



OPERATING INSTRUCTIONS

EN

Translation of the original instructions

ASM 102S

Portable sniffing leak detector

A very wide range of leak detectors

Dear customer,

You have just bought a Pfeiffer Vacuum leak detector.

We would like to thank you and we are proud to count you among our customers. This product is a result of the experience acquired over several years by Pfeiffer Vacuum in vacuum and leak detection technology.

The applications of helium leak testing are extremely diversified ranging from high-tech installation maintenance to high-speed testing of industrial products.

Each product of the Pfeiffer Vacuum detector range is designed to meet the specific needs of each application:

- portability,
- high sensitivity,
- pumping capacity,
- pumping type,
- automation and integration in an industrial process.



A very wide range of leak detectors


This product complies with the requirements of European Directives, listed in the Declaration of Conformity contained in G100 of this manual. These Directives are amended by Directive 93/68/E.E.C (E.C. Marking).

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ASM 102 S - Operating instructions

Preliminary remarks Throughout this operating manual, you could find this type of message “**Summary of screen  C 140**”: it refers to a specific chapter of the operating manual. Please read it for further information.

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CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in property damage.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury. It may also be used to alert against unsafe practices.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or severe injury.


DANGER

Indicates an imminently hazardous situation that, if not avoided, will result in death or severe injury (extreme situations).



Introduction

ASM 102 S Operating instructions Detailed contents

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A 100

Introduction to the ASM 102 S

A 200

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Introduction

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A 600

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- Bombing chamber
- Test chambers
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- Bottle handle for cart

A 800

ASM 102 S Technical characteristics

A 900

Dimensions

Introduction to the ASM 102 S



The ASM 102 S is the latest evolution of adixen dry leak detectors of which thousands are successful daily operating throughout the world in various applications like quality control and maintenance.

With the ASM 102 S: no compromise ! You need for your application: sensitivity, stability, measuring range, response time and clean up time: the ASM 102 S is the right choice.

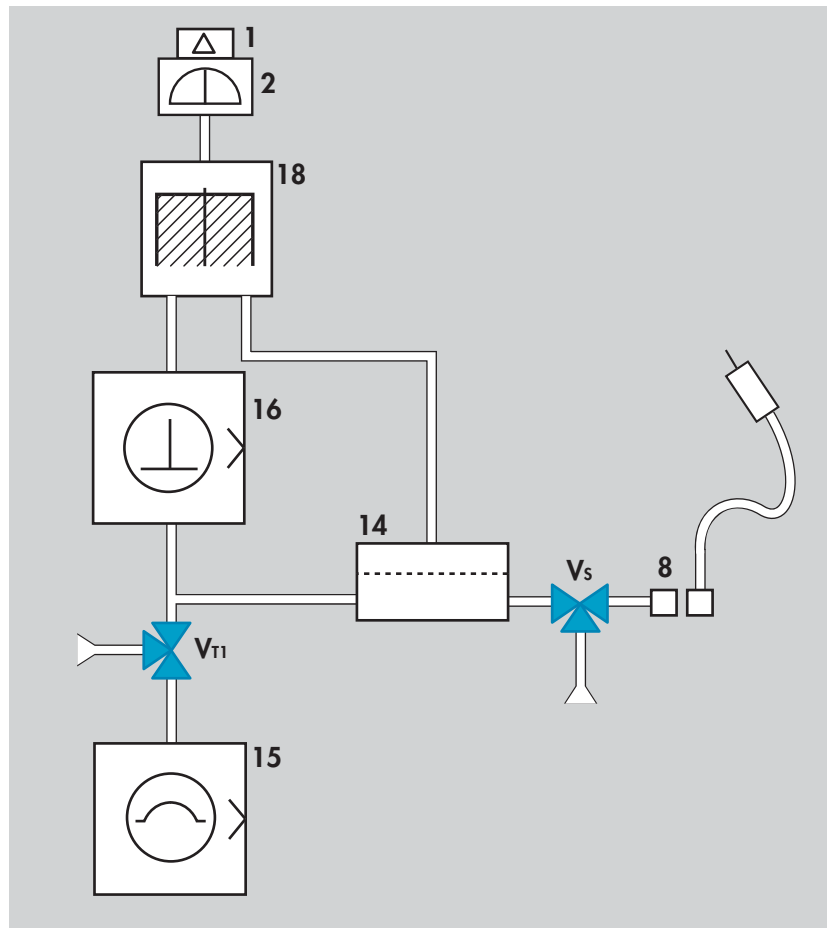
You can now detect and pinpoint easily very small leaks, the one you can not see before and that impacted your process applications.

The ASM 102 S is a dry leak detector enhancing its flexibility for applications where the unit may have to be placed side way or in an angle or carried around frequently.

We suggest that you read this manual before you start to use your detector to obtain optimum levels of performance and complete satisfaction.

ASM 102 S detector operating principle

Vacuum circuit

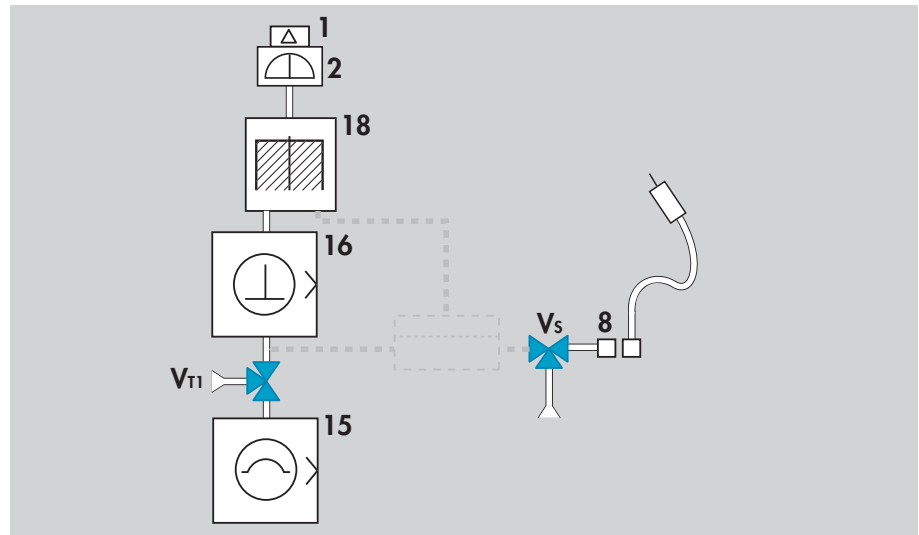


Reference correspondence between valve/vacuum block marks E 530

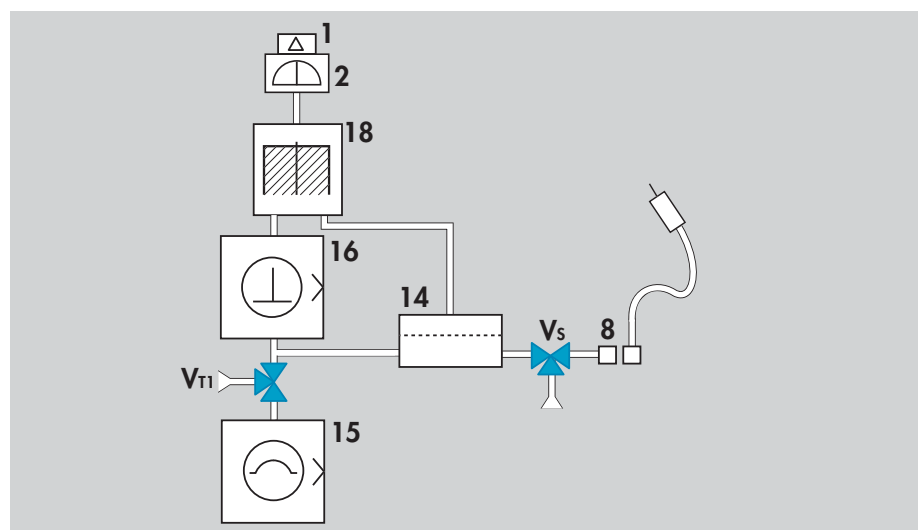
- | | | | |
|----|---------------------------------|-----------------|--------------------------|
| 1 | Preamplifier | V _{T1} | Exhaust valve (2 points) |
| 2 | Analyzer cell | V _S | Sniffing valve (1 point) |
| 8 | Long distance sniffer connector | | |
| 14 | Sniffing cell | | |
| 15 | Roughing membrane pump | | |
| 16 | Roughing dry pump | | |
| 18 | Detection molecular pump | | |

ASM 102 S detector operating principle

Stand-by mode



Sniffing test mode

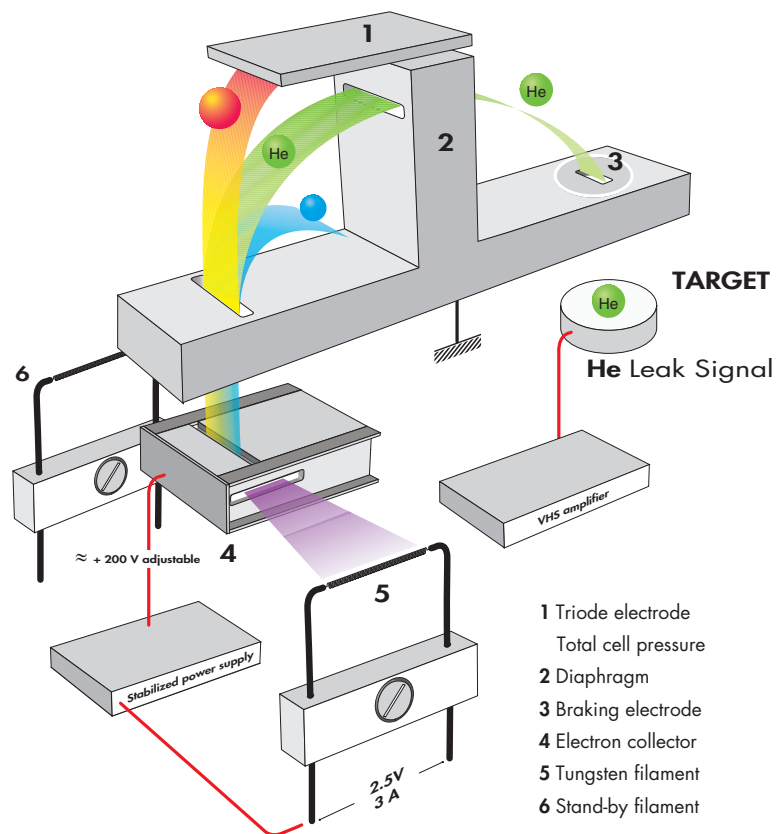


Analyzer cell operating principle

Description The analyzer cell works on the principle of mass spectrometry and is set to the mass of helium ($m/e = 4$).

m/e = atomic mass of the particle/number of electrons lost on ionization

The principle of magnetic deflexion spectrometry is as follows. The neutral molecules of the gas being analyzed pass into an ionization chamber (or source of ions) where they are bombarded by an electron beam generated by a heated tungsten filament. A large number of the molecules are transformed into ions.



 **Electrons beam**

 **"heavy" ions**

 **Helium ions**

 **"light" ions**

Analyzer cell - functional diagram

Analyzer cell operating principle

Description (continued) These ionized particles are accelerated by an electrical field.

The entire analyzer cell is subject to a magnetic field which has the property of deflecting the trajectories of the ions along different curves according to the masses of those ions (to be more precise, according to their m/e ratios). Thus the ions beam, which contained ions with different masses, is divided into several beams, each containing only ions with the same m/e ratio. The helium ions ($m/e = 4$) are separated from the lighter (H_2^+ or H_1^+ , smaller beams) or heavier ions (N_2^+ or O_2^+ , small beams).

Because there is a constant magnetic field (permanent magnet), the accelerator electrical field is adjusted so that the helium ions ($m/e = 4$) follow a pre-determined trajectory (passing through diaphragms) and arrive on the target at the input to a direct current amplifier.

The current of helium ions is proportional to the partial pressure of helium in the installation and by measuring it we can find the flow rate of the leak that has been detected.

It is essential that the total pressure in the analyzer cell is less than 10^{-4} mbar, so that the trajectories of the electrons and the ions are not disturbed by residual molecules.

Around 10^{-3} mbar there is a risk of damaging the heated filament.

In order to separate the helium ions from «noise» caused by «stray ions», an electrode located in front of the target eliminates the secondary ions with low energies. This electrode is called the «braking electrode».

There is an auxiliary electrode at the top of the cell, shaped like a plate, which collects the ions that are heavier than helium. This electrode thus measures the total pressure in the analyzer. This electrode serves as the plate for a triode gauge, hence its name of «triode electrode».

Analyzer cell operating principle

Design and manufacture

Great care has been taken with the design and manufacture of the cell in order to repeatedly obtain the same characteristics and to achieve excellent stability:

- the metal parts are made of stainless steel,
- the filament holder is made of machined aluminium,
- there is an integral amplifier.

The cell assembly is composed of:

- a vacuum chamber or deflection chamber,
- an optic holder flange,
- a permanent magnet,
- an amplifier.

- **The vacuum chamber:**

The analysis cell vacuum chamber is made of light alloy. It is hollow with a rectangular opening into which the electrodes, (that are installed on the «optics holder» flange) are placed.

- **The optics holder flange:**

The optics holder flange supports all the electrodes and electrical connections in the cell. They include:

- the sealed power supply socket, mounted on a metal gasket,
- the amplifier, mounted on an elastomer gasket,
- the supporting block which screens the target and on which the source of ions is mounted,
- the source of ions, which is made up of 2 parts:
 - a filament holder,
 - an ionization chamber with a stainless steel electron collector and a mass ion emitter.

The filament holder mechanically positions the tungsten filament with respect to the ionization chamber.

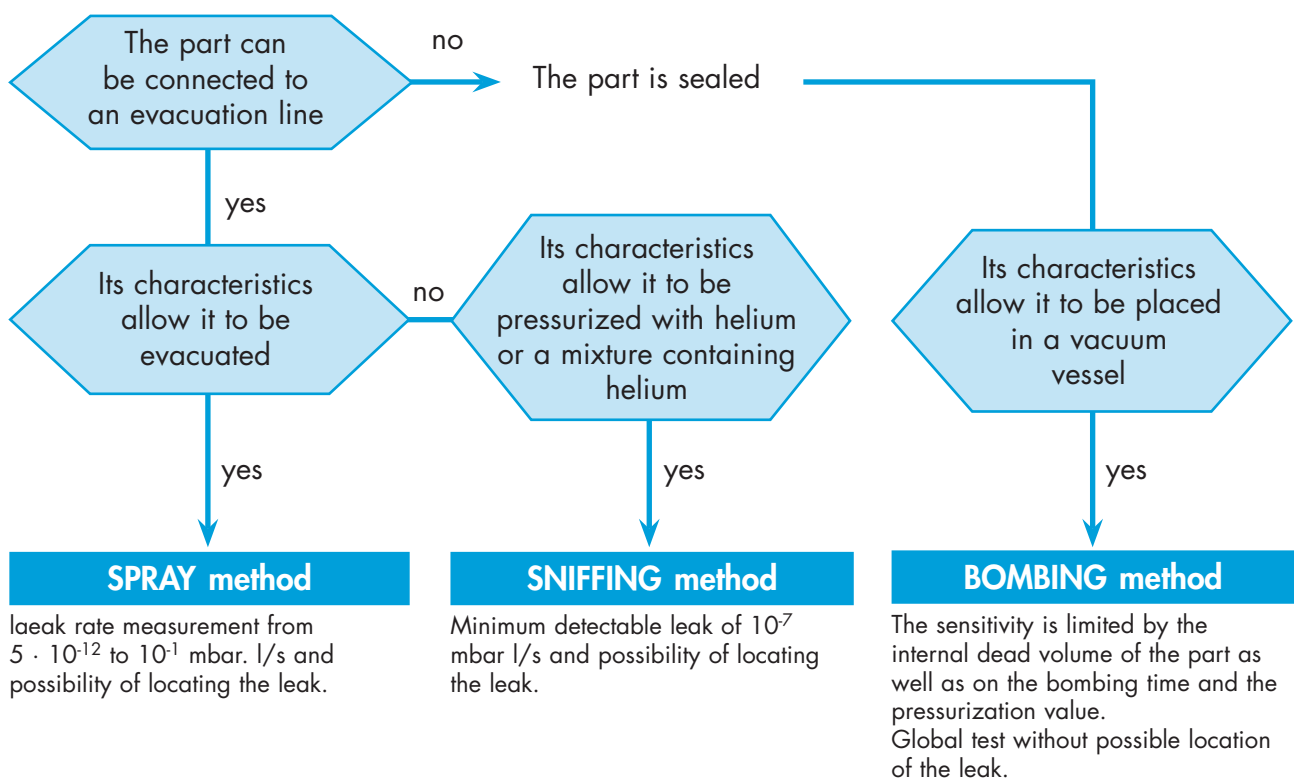
The electron collector and the filament have been designed and positioned so that the temperature of the electron collector stabilizes at 400°C under bombardment and radiation from the filament. The cell is thus rendered immune to contamination from the pieces being tested without the need of any special heating system.

