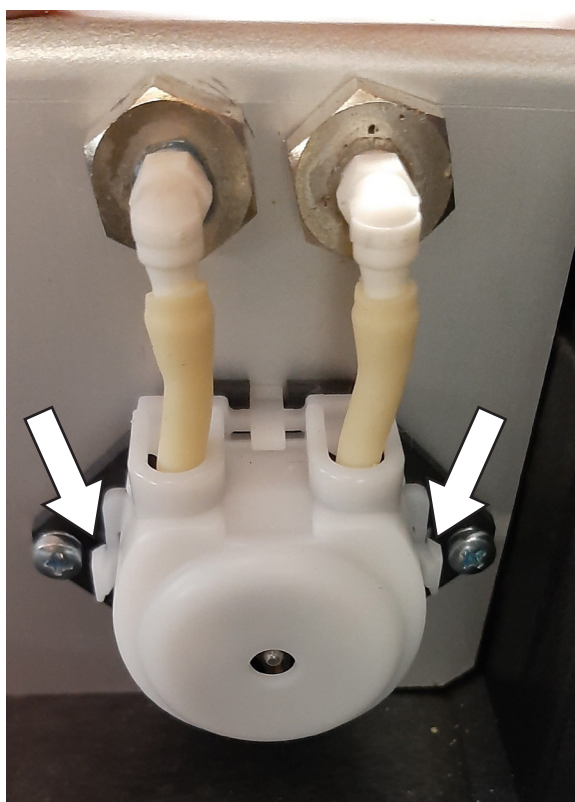
9.2 Peristaltic pump rotor replacement

For the replacement of the peristaltic pump rotor, proceed as follows:

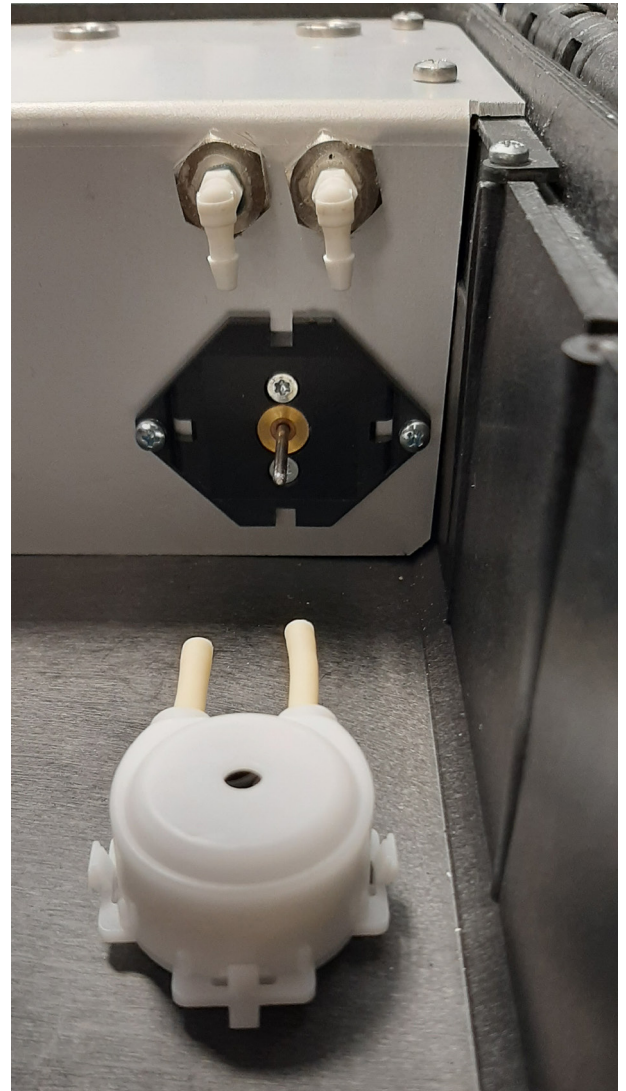
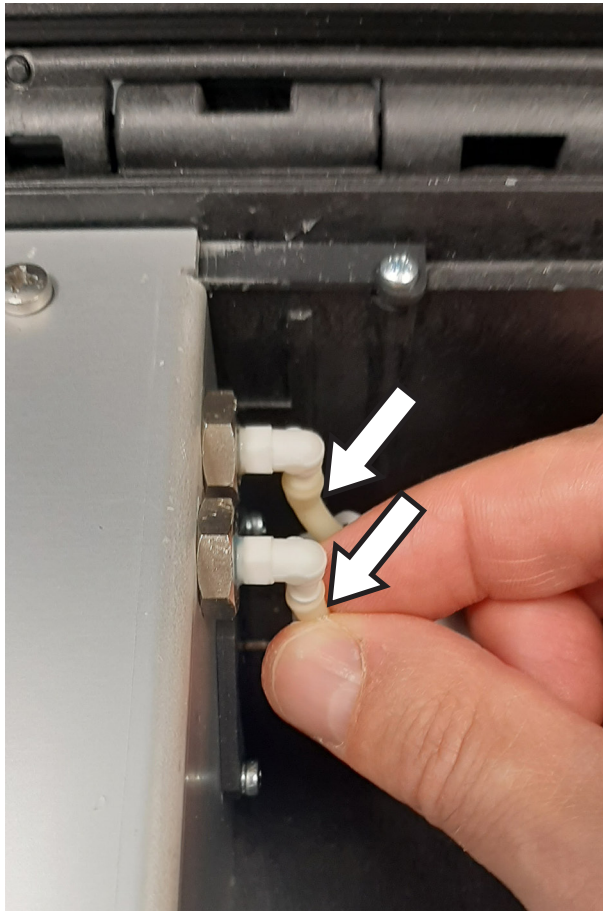
1. Switch off the instrument and disconnect the power cable from the instrument connector.
2. Locate the peristaltic pump rotor and remove the sponge from the bottom of the case.