Testing methods

Overview Leak detection is used to detect micro-openings, porosities, etc. in test parts. The detection of these cracks involves the use of a light tracer gas, which is capable of infiltrating the smallest leak quickly: **Helium**.

The detector samples and measures the helium flow rate entering the test part via the leak(s).

The testing method is selected according to the test part and the measurement accuracy required:



Testing methods

Helium concentration and signal displayed

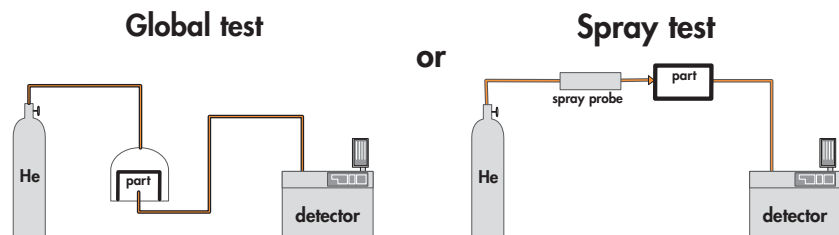
In accordance to the He concentration rate in the gas used for the leak detection, the signal displayed will change.

Example: signal displayed with a 1×10^{-7} mbar l/s calibrated leak (with 100 % He) connected to the detector inlet.

% He in the gas used	100 %	10 %	1 %
Signal displayed on the leak detector	1×10^{-7} mbar l/s	1×10^{-8} mbar l/s	1×10^{-9} mbar l/s

Spray method (inboard testing)

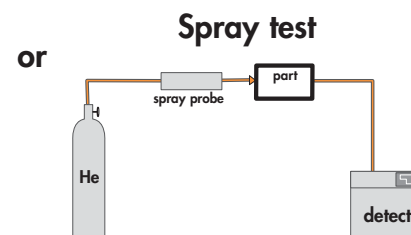
This involves removing air from the test part, connecting it to the analyzer and then spraying helium over the outer surface.



The part is placed under a cover, into which helium is injected.

The leak cannot be located.

The detector measures the flow of helium penetrating the part.



Potential leaking areas are sprayed with helium.

The leak can be located.

Response time

When spraying starts, the leak signal is not displayed instantaneously on the analyzer:

there is a response time which depends on the volume V being tested and the helium pumping speed S of the system at the opening of the part, according to the following relation:

$$T = V/S \quad (T \text{ in seconds, } V \text{ in litres, } S \text{ in l/s})$$

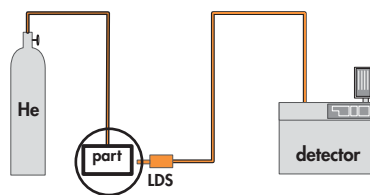
T is the time required for the signal to reach 63 % of the final value.

Testing methods

Sniffer method (outboard testing)

The test part is pressurized with helium. The detector, via an LDS (Long Distance Sniffer) probe, samples the helium escaping from the part.

Global test



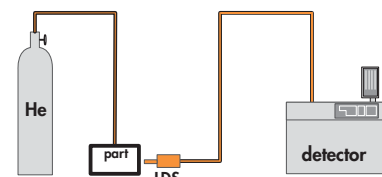
The part is placed under a cover containing a sniffer probe.

The leak cannot be located.

The helium from the leak accumulates over time inside the cover. The detector measures the concentration of helium.

Local sniffing test

or



The sniffer probe is moved over areas likely to contain leaks.

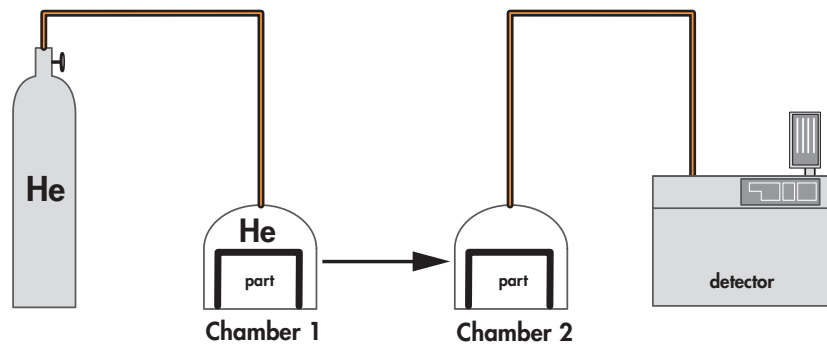
The leak can be located.

The signal supplied by the analyzer is not a direct measurement of the leak. The sniffer probe only samples part of the helium escaping from the part. The sample depends on the distance separating the leak from the tip of the probe.

Testing methods

Bombing method

This method is used for sealed objects that cannot be connected directly to the detector (semiconductors, waterproof watches, etc.).



The part is placed in a chamber containing pressurized helium.

The helium penetrates the part if it has a leak.

The part is then removed from the chamber and placed in another vacuum chamber which is connected to the detector. The helium escapes from the part through the leak and produces a signal.

This signal is not a direct measurement of the leak as the helium pressure inside the part is difficult to determine. Several parts play an important part such as: the pressurization time, the helium bombing pressure, the internal volume, the aeration time, the size of the leak.

About Helium and hydrogen

Helium Helium is the second most common element in the universe, representing about 23 % of the total matter. 76 % is Hydrogen. All other elements represent an insignificantly small fraction of the total.

Helium was discovered by spectroscopy in a solar eclipse on August 18, 1868. The discovery in the sun's chromosphere gave the new element its name: "helios" in Greek means "sun". While Helium is very common in the universe most of it is in the stars: on earth it is actually not abundant. Since it is so light all the Helium present during the formation of earth escaped to space. Helium is created, deep in the earth from the radioactive decay of Uranium and Thorium which also generates the earth its internal heat. On earth Helium was discovered in 1881 by spectroscopy of Mount Vesuvio in Italy – the volcanic gases emanated by the mountain showed the same lines in the spectrum as already known from the sun.

Helium concentration in the atmosphere is 5 times bigger than the one of Krypton and 60 times higher than Xenon. Helium comes up with the natural gas and is separated and stored. The annual world wide production is ca. 3×10^7 m³ or 4,500 tons.

Helium is constantly seeping up from the ground all around us, but it is so light that almost all of it escapes into space fairly rapidly. On the other hand there is a constant flow of Helium from space and the sun to earth. This gives a dynamic equilibrium and is the reason for the world wide constant concentration of ca. 5 ppm Helium in air.

Helium is a very light colorless element and it is one of the six noble gases; it is the most difficult gas to liquefy.

Helium is a noble gas, which means it doesn't react with anything for all practical intents and purposes. It's used as an inert shield gas to protect things from oxidation – and of course as leak detection tracer gas.

Helium is a 100 % green gas and has absolutely no environmental impact on the atmosphere.

About Helium and hydrogen

Helium and leak detection: which purity ?

Helium is available in many different purity levels, the highest level of purity is requested from some laboratories for fundamental activities or very accurate analyses.

The use of the Helium as a tracer gas into a mass spectrometer doesn't require such attention. A purity in the range of 97 % to 99 % is enough .

There is absolutely no risk of accuracy lost or contamination for the cell analyzer by using standard purity level of Helium gas.

Hydrogenated nitrogen

If Hydrogen (H_2) and Oxygen (O_2) are mixed and heated, they react and create water vapor (H_2O). During this process more heat is generated which may (if the concentration is high enough) ignite the surrounding gas. If this process propagates, the gas explodes.

At low concentration of Hydrogen (< 4 % in air) the generated heat is not enough to ignite the surrounding gas.

At concentrations in the range 4 to 12 % the combustion may spread only if actions are taken to prevent the generated heat from dissipating. It is a common misconception that hydrogen will explode as soon as the concentration exceeds 4 %. It may explode only if conditions are favorable for spontaneous propagation of combustion.

DANGER

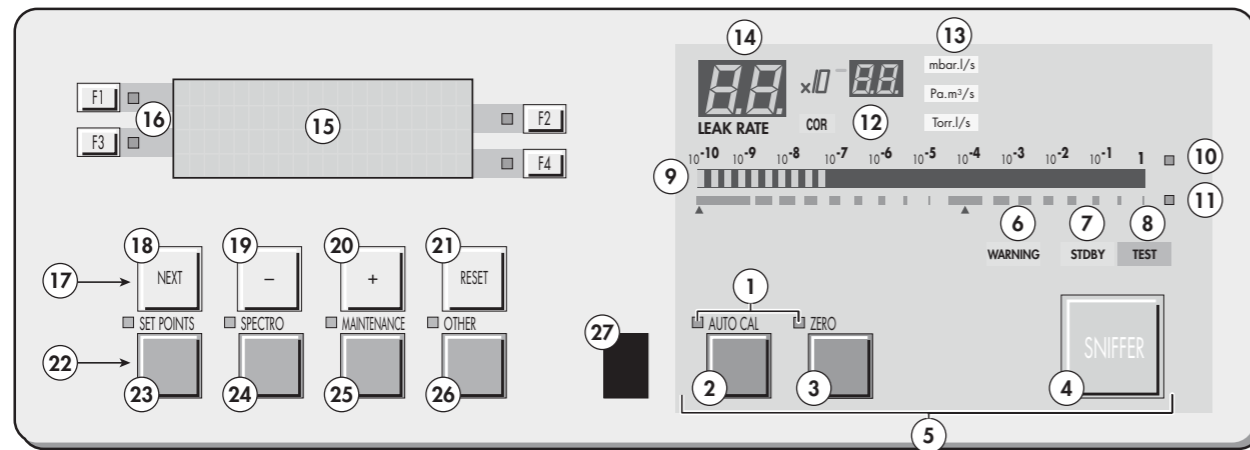
Never use pure hydrogen or a mixture with a hydrogen concentration higher than 10 % to realize a «hydrogen» test as tracer

If you use the recommended tracer gas of 5 % H_2 / 95 % N_2 and mix it with air there will either be too little hydrogen or too little oxygen to constitute a combustible gas mixture. Hence this gas mixture is classified as non flammable. The actual limit is 5.7 %.

The mixture 10 % H_2 / 90 % N_2 is commonly used in the industry because it is flammable only under certain conditions. This mixture is however classified according to ISO 10156 as Flammable Gas and should only be used after due safety considerations and approvals.

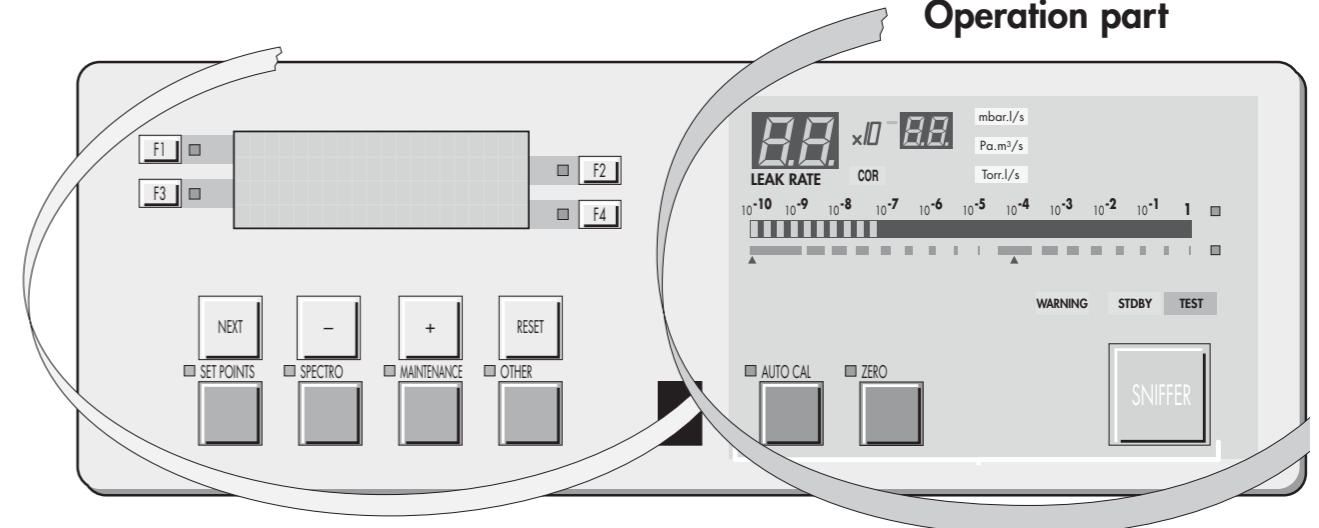
A 500

Operator interface: control panel



- 1 Control and menu selection indicators (ON when activated)
- 2 Autocalibration start/stop key
- 3 Zero start/stop key
- 4 Sniffing start/stop key
- 5 Control keyboard (3 keys)
- 6 Fault indicator
- 7 «Sniffing stop» state indicator
- 8 «Sniffing start» state indicator
- 9 Tracer gas analogic display
- 10 10 decades scale use indicator
- 11 2 decades scale use indicator
- 12 Extra units use indicator
- 13 Basic units use indicator
- 14 Digital display
- 15 Alphanumeric display (4 lines x 20 characters)
- 16 Parameter function keys (1 key per display line)
- 17 Modification access keys (4 keys)
- 18 NEXT : next display/parameter circular function
- 19/20 Plus or minus value adjustment, parameter selection, audio volume adjustment keys
- 21 RESET of previously displayed values (cancels temporary inputs)
- 22 Menu selection access keys (4 keys)
- 23 SET POINT menu selection key
- 24 SPECTRO calibration and analyzer cell configuration menu selection key
- 25 MAINTENANCE menu selection key
- 26 OTHER menus selection key (test mode selection, inlet VENT selection, date/time)

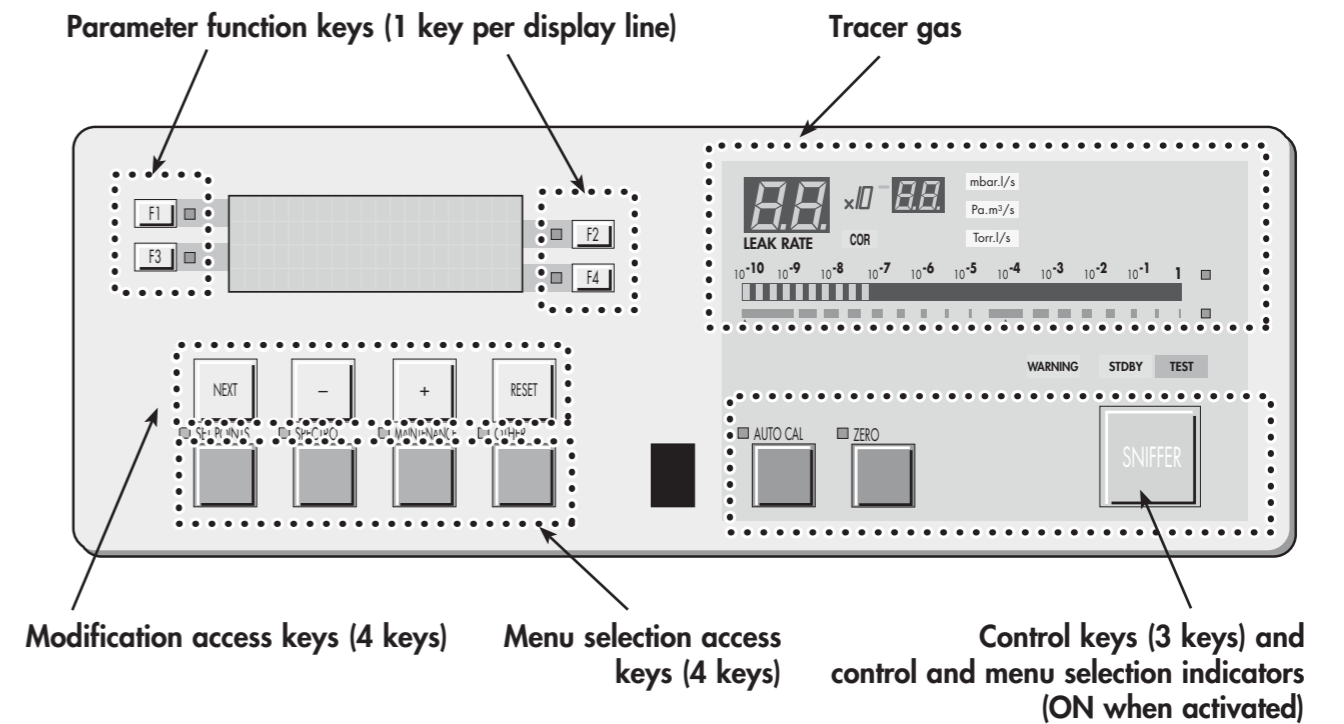
Operation part



Setting and maintenance part (*)

* Operator access to setting and maintenance part depends on the user interface level.

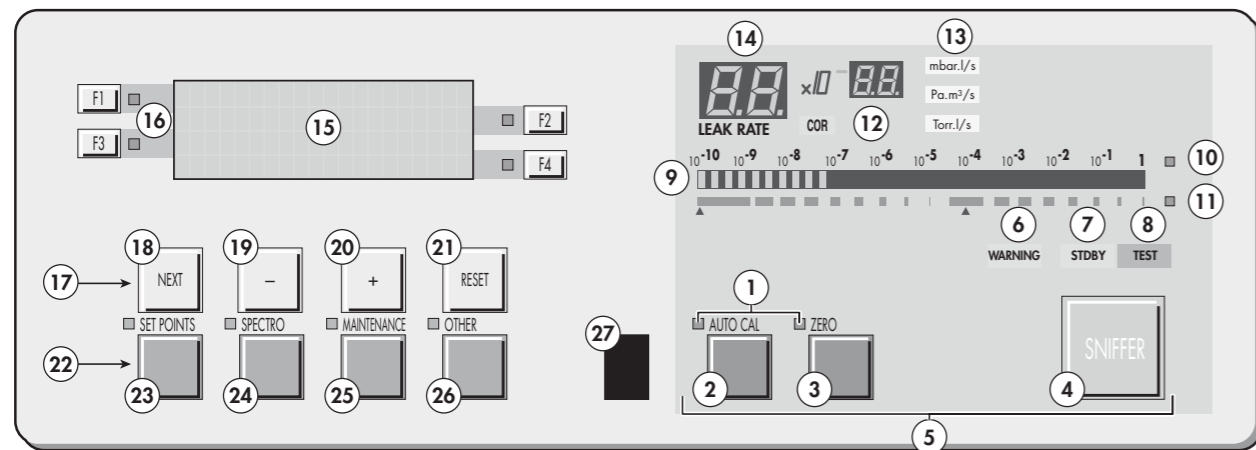
User interface level C 120



Remote control interface C 400

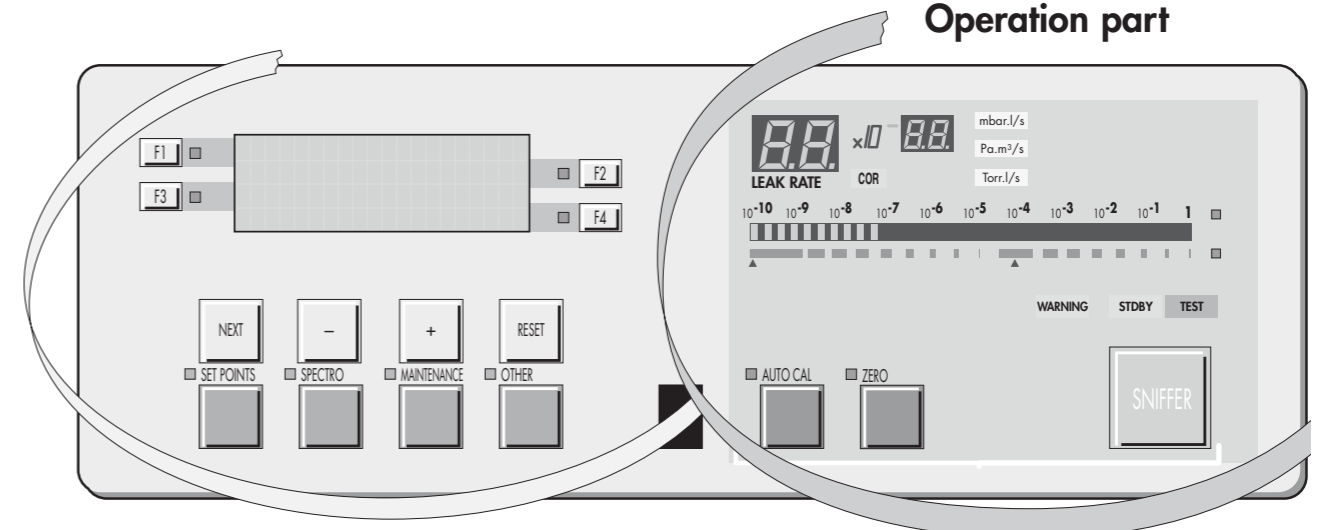
A 500

Operator interface: control panel



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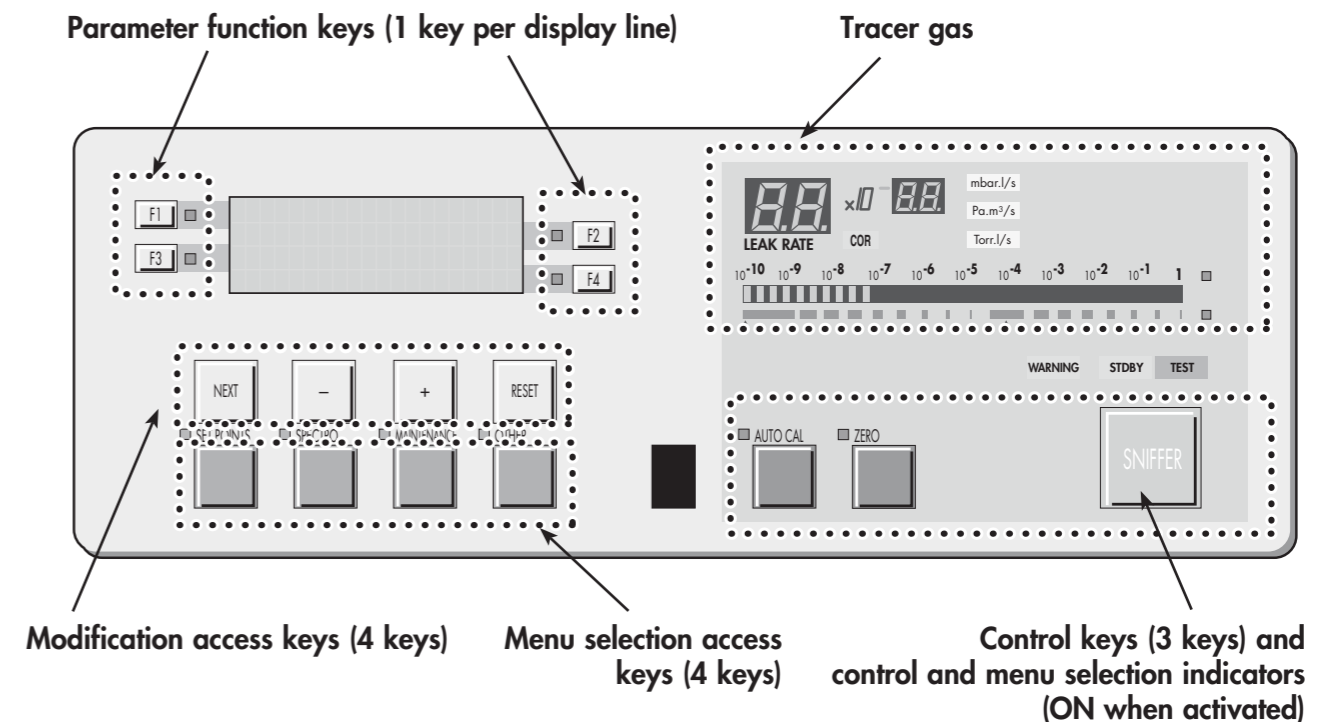
Operation part



Setting and maintenance part (*)

* Operator access to setting and maintenance part depends on the user interface level.



User interface level C 120



Remote control interface C 400

Options

Which options for which model?

		ASM 102 S	ASM 142	ASM 142 S	ASM 142 D	ASM Graph D+	ASM 182 T	ASM 192 T	ASM 192 T2	ASM 182 TD+	ASM 192 TD+	ASM 192 T2D+	ASM 1002
Metal seals	1		•		•	•	•	•	•	•	•	•	•
Inlet port	2												•
Units	3	•	•	•	•	•	•	•	•	•	•	•	•
Languages	4	•	•	•	•	•	•	•	•	•	•	•	•
3 masses	5	•	•		•	•	•	•	•	•	•	•	•
Automatic test chambers	6		•				•	•	•	•	•	•	•
Roughing system	7							•	•		•	•	
Interface board*	8		•	•	•	•							
Remote control cable length	9	•											
Test of gas line	10									•			
Stainless steel cover (UCT)	11									•			
Control panel with graphic interface*	12		•		•	•	•			•			
Transport cart*	 A 700									•			
Voltage configuration	-	•	•	•	•	•	•	•	•	•	•	•	•
Power plug	-	•	•	•	•	•	•	•	•	•	•	•	•
Standard remote control*	 A 700							•	•		•	•	

*also available in accessories

Options

Metal seals

1

Inlet and high vacuum manifolds and the analyzer cell are equipped with metal seals instead of elastomer seals to protect the leak detector against contamination with helium. This option is particularly useful in case of high sensitivity helium leak detection in an "helium contaminated environment".

Localisation of the metal seals  F 800

Inlet port

2

ASM 1002: The test chamber can be replaced by a DN 25 inlet port for convenience.

Units

3

The user can choose the unit of the software: mbar.l/s, Pa.m³/s or Torr.l/s.

Languages

4

The user can choose the language of the software: English, French, German or Japanese.

Note: ASM 142 S: English/French/German/Spanish,
ASM 1002: English/French.

3 masses

5

For use of one of the 3 following tracer gases:
Helium 4, Helium 3 or Hydrogen 2.

Automatic test chambers

6

This is used for the automatic bombing testing of small components. When the chamber cover is closed, the test cycle is initiated, via a contact.

3 aluminium alloy models are available:

- a hemispheric chamber, Ø 72 mm, depth 31 mm (small model),
- a cylindrical chamber, maximum Ø 85 mm and maximum depth 68 mm (medium model),
- a cylindrical chamber, maximum Ø 160 mm and maximum depth 100 mm (large model).

Note: ASM 142: large model not available.

Options

Roughing system

7

In order to reduce the roughing time when testing large volumes, a second roughing pump can be added to the roughing system:

- ASM 192 T / 192 T2 total capacity: 40 m³/h or 24 cfm.
- ASM 192 TD+ / 192 T2D+ total capacity: 50 m³/h or 36 cfm.

Apart from the roughing capacity, the weight and the power consumption, the characteristics and the use of the leak detector remain the same.

Interface board

8

The helium leak detector can be equipped with a software version which will offer a complete RS 232 protocol:

- 3 operating modes: basic, advanced, printer;
- possibility to remote control the detector (start/stop, autozero, auto-cal etc...);
- possibility to obtain and adjust the settings;
- possibility to obtain all the maintenance information for preventive maintenance purposes.

This RS 232 is the most effective interface to supervise your leak test from a PC (data recording on an Excel sheet, for instance) and/or to monitor the detector from a small PLC.

Remote control cable length

9

3 lengths are proposed: 5 m (16 Ft), 10 m (32 Ft) and 15 m (49 Ft).

Test of gas line

10

Used to perform spray testing on long lines (typical diameter 1/4"), with a reduced response time due to the transfer of the helium by a carrier gas injected in viscous flow.

In this case, the detector is equipped with an additional 1/4" VCR connector specific to this option.

Stainless steel cover (UCT)

11

Designed for use of the unit in clean rooms ("Ultra Clean Technology").

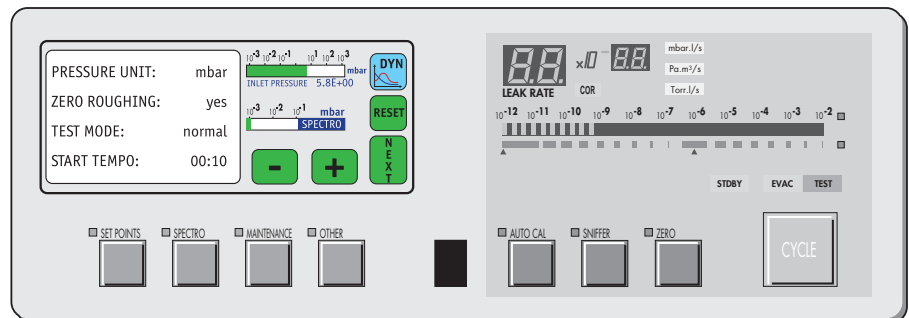
The front and rear covers and frame are made of stainless steel.

Options

Control panel with graphic interface



12

The control panel with graphic interface is equipped with a color touch screen. It allows it to have, as a supplement to the standard control panel functions, a graphic interface.



Accessories

Which accessories for which model?