3. Pull out the rotor of the peristaltic pump, holding inward the two plastic fins indicated by the arrows and at the same time, extract the rotor.



4. Remove both tubes from the elbow fittings.

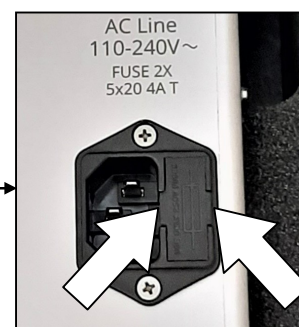
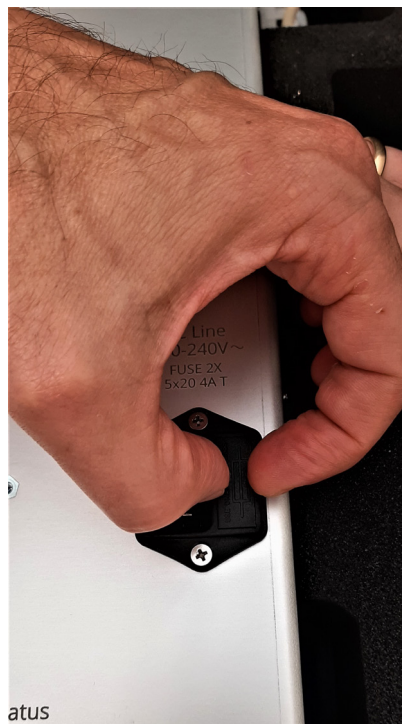


5. Pulled out the old rotor, replace it with a new one doing reverse operations up to here described, paying attention to the correct insertion of the tubes.

9.3 Fuses replacement

If it is necessary to replace the fuses of the instrument, proceed as follows.
For technical specifications of fuses, see Chapter "2.0 Technical features".

1. Switch off the instrument and disconnect the power cable from the instrument connector.
Locate the fuse holder drawer and pull it out.



2. Pull out the fuses, with the help of a screwdriver, taking care not to damage the fuse holder drawer and/or the fuses.

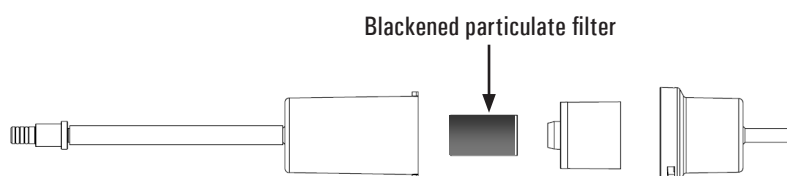


9.4 Maintenance of the particulate trap / filter assembly

**REPLACE THE PARTICULATE FILTER IF IT IS VISIBLY DIRTY OR HUMID.
DO NOT PERFORM MEASURES WITHOUT THE FILTER OR WITH A DIRTY FILTER IN ORDER TO AVOID
IRREVERSIBLE DAMAGES TO THE SENSORS.**

Replacing the particulate filter

In case the particulate filter is blackened, especially on the outside surface, it becomes necessary the immediate replacement. So, in this way, any obstruction to the gas flow is avoided.



To remove the water trap, just rotate the cover and unhook the filter holder body; remove the internal cup and then replace the filter (see figure).

Clean all the filter parts using water only, dry the components and reassemble the filter.

10.0 SPARE PARTS AND TECHNICAL ASSISTANCE

10.1 Spare parts

CODE	DESCRIPTION
WFUS5X20004R	5x20mm 4A delayed fuse
AACFA01	Particulate filter
WPOMR0001	Peristaltic pump rotor with neoprene tube
WRAC0007101	Female-female ø8mm junction
AATS02	Remote condensation drain tube
AACTA03A	Condensation water trap & particulate filter
AACCV01	Electric cable with a Schuko plug
AACCV06	Cable with US plug

10.2 Accessories

CODE	DESCRIPTION
AASF51A	180 mm smoke probe, with 2 m cable. Working temperature range: 400°C. For CHEMIST analyzers.
AASF62A	Smoke probe 300 mm, with 3 m cable. Working temperature range: 600°C. For CHEMIST analyzers.
AASL05A	Flexible smoke probe 300 mm, with 2 m cable. Working temperature range: 600°C. For CHEMIST analyzers.
AASF65A	750mm smoke probe, with 3m cable. Working temperature range: 800°C. For CHEMIST analyzers.
AASF66A	1000 mm smoke probe, with 3 m cable. Working temperature range: 1200°C. For CHEMIST analyzers.
AASJ07	Smoke sampling probe handle without tip, with 1.8 m cable. For CHEMIST analyzers.
AASJ08	Smoke probe handle without tip, with 3-m cable. For CHEMIST analyzers.
AJSJ01	Smoke probe handle without tip, with 1.8-meter cable. For NoVO analyzers.
AJSJ02	Smoke probe handle without tip, with 3-meter cable. For NoVO analyzers.
AJPT01	180 mm interchangeable tip. Working temperature range: 400°C.
AJPT02	300 mm interchangeable tip. Working temperature range: 600°C.
AJPT03	750-mm interchangeable tip. Working temperature range: 800°C.
AJPT04	1000 mm interchangeable tip. Working temperature range: 1200°C.
AJPT05	300-mm interchangeable flexible tip. Working temperature range: 600°C.
AJEX01	3 m extension cable for smoke sampling probes with AJSJ01 AND AJSJ02 handles.
AASP01	Heat protective screen for gas sampling probe.

10.3 Service Centers

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