		ASM 102 S	ASM 142	ASM 142 S	ASM 142 D	ASM Graph D+	ASM 182 T	ASM 192 T	ASM 192 T2	ASM 182 TD+	ASM 192 TD+	ASM 192 T2D+	ASM 1002
Standard remote control and cable	1a			•	•	•	•	•	•	•	•	•	•
Sniffing remote control and cable	1b	•		•									
Long distance sniffer (LDS) probe	2	•	•	•	•	•	•	•	•	•	•	•	•
10 m/30 feet LDS extension	3	•	•	•	•	•	•	•	•	•	•	•	•
Headphone connector (required interface board)	4		•	•	•	•	•	•	•	•	•	•	•
Transport cart*	5		•	•	•		•			•			
Foot pedal for cycle command (1.5 m/ 5 feet)	6						•	•	•	•	•	•	•
Calibrated helium leaks	7	•	•		•	•	•	•	•	•	•	•	•
Calibration accessory	8	•	•	•	•	•	•	•	•	•	•	•	•
Spray probe	9	•	•	•	•	•	•	•	•	•	•	•	•
Interface board* (p/n 107657)	 A 600		•	•	•	•							
Inlet filter	10		•		•	•	•	•	•	•	•	•	•
Short distance sniffer probe	11		•		•	•	•	•		•	•		•
Bombing chamber	12		•		•	•	•	•	•	•	•	•	•
Test chambers	13		•		•	•	•	•	•	•	•	•	•
Neutral gas vent line kit	14		•										
Bottle handle for 182 cart	15a									•			
Bottle handle for cart	15b					•							
Control panel with graphic interface* (p/n: 111716)	 A 600		•		•		•			•			

*also available in options

Accessories

Remote control

1

The remote control is equipped with a magnet allowing the operator to place it on a magnetized surface. The operator can read the helium signal and has access to control keys such as cycle command autocalibration and auto-zero.

2 models are available:

1a

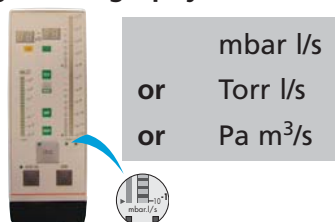
■ 1 standard for all leak detectors except ASM 102 S / ASM 142 S:
Remote control with 5 m/15'' cable length:



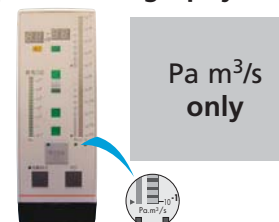
Designation	Part No
Unit: mbar l/s - Front face in English	106 688
Unit: Torr l/s - Front face in English	108 881
Unit: Pa m ³ /s - Front face in English	108 880
Unit: Pa m ³ /s - Front face in Japanese	106 690

Note: The remote control is delivered in standard with the ASM 192 series.

English serigraphy



Japanese serigraphy



1b

■ 1 specific for sniffing leak detectors (ASM 102 S / ASM 142 S):
Remote control with 5 m/15'' feet cable length:



Designation	Part No
Front face in English. Remote control unit is the unit set in the leak detector menus.	112 747

Cable for remote control (remote control not provided):



Only Cable

Designation	Part No
Cable of 10 m/394''	110 881
Cable of 15 m/591''	110 882
Cable of 20 m/787''	802 494
Cable of 25 m/984''	802 339
Cable of 30 m/1181''	802 767
Cable of 40 m/1575''	802 769
Cable of 50 m/1969''	802 771

Other lengths: on request

Accessories

Long Distance Sniffer probe

2

Sniffer probe with a rigid nipple

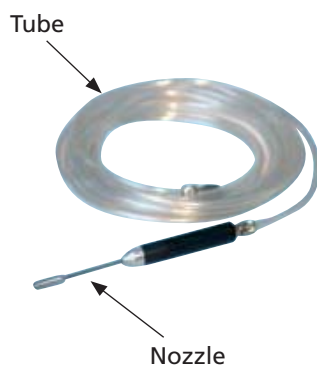


Sniffer probe with a flexible nipple



5 m/15 Ft canalisation				10 m/32 Ft canalisation					
Rigid nipple		Flexible nipple*		Rigid nipple		Flexible nipple*			
9 cm	30 cm	15 cm	45 cm	9 cm	30 cm	15 cm	45 cm		
LDS probe part number		SNC1E1T1	SNC1E2T1	SNC1E3T1	SNC1E4T1	SNC2E1T1	SNC2E2T1	SNC2E3T1	SNC2E4T1

(*) Sniffer probes with flexible nozzle cannot be used with the ASM 102 S.



Long distance sniffer with short rigid nozzle (9 cm/3.5"):

Designation	Part No
Tube length 20 m/787"	802 826
Tube length 30 m/1181"	802 827
Tube length 50 m/1969"	802 829

Other lengths: on request

10 m/30 feet LDS extension

3

Used to extend the LDS probe by 10 m/30 feet.
Part No: 090216



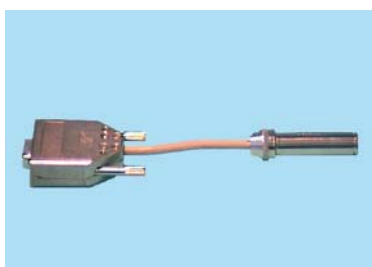
Accessories

Headphone connector

4

With the headphone connector, the operator can connect a headphone to its detector.

Part No: **A459818**



The headphone connector is an accessory but to use it, the detector must be equipped with the interface board option.

Which headphone used?  C 410

Transport cart

5

ASM 182 range
Part No: 111196



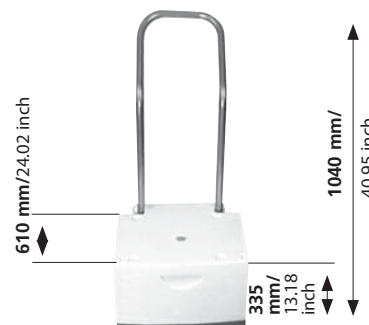
Accessories

Transport cart (ctd)

ASM 142 range

It can be fixed to the detector.

Part No: **108068**



ASM 142 range

In addition to the standard cart (p/n 108068), a 4 wheels stainless steel cart is proposed for 142 series.

Part No: **802862**



Foot pedal for cycle Part No: 100913 command (1.5 m/ 5 feet)

Part No: **100913**

6



Accessories

Calibrated Helium leaks

7

There are several types of calibrated leaks, with or without reservoir, with or without valve, covering several leak ranges. The choice of the appropriate external calibrated leak depends on the application requirements.

For further information on the Pfeiffer Vacuum calibrated leaks, please refer to our representative product catalog or consult your Sales representative.



Most of the Pfeiffer Vacuum calibrated leaks are delivered with a calibration certificate.

Helium 3 and Hydrogen calibrated leaks

Principle

The manufacturer does not supply the calibrated leaks in Helium 3 and Hydrogen.

All Pfeiffer Vacuum calibrated leaks are based on permeable membrane technology.

External calibrated leak recalibration

Most calibrated leaks last many years even though the helium is permanently escaping (the leak rate is very small in comparison to the amount of helium contained in the reservoir: yearly loss is indicated on the calibrated leak identification label).

However, it is recommended to have every calibrated leak (with reservoir) recalibrated on regular intervals to validate its value: this is applicable for both internal and external calibrated leaks.

Recalibration period of the calibrated leak depends on its leak rate value.

Recommendation for proper Quality Control:

THE RECALIBRATION INTERVALS SHOULD NOT EXCEED 2 YEARS.

Please consult your local Sales representative for additional information.

Accessories

Calibration accessory

8

Used to connect the alibrated leak and the sniffer probe for a calibration.

Model	Part No
DN 16	110715
DN 25	110716

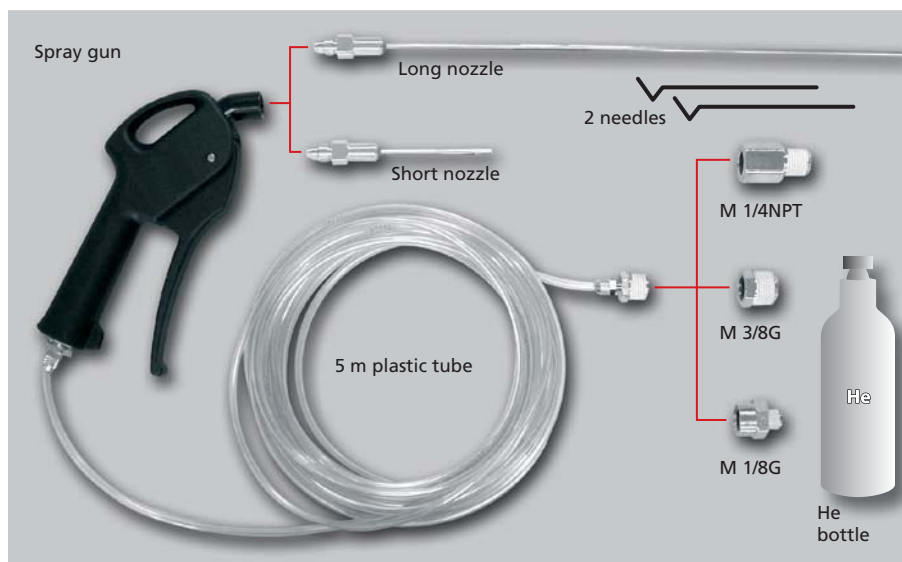


Spray probes

9

9a

Helium spray probe model "Elite".
Part No: 109951



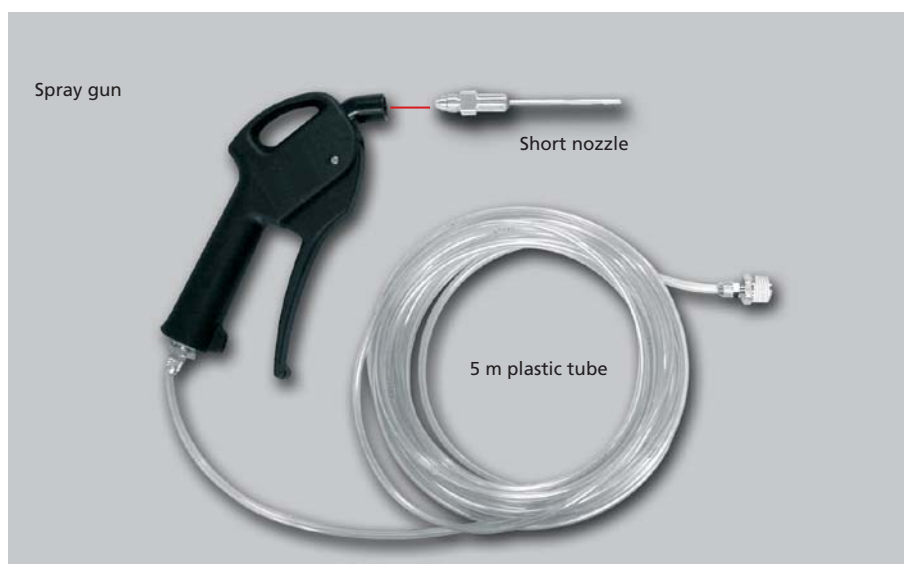
Spraying Helium in order to detect a leak is usually very easy, especially if you need fast and rough detection.

Spraying Helium could also become a technical challenge when you need to pinpoint very fine leaks, more so, when they are located in areas with difficult access.

The Helium spray gun is provided with 2 standard needles wich allow the adjustment of the Helium flow at the outlet of the nozzle.

Accessories

- 9b** Helium spray probe model "standard".
Part No: **112535**



Spraying Helium in order to detect a leak is usually very easy, especially if you need fast and rough detection.

Spraying Helium could also become a technical challenge when you need to pinpoint very fine leaks, more so, when they are located in areas with difficult access.

Inlet filters

10




Complete inlet filters



Model	DN Flange	Part No
20 µm inlet filter	25/25	105841
20 µm inlet filter	40/40	105842
20 µm inlet filter	40/25	105843
5 µm inlet filter	25/25	105844
5 µm inlet filter	40/40	105845
5 µm inlet filter	40/25	105846

Accessories

Spare parts for inlet filters

	Model	DN Flange	Part No
	Stainless steel filter 70 µm	16	072721
	Stainless steel filter 70 µm	25	072857
	Stainless steel filter 70 µm	40	067636
	20 µm inlet filter	Ø 114 mm	105847
	5 µm inlet filter	Ø 114 mm	105848
	O'ring, dia. 5 mm	Ø 114 mm	082152

Short distance sniffer probe (to be connected to the inlet part of a leak detector):

Temperature coefficient: 7 % per °Celsius.

Standard leak rate: 2×10^{-4} mbar l/s

Able to measure helium concentration inside water or liquids.

11



Designation	DN Flange	Part No
Sniffer probe with membrane, DN 40 flange and a 1.5 meter tube (5 ft)	40	067 683
Sniffer probe with membrane, DN 40 flange	40	067 677
Sniffer probe with membrane, DN 25 flange	25	103 592
Sniffer probe with membrane and 14 mm O.D. smooth tube connection	Ø 14 mm	067 678

Accessories

Bombing chamber

12

Designation	DN Flange	Part No
Bombing chamber 10 bars (Ø 150 - L 200 - Vol.: 3.5 l)	-	786 396
Bombing chamber 25 bars (Ø 150 - L 200 - Vol.: 6.4 l)	-	786 397

Test chambers

13

- Small test chamber: hemispherical test chamber, Ø 72 mm, depth 31 mm
- Medium test chamber: cylindrical test chamber, Ø 85 mm, depth 68 mm
- Large test chamber: cylindrical test chamber, Ø 160 mm, depth 100 mm



Designation	Part No
Small test chamber DN 25 (1)	802 452
Small test chamber DN 40 (2)	802 453
Medium test chamber DN 40 (2)	802 456
Large test chamber DN 40 for ASM 182 T/TD+	802 458

- (1) ASM 142 - ASM 142 D
 (2) ASM 182 T/TD+ - ASM 192 T/TD+

Accessories

Neutral gas vent line kit

Part No: 801421

14



Neutral gas vent line kit

Bottle handle for cart

15

15a

ASM 182



Bottle handle for cart p/n 111196

Part No: **802819**

Bottle maxi weight: 15 kg/33 lbs

Accessories

15b ASM Graph D+



Part No: 112 532 (Ø 135-146)
112 533 (Ø 177)

ASM 102 S Technical characteristics

	Measurement range (Helium)		Crossover pressure (at inlet)	
	mbar l/s	Pa m ³ /s	mbar	Pa
Sniffing test mode (flow)	1x10 ⁻⁷ to 1	1x10 ⁻⁸ to 1x10 ⁻¹	sniffer probe at atm. pressure	
Sniffing test mode (concentration)			0.1 ppm to 100 %	
Response time (without LDS extension and without adaptor)			< 1 s	
Response time (with 10 m/32 ft LDS extension)			< 5 s	

Adaptor for calibrated leak  C 306

Analyzer cell (Spectro):

Analyzer cell design	self protected 180° magnetic deflection mass spectrometer
Analyzer cell filament	2 tungsten filaments
Analyzer cell sensitivity	3x10 ⁻⁴ A/mbar
Emission current range	0.2 to 2 mA

Audio alarm: 90 dB frequency modulated and adjustable audio signal

Sniffing Audio set point	Adjustable throughout the entire measuring range
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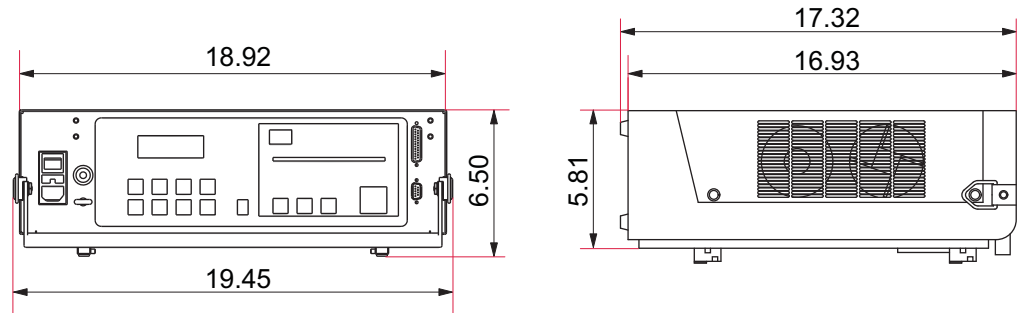
Start-up time (average, at 20 °C):

Without autocalibration	1 min 30 s ± 10 %
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Miscellaneous:

Power voltage	low voltage :	100 - 130 V ± 10%
	high voltage :	200 - 240 V ± 10%
Power frequency		50/60 Hz single phase
Power consumption (maximum)		100 W
Start-up temperature		0 to 45° C
Ambient operating temperature		0 to 45° C
Storage temperature		-25° C to 70° C
Noise level (at 1 meter; audio alarm not operational, stand by mode)		56 dBA
House protection level		30C IP
Weight		18 kg /39.6 lb


Dimensions (inch)





Installation

ASM 102 S Operating instructions Detailed contents

Preliminary remarks Throughout this operating manual, you could find this type of message “**Summary of screen  C 140**”: it refers to a specific chapter of the operating manual. Please read it for further information.

B 100

Safety instructions

- Overview
- Storage
- Unpacking
- Installation
- Operation
- Maintenance

B 110

Unpacking - Storage - Transportation

- Unpacking
- Supplies
- Storage space
- Storage
- Transportation

B 112

Product labelling

- Detector packaging
- Detector
- Pumps

B 200

Neutral gas purge and inlet vent connection

- Products concerned
- Connection to the leak detector
- Use
- Gas characteristics

B 210

Connecting the detector to the installation

B 300

Controlling the detector with the I/O interface

- Purpose of the I/O interface
- Location of the I/O interface
- Prepare the connector wiring
- The controls (inputs)
- The signals (outputs)
- 24 V DC Power supply



Installation

ASM 102 S Operating instructions Detailed contents

B 310 *Controlling the detector with a PC computer through the RS 232 interface*

- Purpose of the PC computer interface
- Location of the RS 232 interface
- RS 232 interface instructions
- Commands available for your leak detector
- RS 232 interface setting
- Connection checking of RS 232 interface

B 320 *Connecting the detector directly to a printer or another device*

- Purpose of the printer interface
- Location of the printer interface
- Connector description
- Communication mode description
- Connection to the printer
- Tickets available

B 400 *Before starting up the leak detector*

- Check power voltage
- Transporting strap
- Detector installation

Safety instructions

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in property damage.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury. It may also be used to alert against unsafe practices.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or severe injury.

DANGER

Indicates an imminently hazardous situation that, if not avoided, will result in death or severe injury (extreme situations).

Overview

Before switching on the appliance, study the user's manual and make sure you follow the safety instructions it gives. You can recognise these by the 'Caution', 'Warning' and 'Danger' symbols.

Good practice tips and manufacturer's recommendations are in a blue box.

The performance and operational safety of this product are guaranteed provided it is used normally in the operating conditions defined in this manual.

It is the customer's task to:

- train operators to use the product if they do not speak the language the manual is written in,
- ensure operators know the safe practices to apply when using the product.

We took care to provide you with a clean appliance. To keep it in this condition, unpack it only in its final place of use.

For emergencies and breakdowns, contact the manager of your local service center (see addresses at back of manual).

Make sure the equipment shows no sign of transport damage. If it has been damaged, take the necessary steps to record this with the carrier and inform the manufacturer. In all cases, we recommend keeping the packaging (reusable materials) for further transport of the equipment or for prolonged storage.

Safety instructions

Our products are designed to comply with current EEC regulations. Users making their own modifications to the product are liable to break its compliance with these regulations, degrade its EMC (electromagnetic compatibility) rating, and make it unsafe to use. The manufacturer declines all liability for the consequences of such operations.

CAUTION

The product's EMC rating is obtained on the understanding that it is installed in compliance with EMC rules.

Of special note: in environments that are prone to emit interference,

- use shielded cables and connections on interfaces,
- put earthed screening on the power supply line, from the power source up to 3 meters (10 ft) from the product cable entry.

Storage

When storing the detector, please note that we guarantee the reliability of our equipment for three months in normal storage conditions (see operating manual for storage temperatures). Beyond this period, factors like temperature, humidity, or salt in the air can lead to deterioration of 'sensitive' items (elastomer, lubricant, etc.).

For storage longer than 3 months, follow the instructions in this operating manual.

Unpacking

Heavy detector

This product needs special handling precautions due to its weight. It should be removed from its crate only by staff trained in heavy materials handling:

- make sure the detector is stripped of all excess weight (accessories, customization, etc.) and the side covers are fastened,
- use the lifting rings provided with the product. The maker can not be held liable for the consequences of using other rings.
- screw the rings firmly home into the holes, provided, facing in the right direction to accept the slings,
- never lift the detector by means of a single lifting ring,
- the sling must not form an angle of more than 45 ° from vertical.

Installation

WARNING

Risk of tilting.

Although the appliance meets EEC safety regulations (normal range $\pm 10^\circ$), it is advisable to guard against the risk of tilting during handling, installation, and use.

ASM 380 detector.

When the detector is placed on a gradient of more than 3 ° (6 %), it can drag the operator along due to its heavy weight:

- use castors to move it,
- locate it on flat, hard ground,
- do not push it sideways or press on its side faces,
- do not leave objects leaning on the side of it.

The detector is not designed to carry people or loads and is not for use as a seat or step.

Safety instructions

Installation (cont.)

In leak detectors fitted with atmospheric air purging, avoid performing detection operations in non ventilated rooms. The helium concentration may be too high.

CAUTION

The leak detector must be installed on a horizontal flat surface and never laid on its side. Some models cater for other positions; these are described in the operating manual.

CAUTION

The leak detector is Class 1 equipment and therefore must be earthed. The user must check the electrical installation to which the leak detector is connected:

- it must comply with current standards (IEC 364),
- it must have a standards compliant earth wire, properly connected to earth.

WARNING

Electric shock hazard on touching.
When the main isolator is switched to the «0» position, items located between the mains connection and the isolator are still under mains voltage. Disconnect the mains cable from all power sources before commencing any maintenance work on the product.

WARNING

Electric shock hazard.
Some components have capacitors charged to over 60VDC. When power is switched off, they keep their charge for a time. Residual voltages from the filter capacitors can cause electric shocks all the way back to the mains plug. Wait 5 minutes after power-off before commencing any work on the appliance.

WARNING

A helium leak test must be performed in environmental conditions bearing no risk to the user or equipment.
The user and/or OEM are ultimately responsible for ensuring proper safety conditions apply to the working product. The manufacturer has no control over the type of gas the detector is used with. Parts tested, equipment used and the plan itself must show no traces of aggressive, chemical, corrosive, inflammable, reactive, toxic, explosive substances, in an form whatsoever (solid, liquid, gaseous).
Note: any pumping of liquid water is forbidden; water steam contained naturally in the air can be pumped (see maxi concentration indicated in the environmental conditions of the operating instructions: see **A 100**
These are hazardous substances, and the process user must take responsibility for applying all relevant safety instructions in accordance with the legislation in effect at the site.
The detector's nitrogen purge system is not intended to dilute these gases. The manufacturer can not be held liable and the guarantee is void if the detector is used while these gases are present.

Safety instructions

Installation (cont.)

WARNING

Lock out (LO/TO) of nitrogen purging circuit.
The user will need to provide a dedicated Nitrogen circuit, fitted with a manual valve, that can be locked out within a radius of 3 m (10 ft) of the equipment.

Operation

CAUTION

ASM 380 detector
This leak detector must not be used without its purge system. The user must make sure the purger is present and working properly.
The manufacturer shall not be held liable for any damage to the product and the guarantee is void if the purge does not work.

WARNING

The products are factory tested to ensure they will not leak in normal operating conditions. It is the user's responsibility to ensure this level of leak tightness is maintained.

DANGER

Explosion hazard.
To detect leaks using «hydrogen» tracer gas, always use hydrogenated nitrogen (95 % N₂ and 5 % H₂) (see chapter A of operating manual).

CAUTION

If the appliance is used in applications where dust or solid particles are present, we advise protecting it with an inlet filter (see section A of the operating manual).
Always use clean pipes and fittings in the pumping installation.

CAUTION

Make sure all parts and chambers connected to the inlet of our products can withstand a negative pressure of 1 bar below atmospheric pressure and that they are impervious to damage from vacuum (seals, etc.).

CAUTION

The inlet pressure must be no higher than atmospheric pressure. Too high a pressure can damage the product

WARNING

Remove the blanking plates on the inlet and exhaust orifices. These are to prevent foreign bodies entering the pump during transport and storage.

Safety instructions

Operation (cont.)

CAUTION

Make sure the exhaust pressure does not exceed 1200 mbar (absolute). Too high a pressure can damage the appliance.

After connecting the appliance to the pumping line, check for leaks along the whole of the line to ensure proper connections have been made (pump, pipes, valves, etc.).

CAUTION

Leak detectors fitted with oil seal roughing pumps. These pumps come without oil, which is delivered in separate drums. The material safety sheet for the oil is available upon request. Always wear gloves and goggles when filling the pumps with oil.

DANGER

The voltages and currents in use can induce electric shock. Isolate and lock out power to the appliance before maintaining it or removing the cover. Only skilled, authorized people may carry out maintenance work.

CAUTION

Risk of seizing
Avoid moving or applying shock to a running detector.
Portable detectors: avoid rotating the appliance about an axis perpendicular to the axis of rotation of the high vacuum pump.

CAUTION


ASM 380 detector.
Nipping hazard:
- keep hands away from the sides when opening the cover,
- keep hands away from the front of the cover when closing it.
Laceration hazard:
Do not move the appliance by holding the bumper bar. Use the handle provided.

Maintenance

The outside of the appliance and control box can be cleaned with a lint free wiper. Avoid using cleaning products that deteriorate printed surfaces and self adhesive labels. All other cleaning operations must be done by our service centers.

Safety instructions

Maintenance (cont.)

Do not eliminate maintenance waste via standard disposal channels. Have it destroyed by a qualified company if necessary: see  F 003.

CAUTION

Leak detectors fitted with oil seal roughing pumps.
We advise draining the pump prior to any transport of the equipment.
Always wear gloves and goggles when draining the pumps.
Do not put waste oil down the drain. Have it destroyed by a qualified company if necessary.

WARNING

Maintenance must be performed by a skilled maintenance operator trained in the relevant health and safety aspects (EMC, electrical hazards, chemical pollution, etc.).
Isolate the product from all energy sources (mains electricity, compressed air, etc.) before starting work.
Major overhauls must be performed by qualified staff who have received training from the manufacturer, especially when it comes to handling the fluids inside the detector (see instructions in operating manual).

WARNING

The products are designed to avoid subjecting users to heat hazards. Specific operating conditions can nevertheless exist that require extra caution from users due to the high temperatures generated (outer surfaces > 70° C):
Wear protective gloves to work on the appliance, especially during maintenance.

Unpacking - Storage - Transportation

Unpacking


When the equipment is received, unpack it carefully.
Keep the packaging for possible return.

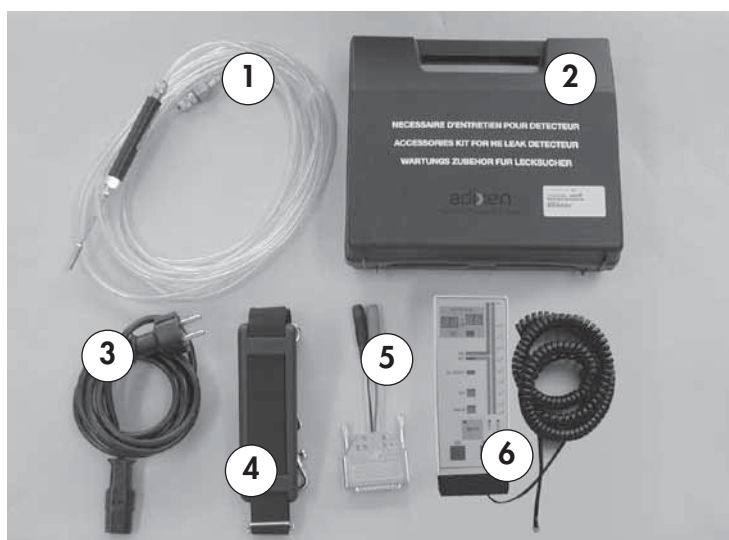
Before opening, check the **name of the model** and the **serial number**.

In the event of an anomaly, take the necessary action with the shipper and notify the manufacturer if necessary.

Supplies

The following parts are supplied with your detector:

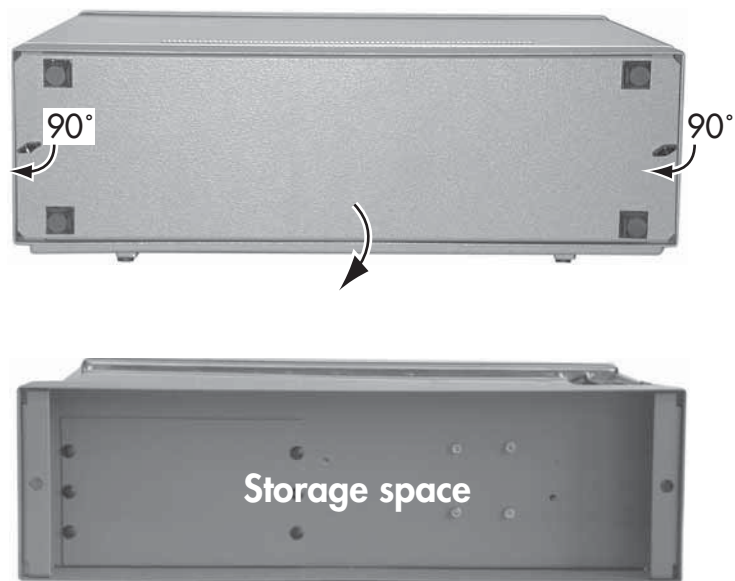
- an operating manual (not pictured)
- a long distance sniffer probe (p/n SNC1E1T1) (1)
- a maintenance kit (2) **Maintenance kit**  F 100
- a power supply cable (3)
- a transportation strap (4)
- a 0/8 V adaptor cable (5)
- a remote control unit (6).



Unpacking - Storage - Transportation

Storage space On the rear side of the ASM 102 S, there is a storage space in order to put some accessories.

Access Turn the 2 attachment screws through 90° and remove the panel :



Storage For long duration prolonged storage, factors such as temperature, humidity, saline atmosphere, etc. may damage the detector elements.

Please call your local representative for further information.

Before starting up after storage for over six months, it is recommended to change all the seals (contact customer service).

The seals kits must be kept away from heat and light (direct sunlight and ultraviolet light) in order to prevent hardening of the elastomers.

Unpacking - Storage - Transportation

Transportation The ASM 102 S can not be transported in any position when it is switched on (see label on the cover):



Before moving the ASM 102 S after operating, wait 2 minutes.

The operator can use the handle or the transporting strap.



We advise for any transport to use the original packaging and to wedge it carefully into the box.

Product labelling

Detector packaging

- Marking on the packaging used for product delivery.

WARNING

WE RECOMMEND KEEPING THE ORIGINAL PACKAGING (REUSABLE MATERIALS) FOR FURTHER TRANSPORT OF THE EQUIPMENT.
CONSULT THE OPERATING INSTRUCTIONS BEFORE PRODUCT UNPACKING.

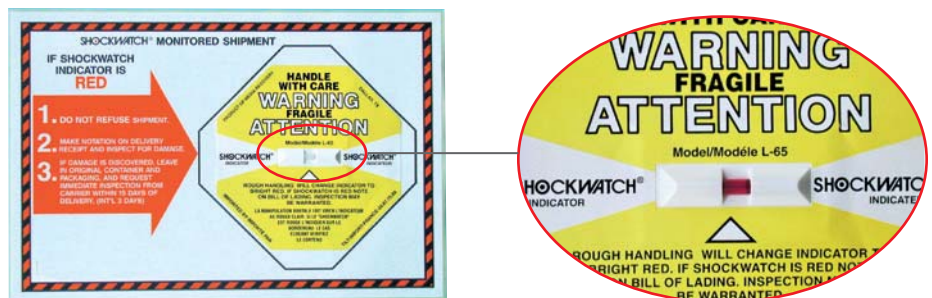
ATTENTION

NOUS VOUS RECOMMANDONS DE CONSERVER L'EMBALLAGE D'ORIGINE (MATERIAU RECYCLABLE) POUR TRANSPORTER L'EQUIPEMENT.
CONSULTER DE L'UTILISATEUR AVANT DEBALLAGE DU PRODUIT.

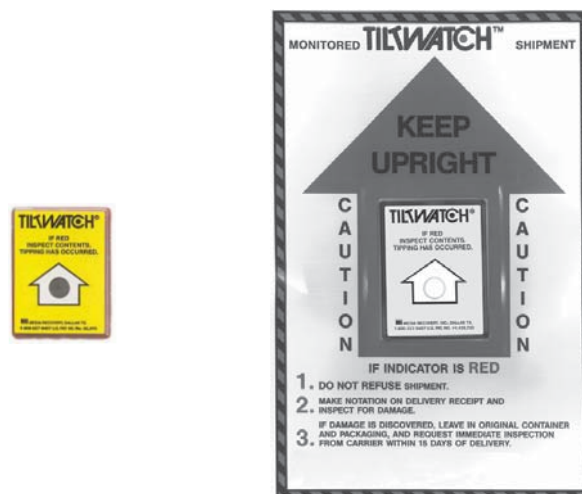
ACHTUNG

WIR RATEN IHNEN DIE ORIGINALVERPACKUNG (WIEDERVERWERTBARES MATERIAL) FÜR EINEN SPÄTEREN TRANSPORT AUFZUBEWAHREN.
VOR DEM AUSPACKEN, DER BETRIEBSANLEITUNG LESEN UND BEACHTEN.

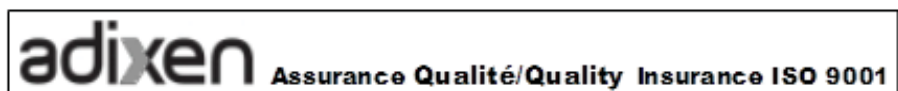
- Shock indicator: indicates if the box has been shook.



- Tilt indicator: indicates that the box has been tipped.

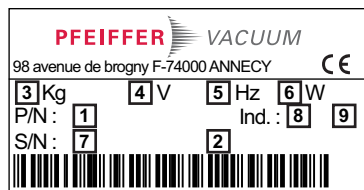


- Safety label: guarantees that nobody has opened the packaging since the manufacturing departure.



Product labelling

- Detector**
- Located on the frame, identity label indicates:
 - General data allowing identifying the leak detector.
 - Safety data allowing using the leak detector in good conditions.



1	Part number
2	Designation
3	Net weight
4	Use voltage
5	Use frequency
6	Maxi power consumption
7	Serial number
8	Index
9	Manufacturing date

- Product customized in factory, according to customer order.

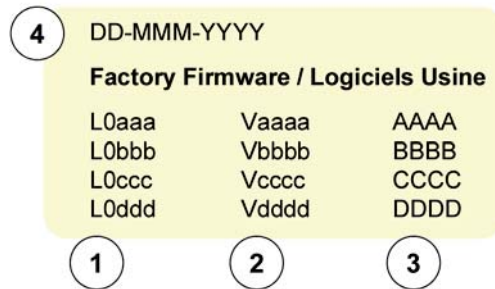
**PRODUIT PERSONNALISE
CUSTOMIZED PRODUCT**

- Located on the frame, this label indicates if “Bluetooth”, “Input/output board with Ethernet” or “Input/output board with Wi-Fi” options are placed in the detector.
If yes, their Mac addresses, required for their configuration, are indicated.



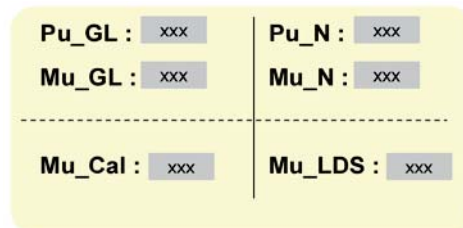
Product labelling

- Located on the frame, under the cover, this label indicates for each firmware load in the leak detector, its version and checksum.



1	Firmware name
2	Firmware version
3	Firmware checksum
4	Label edition date

- Located on the frame, under the cover, this label indicates parameters values only necessary to Service Centers for the leak detector maintenance.



- Leak detector quality control comply at factory leaving.

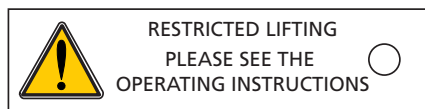


- Leak detector conformed with the R.O.H.S. directives.

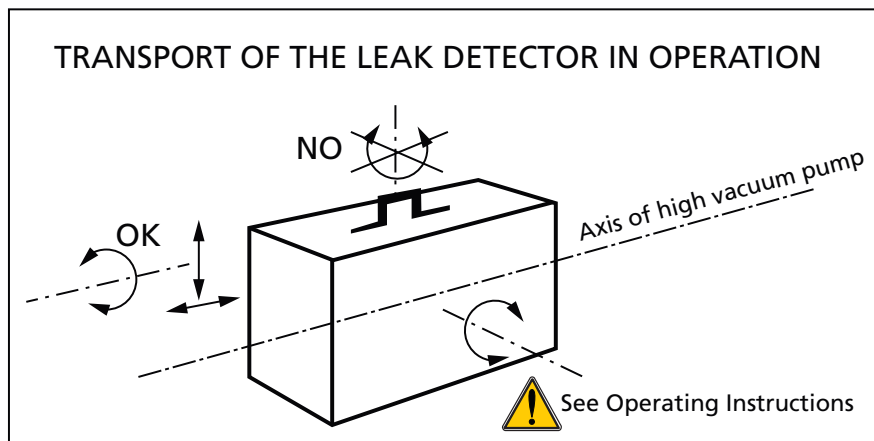


Product labelling

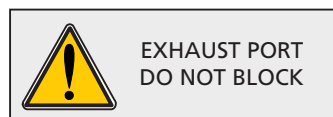
- Located on the detector, this label indicates that the product lifting must:
 - be made from the handling points identified with this label (rings, handles, ...),
 - respect the handling rules book considering its weight and dimensions.
 - See Operating Instructions for more details.



- Don't move the leak detector in operation in all positions.



- Exhaust port: not to be blocked.



- Product drained before leaving factory: fill the primary pump with oil before running.

NOTICE
PUMP IS SHIPPED WITHOUT
 ● **OIL INSTALLED**
 consult maintenance manual
CAUTION

ATTENTION
POMPE LIVREE SANS HUILE
 ● **A L'INTERIEUR**
 consulter le manuel d'utilisation
ATTENTION

Product labelling

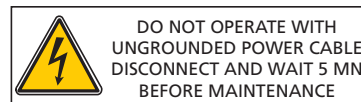
- This label indicates a detector ground point.



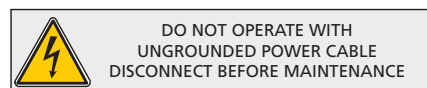
- Located on some electronic boards, this label indicates that some of the internal parts are energized and could cause electrical shocks in case of contact.



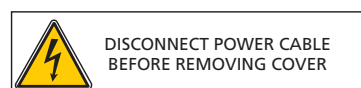
- Located on the frame, this label indicates that some of the internal parts are energized and could cause electrical shocks in case of contact. This label recommends disconnecting power supply cable and waiting 5 minutes before any maintenance operation.



- Located on some electronic boards, this label indicates that some of the internal parts are energized and could cause electrical shocks in case of contact. This label recommends:
 - Do not using the leak detector with the power supply cable not connected to the ground,
 - disconnecting electrically the leak detector before any maintenance operation.



- Located on some electronic boards, this label indicates that some of the internal parts are energized and could cause electrical shocks in case of contact. This label recommends disconnecting electrically the leak detector before removing the cover.



Product labelling

Pumps

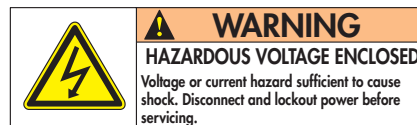
- Located on the rear of the pump, this label warns the user against possible risk of injury due to any hand contact with hot surfaces. It states that protective gloves should be used before performing any intervention.



- Located on the upper cover, this label indicates that due to its heavy weight the product should not be handled manually, but always through appropriate handling devices.



- Located on the upper cover, this label indicates that some of the internal parts are energized and could cause electrical shocks in case of contact. It advises to disconnect the pump before any intervention or to properly lock-out and tag-out the equipment breaker before any intervention on the pump.



- Located on the upper cover, this label informs the user that moving parts present inside the pump could cause personal injury, like crushing or cutting. The user must keep all body parts away from moving parts.




Neutral gas purge and inlet vent connection

Products concerned

	Inlet vent	Neutral gas purge
ASM 182 / 192 T ASM 192 T2	✓	
ASM 182 / 192 TD+ ASM 192 T2D+	✓	✓ ⁽²⁾
ASM 142	✓ ⁽¹⁾	
ASM 142 D ASM Graph D+		✓ (MDP 5006 HDS) ⁽³⁾
ASM 142 S ASM 102 S		
ASM 122 D	✓	✓ ⁽²⁾
ASM 1002	✓	

(1) Requires a special inlet vent kit installation ( A 700).

(2) Male connector delivered with the leak detector ( F 800 - Ref. H116).

(3) Male connector not delivered with the leak detector.
Model : Male connector R 1/4 BSPT.

Connection to the leak detector

 B 210 / B 211

Neutral gas purge
ASM 182/192 TD+
ASM 192 T2D+
ASM 142 D

■ If the purge is connected to an insert gas, the primary pump will be purged with this inert gas: its supply pressure must be regulated (see purge flow §).

If the male purge fitting is installed and not connected to an inert gas, the primary pump will be purged with ambient air and an air flow is maintained inside the leak detector.


CAUTION

The manufacturer recommends that the primary pump be purged continuously whenever the leak detector is in operation. Premature failure of the primary pump may occur and the warranty may be affected if the male purge fitting is not used at all times: do not remove this purge. This can be done by connecting the purge to an insert gas with less than 5 ppm of helium or simply to ambient air with normal Helium concentration of 5 ppm.

Neutral gas purge
ASM 122 D

■ Even if the leak detector does not use the neutral gas purge, the male connector delivered with the leak detector should always be connected to leak detector.


Inlet vent

■ The inlet vent status (open or closed) depends on the parameters set by the operator ( C 500).

■ If no inlet vent system is connected, the inlet vent is connected to the ambient air.

Neutral gas purge and inlet vent connection

Use Neutral gas purge

- Used to limit the leak detector internal pollution.
- Used to accelerate the cleanup of the helium background noise in the pumps after detecting a significant leak.
- Make high sensitivity testing easier due to the decreasing and stabilization of the helium background noise.
- As a supplement to the neutral gas purge, use the “Depollution” function  C 560 (except ASM 142 S/ASM 102 S).

In case of a big flow of Helium into the leak detector (very big leak detected), the recovery time (time for the display to go back to normal Helium background value) is 10 times longer when the neutral gas purge is obturated than when it is open. In usual average test conditions, there is however no major difference.

Inlet vent

- Used to accelerate the cleanup of the helium background noise in the leak detector after detecting a significant leak.
- Make high sensitivity testing easier due to the decreasing and stabilization of the helium background noise.
- Allows to regulate the gas flow inside the leak detector, leak detector in stand-by.

Gas characteristics

Type

Nitrogen is typically the neutral gas used but you can use any gas on the condition that it is poor in helium (concentration ≤ 1 ppm).
Take care with the ambient air: it should not be polluted with helium.

Quality/purity

According to the installation or item to test. The gas should be clean, dry, without dust, no toxic.

Use pressure

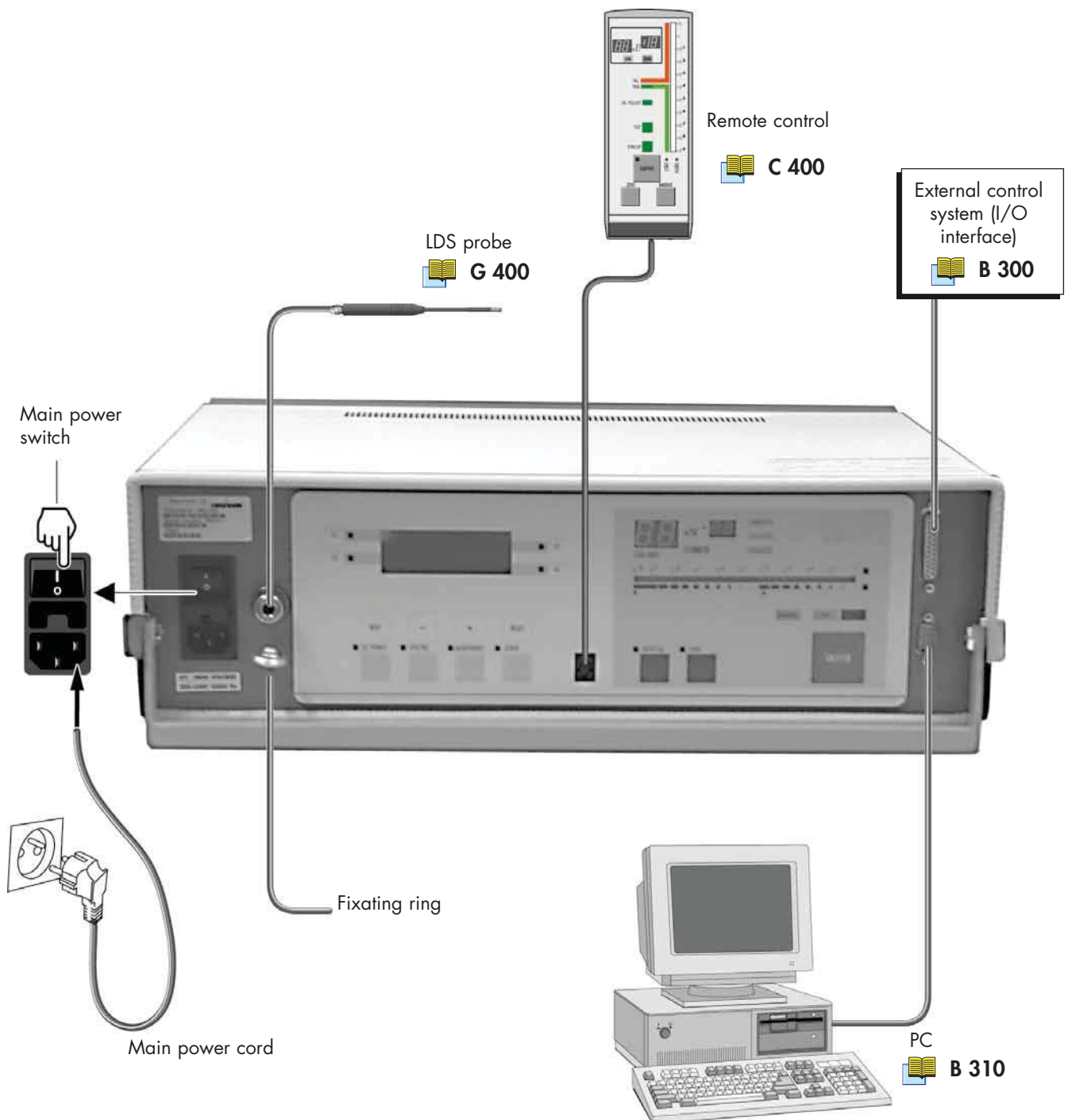
0.3 ± 0.1 bar relative (≈ 20 psia/5 psig).

If the inlet vent pressure is too high, the inlet valve will always stay closed, off even if the inlet valve is «ON».

Purge flow

- ASM 122 D - ASM 142 D: ≤ 5 sccm
- ASM 182 TD+: ≤ 50 sccm

Connecting the detector to the installation



Controlling the detector with a PC computer through the RS 232 interface: Refer to the RS 232 operating manual delivered with your detector.

Controlling the detector with the I/O interface

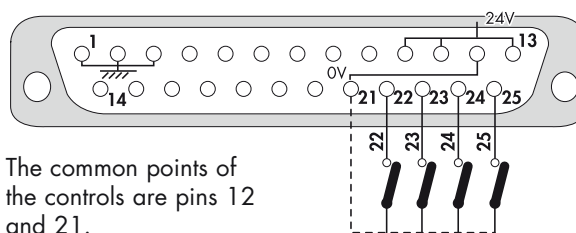
Purpose of the I/O interface

The I/O interface makes it possible to control the leak detector with a PLC or any other external control device.

Location of the I/O interface

The I/O interface is available on a Sub D. 25 pin Female connector located on the back of the leak detector.

Prepare the connector wiring (Sub D. 25 pin male connector)



The common points of the controls are pins 12 and 21.

B 210

It is recommended to use a shielded cable which is grounded on the connector cap.

The controls (inputs)

22 Sniffer	Sniffing start/stop [low level (contact closed) activation]
23 Autocal	Autocalibration: falling edge pulse [open-closed activation]
24 Zero	Zero function start/stop [low level activation]

The signals (outputs)

Dry contacts:
 Direct current: 60 V - 60 W or 2 A max
 Alternative current: 40 V - 125 VA or 2 A max
 Closed contact:

Pin #	State	Logic output	Type
8 - 9	Closed	Helium signal above Reject Setpoint SNIF	Dry contact Tolerated voltage from 0 to 240 V maximum current 2A
7 - 20	Closed	Calibration	
6 - 19	Closed	Selected sniffer mode On	
5 - 18	Closed	Warning or Fault message	
4 - 17	Closed	Sniffing mode ON	
Pin #	Analog output		Type
1 - 14	Spectro Helium signal Logarithmic		0 - 8 V Log (1 Volt/...) without any correction factor
2 - 15	Corrected Helium signal Exponent		Voltage = Exponent absolute value + 2 0 - 10 V - 1 V per decade, $10^{-10} = 10$ V, 1 = 0 V
3 - 16	Corrected Helium signal Mantissa		Voltage = Mantissa value 0 - 10 V linear - ex.: 1.2 Volt = 1.2

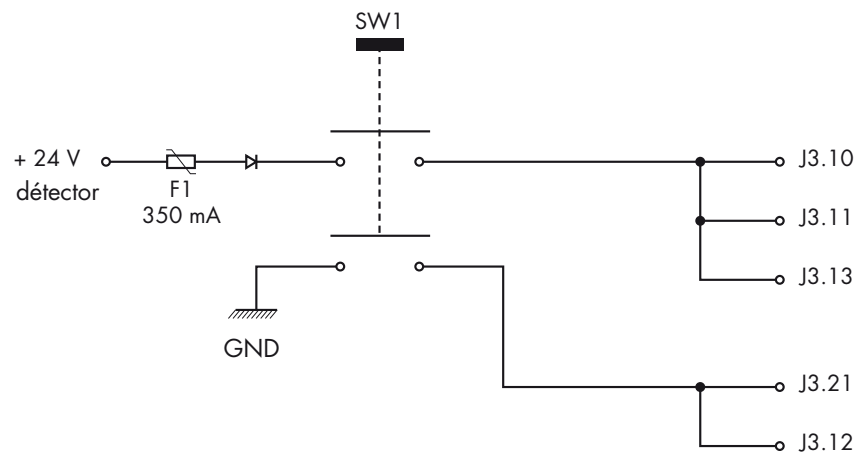
Nota:

- 1 - 2 - 3 = internal ground
- 12 = common (external ground)
- 21 = common (external ground)

Controlling the detector with the I/O interface

24 V DC Power supply

Pin No	24 V DC power supply
10, 11, 13	<p>If SW1 on P0307 interface board is closed (upper position) ⇨ +24V DC (maximum current 350 mA) supplied by leak detector</p> <p>If SW1 is open (lower position) ⇨ (+) point for customer external power supply (24 V)</p>
12, 21	<p>If SW1 on P0307 interface board is closed (upper position) ⇨ Ground</p> <p>If SW1 is open (lower position) ⇨ (-) point for customer external power supply</p>



Controlling the detector with a PC computer through the RS 232 interface

Purpose of the PC computer interface

The RS 232 interface makes it possible to control the leak detector with a PC compatible computer.

Location of the RS 232 interface

It is a Sub D 9 pin Male connector.

Connect the detector to the installation  B 210/211

RS 232 interface instructions

A specific manual describes to the operator all the commands available with the RS 232 manufacturer protocol. It is delivery with your leak detector.

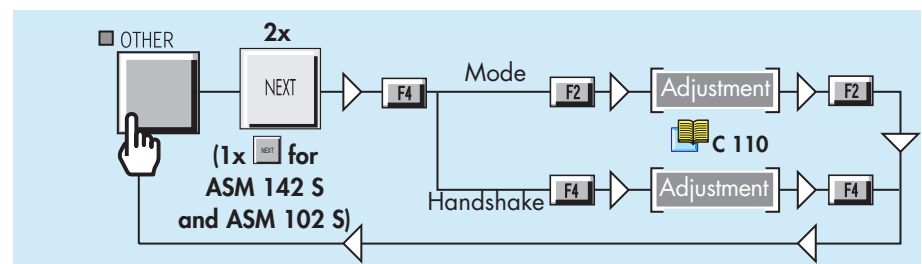
Commands available for your leak detector

Only the commands which correspond to the fonctions of your leak detector are available.

See details in the RS 232 operating manual.



RS 232 interface setting



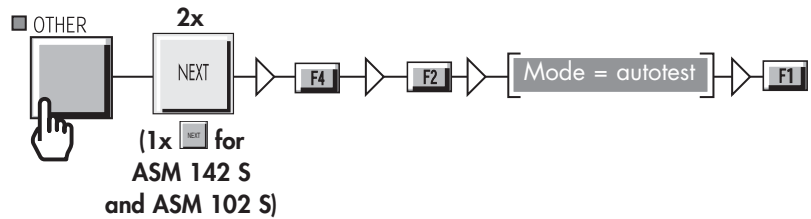
Connection checking of RS 232 interface

You can start up an autotest in order to check the connection PC/leak detector.

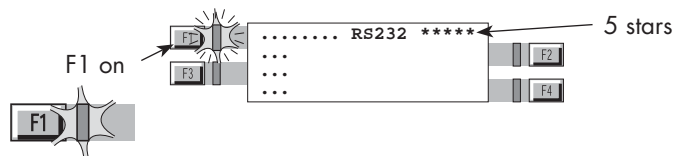
Leak detector stopped, connect the both ends of RS 232 cable (depending on wiring recommended) on each of Sub 9 pin connectors.



Controlling the detector with a PC computer through the RS 232 interface

Procedure 1 -

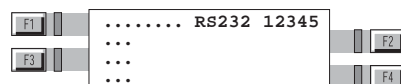


2 - The first line of LCD screen is:



3 -  the autotest is started and F1 flash on 

Following different tests, the stars are replaced by numbers.
If the autotest is accomplished, the first line LCD screen become:



Connecting the detector directly to a printer or another device

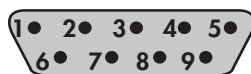
Purpose of the printer interface

The Printer interface makes it possible to connect the leak detector to a printer, an external loudspeaker or a headphone.




Location of the printer interface

It is a Sub D 9 pin Male connector.

 **B 210**



Connector description

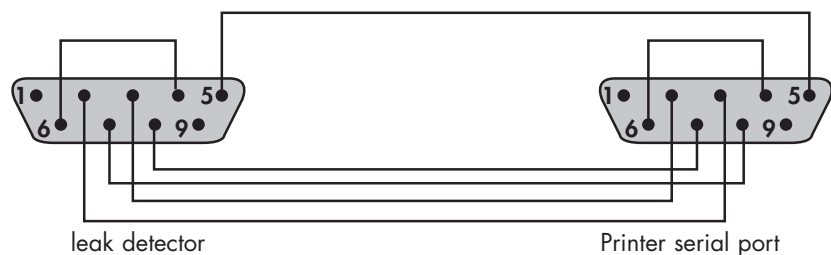
	Pin #	Function	Communication protocol	
	1	External loudspeaker	Mode	Asynchronous
	2	Rx	Bauds	9600
	3	Tx	Bits	8
	4	NA	Parity	None
	5	Ground	Stop bit	1
	6	Headphone	Parity control	None
	7	RTS		
	8	CTS		
	9 	Internal use only. Don't connect it		

Headphone and loudspeaker  **C 410**

Communication mode description





Configuration tickets are sent out.

Connection to the printer



Connecting the detector directly to a printer or another device

Tickets available

Ticket	Exemple	Impression
Configuration	1	Print from «T» RS 232 command
Internal calibration with internal leak (option)	2a	Automatic print after a calibration with internal/external leak: refer to  C 301
Internal calibration with external leak	2b	
Calibration with concentration	2c	Automatic print after a calibration with concentration: refer to  C 301
Calibration checking with a leak	3a	Automatic print after a calibration adjustment with a leak: refer to  C 301
Calibration adjustment with concentration	3b	Automatic print after a calibration adjustment with a concentration: refer to  C 301
Calibration source	5	Print from RS 232 «S» command
Current calibration status	6	Print from RS 232 «C» command

Nota : Whatever the selected language, the tickets are always printed in English, except if the French is selected (tickets in French).

Connecting the detector directly to a printer or another device

Configuration ticket

1

```

ASM142S CONFIGURATION TICKET
VERSION: L102v3.0 r10
DATE:Jan/01/2005  TIME:00:06:46

SET-POINTS MENU
reject point:                1.0E-04
audio level:                  3
digital voice level:         2
sniffer probe clogged reject: 1.0E-06
sniffer probe length (meter): =5
auto standby time span(h/m): 01/00
zero function use:           operator
zero auto capture every (m:s): 00:10
start.timer value(m:s):      00:10

SPECTRO MENU
calibration key:              on
calibration check every(h/m): 12/00

*****

Calibration Source Parameters:      std
.....
type:                               internal leak
value:                              1.9E-05
unit:                               mbar.l/sec
date:                               Jan/2005
depletion rate (%/year):            2.30
calibration temperature(Celsius):   24
temperature coefficient (%/C):       2.00

*****

filament in use:                    1
electronic zero:                    40
acceleration voltage(V):            224
electronic current(mA):              0.6
sensitivity coefficient:             00.39
MAINTENANCE MENU
high vac.mnt.periodicity(hours):    12000
high vac. mnt.due in(hours):        12000
customed mnt.period.(hours):        12000
customed mnt.due in(hours):         12000
filament#1 running time(hours):     0
filament#2 running time(hours):     0
.....
Current Calibrated Leak for:         He
recalibration delay span(month):     12
recalibration previous date:         Jan/2006
.....

```

```

OTHER MENU
*****
Preset Param. File for:              customize
analog display bargraph:             2 decades
blinking led for rejectpoint:        no
digit.display used for:               reject_pt
digital display out of test:         no
.....
Preset Param. File for:              standard
analog display bargraph:             10 decades
blinking led for rejectpoint:        yes
digit.display used for:               leak_rate
digital display out of test:         no
.....
current displays preset:             standard

*****

display language:                    english
lds basic unit:                      mbar.l/sec
lds working unit:                    mbar.l/sec
password value:                      5555
user interface:                      4
rs232 interface use:                  :
rs232 handshake:                     no
TYPICAL VACUUM VALUES
Pu_gf :                              1.00000
Mu_rld:                              00042.0
DATE AND TIME VALUES
last stop:                            Jan/01/2005 00:00:00
last start:                           Jan/01/2005 00:00:03
last calib.ok:                        Jan/01/2005 00:05:03
detector counter (h:m:s):             00000:07:310

```

Connecting the detector directly to a printer or another device

Internal calibration with internal leak (option)

2a

```

DATE:Jan/01/2005  TIME:00:04:25
ASM142S CALIBRATION gas:                He
sniffer probe length (meter):           =5
unit:                                    mbar.l/sec

CALIBRATED LEAK PARAMETERS:
type:                                    internal leak
value:                                   1.9E-05
unit:                                    mbar.l/sec
calibration year:                        Jan/2005
loss per year(%):                        2.30
calibration temperature(C):              24
temperature coefficient(%/C):            2.00
TARGET PARAMETERS:
current internal temperature(C):          26
target value:                             2.0E-05
ELECTRONIC ZERO:
done:                                       no
PEAK SEARCH   :
search                                               yes
SIGNAL RECORDS(no calibrated):
global:                                           6.8E-05
background:                                       1.7E-05
CALIBRATION INFORMATIONS:
total time(sec):                                68
result:                                         COMPLETED

CURRENT ASM142S CALIBRATION:
DATE:Jan/01/2005  TIME:00:04:25
Fil:1 Ie=0.6 Vacc=224 Coef_sens:00.39
    
```

Internal calibration with external leak

2b

```

DATE:Jan/01/2005  TIME:00:04:25
ASM142S CALIBRATION gas:                He
sniffer probe length (meter):           =5
unit:                                    mbar.l/sec

CALIBRATED LEAK PARAMETERS:
type:                                    internal leak
value:                                   1.9E-05
unit:                                    mbar.l/sec
calibration year:                        Jan/2005
loss per year(%):                        2.30
calibration temperature(C):              24
temperature coefficient(%/C):            2.00
TARGET PARAMETERS:
current internal temperature(C):          26
target value:                             2.0E-05
ELECTRONIC ZERO:
done:                                       no
PEAK SEARCH   :
search                                               yes
SIGNAL RECORDS(no calibrated):
global:                                           6.8E-05
background:                                       1.7E-05
CALIBRATION INFORMATIONS:
total time(sec):                                68
result:                                         COMPLETED

CURRENT ASM142S CALIBRATION:
DATE:Jan/01/2005  TIME:00:04:25
Fil:1 Ie=0.6 Vacc=224 Coef_sens:00.39
    
```

Connecting the detector directly to a printer or another device

Calibration with concentration

2c

```
DATE:Jan/03/2005  TIME:10:16:27
ASM142S CALIBRATION gas:           He
sniffer probe length (meter):     =5
CONCENTRATION REFERENCE
target value:                      5.0E-06
ELECTRONIC ZERO:
done:                              no
PEAK SEARCH   :
search        :                    no
SIGNAL RECORDS(no calibrated):
global:                    5.3E-06
CALIBRATION INFORMATIONS:
result:                    COMPLETED

CURRENT ASM142S CALIBRATION:
DATE:Jan/03/2005  TIME:22:12:53
Fil:1 Ie=0.6 Vacc=234 Coef_sens:00.95
```

Calibration adjustment with a leak

3a

```
CALIBRATION ADJUSTMENT INFORMATIONS:
DATE:Jan/01/2005  TIME:00:05:04
current internal temperature(C):    26
current coef.sens:                  00.39
global rate:                        2.48E-05
background rate:                    5.53E-06
calibrated leak-rate:               1.92E-05
target value:                       1.98E-05
Calibration Adjustment Coefficient:
authorized low value:                0.85
authorized high value:               1.15
CURRENT VALUE:                      1.03
```

Calibration adjustment with concentration

3b

```
CALIBRATION ADJUSTMENT INFORMATIONS:
Calibration source:  concentration
DATE:Jan/03/2005  TIME:10:19:31
current coef.sens:  00.95
concentration rate:  5.19E-06
target value:       5.00E-06
Calibration Adjustment Coefficient:
authorized low value:  0.85
authorized high value:  1.15
CURRENT VALUE:       0.96
```

Connecting the detector directly to a printer or another device

Calibration source

5

```
*****
Calibration Source Parameters:   He
.....
type:                            external leak
value:                           1.1E-05
unit:                             mbar.l/sec
date:                             Jan/2004
depletion rate (%/year):         2.00
calibration temperature(Celsius): 23
temperature coefficient (%/C):    2.00
.....
type:                            concentration
value:                           5.0E-06
.....
type:                            internal leak
value:                           1.9E-05
unit:                             mbar.l/sec
date:                             Jan/2005
depletion rate (%/year):         2.30
calibration temperature(Celsius): 24
temperature coefficient (%/C):    2.00
.....
*****
Calibration Source Parameters:   Hy
.....
type:                            external leak
value:                           1.2E-05
unit:                             mbar.l/sec
date:                             Feb/2002
depletion rate (%/year):         2.00
calibration temperature(Celsius): 20
temperature coefficient (%/C):    0.20
.....
type:                            concentration
value:                           1.0E-05
.....
*****
```

ASM 142 S
only

```
*****
Calibration Source Parameters:   He3
.....
type:                            external leak
value:                           1.3E-08
unit:                             mbar.l/sec
date:                             Mar/2003
depletion rate (%/year):         3.00
calibration temperature(Celsius): 20
temperature coefficient (%/C):    3.00
.....
type:                            concentration
value:                           5.0E-08
.....
*****
Calibration Source Parameters:   He
.....
type:                            external leak
value:                           1.4E-05
unit:                             mbar.l/sec
date:                             Jan/2004
depletion rate (%/year):         2.00
calibration temperature(Celsius): 23
temperature coefficient (%/C):    2.00
.....
type:                            concentration
value:                           5.0E-06
.....
type:                            internal leak
value:                           2.4E-05
unit:                             mbar.l/sec
date:                             Jan/2005
depletion rate (%/year):         2.30
calibration temperature(Celsius): 24
temperature coefficient (%/C):    2.00
.....
*****
```

ASM 142 S
only

Current calibration status

6

```
DATE AND TIME VALUES
last calib.ok:      Jan/01/2005 00:04:25
last ajust.ok:     Jan/01/2005 00:05:04
Detector stop:     Jan/01/2005 00:00:00
Detector start:    Jan/01/2005 00:00:03
CALIBRATION PARAMETERS
Fil:1 Ie=0.6 Vacc=224 Coef_sens:      00.39
Adjustment calib. coefficient=        1.03
```

Before starting up the leak detector

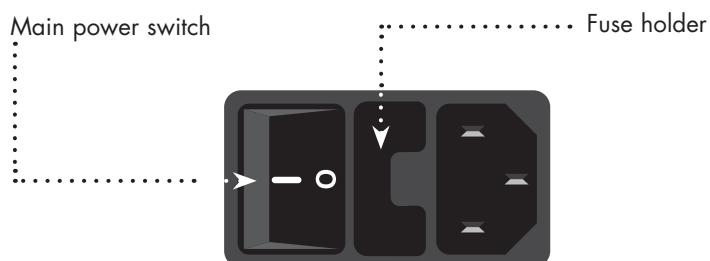
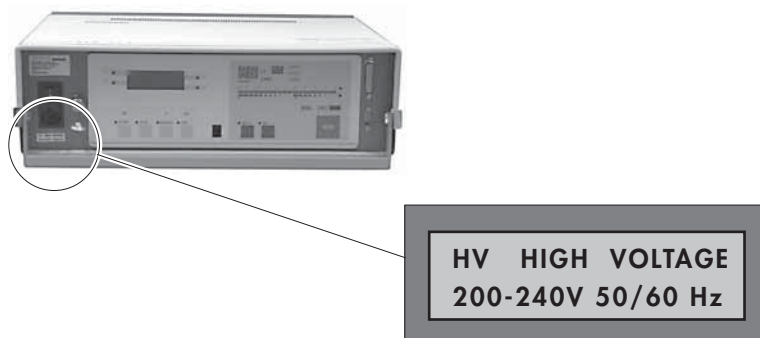
Please acquaint oneself with the safety instructions sheet ( B 100) and the installation sheet ( B 110)

The performance of the detector (pumping speed, accuracy and reliability) depends on:

- the vacuum connections
- the frequency and quality of maintenance
- the helium calibration.

Check power voltage

Check that the power voltage is compatible with the power configuration of the leak detector: check the indications of the label located close to the power switch.



Fuse: 100 - 130 V } 4 A fuse
200 - 240 V }

Note: a spare fuse is located in the fuse holder.
Main power switch Fuse holder

Before starting up the leak detector

Transporting strap

Place the transportation strap on the leak detector.

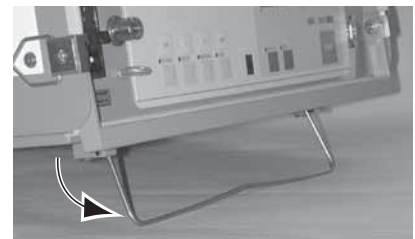


Detector installation

Position the unit so there is no possible risk of it falling or tilting.


Set the ASM 102 S in one of the following operating positions:

- horizontal (resting on the 4 feet on the base plate)
- sloping slightly: move the slope rest forwards
- vertical (resting on the 4 feet on the rear of the case.)





ASM 102 S Operating instructions Detailed contents

Preliminary remarks Throughout this operating manual, you could find this type of message “**Summary of screen**  **C 140**”: it refers to a specific chapter of the operating manual. Please read it for further information.

C 100 *Factory configuration of the leak detector parameters*

- Parameters configuration


C 110 *Operating principle of the control panel*

- General
- Control keys
- Menu selection access keys
- Parameter keys
- Access level
- Description of access keys
- Values adjustment with the control panel

C 120 *Setting and maintenance part presentation of the control panel*

- Setting and maintenance part
- Levels
- Parameters setting and application depending on level and display of the user interface

C 130 *Access to level - Password*

- Access to level 
- Change password

C 140 *Summary of screens*

- Other Menu
- Spectro Menu
- Set point Menu
- Maintenance Menu

C 200 *Starting up / Switching off the leak detector*

- Starting up after an unused/storage period
- Starting up the leak detector
- Switching off the leak detector



ASM 102 S Operating instructions Detailed contents

C 211	<i>Operation of the leak detector</i>
	<ul style="list-style-type: none">- How to use your leak detector?- 3 detector states- Sniffing test- Display- Reject Threshold- Sniffer probe
C 213	<i>Display</i>
	<ul style="list-style-type: none">- Analogic display- Digital display- Displays setting
C 300	<i>Calibration of the leak detector</i>
C 301	<i>Calibration of the leak detector</i>
	<ul style="list-style-type: none">- Purpose of the calibration- Different types of calibration- When should calibration be performed?- Internal calibrated leak- Calibration procedure
C 305	<i>Calibrated leak values programming</i>
	<ul style="list-style-type: none">- Different types of calibrated leaks- Programming the calibrated leak parameters
C 306	<i>Adaptor for calibrated leak in sniffing mode</i>
	<ul style="list-style-type: none">- How to use the adaptor?- Notes
C 400	<i>Remote control</i>
	<ul style="list-style-type: none">- Remote control interface- Remote control connecting- Users levels- Use and display
C 430	<i>3 masses option</i>
	<ul style="list-style-type: none">- Purpose- Gas selection- Calibration in Hydrogen or Helium 3
C 450	<i>Long distance sniffer probe and Helium spray gun</i>



ASM 102 S Operating instructions Detailed contents

C 520

Audio alarm / Digital voice

- Audio alarm definition
- Digital voice definition
- General
- Sound level
- Adjustment

C 540

Zero function

- Purpose
- Procedure
- Activate/desactivate the zero function manually
- Zero function setting
- Audio level
- Display

C 570

Date - Time - Language - Unit

- Adjustment procedure

C 580

Fault / information indicator and display

- Fault and information
- Faults
- Information
- List of messages

C 590

Massive Function

- Purpose
- Principle
- Preliminary conditions
- Start/Stop of the massive function


Factory configuration of the leak detector parameters

Parameters configuration

The following list indicates the factory configuration of the leak detector parameters.


When the leak detector is switched off, all set parameters are memorized and values are kept for the next start-up.

We advice you to note in the "Customer modification" column, the parameter values modified for your application.

Parameters		Configuration		
		Factory	Customer modification	
Rs232	Mode	Basic		B 310
	Handshake	no		B 310
Test	Reject point	1.0E-04(*)		C 211
Sniffer probe	Clogged	1.0E-06(*)		C 211
	Length (feet)	> 49		C 211
	Response time (s)	10		C 211
Display	Test info	standard		C 213
	Bargraph	10 decades		C 213
	Blinking led used for reject point	yes		C 213
	Used for	leak_rate		C 213
	Active out of test	no		C 213
Autocalibration	Autocal key	on		C 301
	Source	int. leak		C 301
	Timer (h/m)	12/00		C 301
Calib. source (ASM 142 S with int. cal. leak option only)	Type	int. leak		C 305
	Value	See the calibration certificate of the calibrated leak delivered with the detector.		C 305
	Unit			C 305
	Calib. date			C 305
	Depl. rate (%/yr)			C 305
	Calib. temp (°c)			C 305
	Temp. coeff. (%/°C)			C 305

(*) in mbar.l/s. If you use another unit, this value will be automatically converted in this unit.

Factory configuration of the leak detector parameters

Parameters		Configuration		
		Factory	Customer modification	
Calib. source	Type	ext. leak		C 305
	Value	1.1E-05(*)		C 305
	Unit	mbar.l/s		C 305
	Calib. date	01/01/2006		C 305
	Depl. rate (%/yr)	2.0		C 305
	Calib. temp (°C)	24		C 305
	Temp. coeff. (%/°C)	02.00		C 305
3 Masses	Spectrometer gas	He		C 430
	Audio	3		C 520
	Digital voice	4		C 520
Zero option	Automatic	no		C 540
	Capture	Timer		C 540
	Timer (m/s)	00:10		C 540
	Language	English		C 570
	Date	Factory leaving		C 570
	Time		C 570	
Unit	Basic	mbar.l/s		C 570
	Extra	no		C 570
	Cor. value	1		C 570
Menu access	Password	5555		C 130
	Level	4		C 130
Maintenance	Primary pump initial value	5000 H		D 200
	High vac. pump initial value	12000 H		D 200
	Customized initial value	12000 H		D 200
Leak dates	Calib. date	01/01/2005		D 210
	Time (month)	24		D 210

(*) in mbar.l/s. If you use another unit, this value will be automatically converted in this unit.

Operating principle of the control panel

General

Operator interface  A 500

If a key (sensing switch) is depressed when its function is not available or not authorized, a brief audio signal is emitted.

Control keys



The LED indicator is **ON** when the control key is activated (ex.: Sniffer ON).



The LED indicator is **OFF** when the control key is deactivated (ex.: Sniffer OFF).

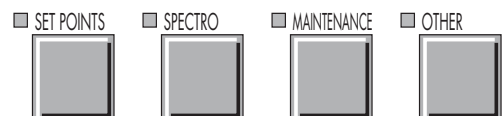
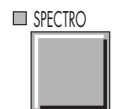


Menu selection access keys

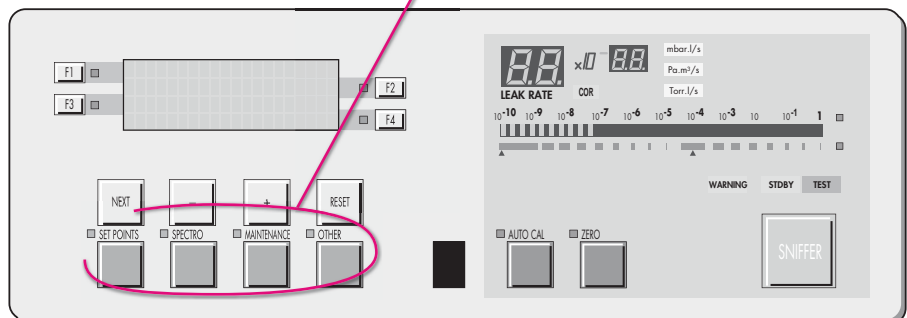
The LED indicator comes **ON** after depressing the key. It activates the menu. Then the corresponding menu is shown on the alphanumeric display.



Pressing the corresponding Menu selection key a second time deactivates the menu. The LED indicator is then turned **OFF** and the previous screen is displayed again.



Menu selection access keys



Operating principle of the control panel

Parameter keys

- To access to the parameter to be changed, there are up to 4 function keys available on the alphanumeric display

(, ,  et ).





Only one parameter key can be activated at a time.

- The LED indicator is **ON** when the corresponding function key is available:



- Press on key: the indicator light **flash**:



The modification can be performed with ,  and  keys. At this stage, it is always possible to cancel the modification in progress and reset the previous value by pressing  key.




Otherwise, once the desired value is obtained, **pressing the function key again validates it**: the LED indicator remains **ON** and




Access level

Following the user's level set, the operator will have access to different control panel keys.  **C 120**


Level ①

All the control panel keys are locked except ,  and  keys which are necessary to set the password if necessary.

If you press a control panel key, the password is requested. After the password validation, all the control panel keys are unlocked provisionally.  **C 130**


Level ②

Only , ,  and  are locked.

If you press a control panel key, the password is requested. After the password validation, all the control panel keys are unlocked provisionally.  **C 130**

Level ③

All the control panel keys are unlocked.

Some parameters access will request the password.  **C 130**

Level ④

Total access to the control panel keys.

Operating principle of the control panel

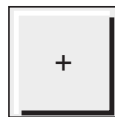
Description of access keys



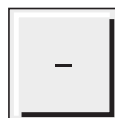
Next menu or next step of a function, Next PARAMETER DIGIT, WARNING/ERROR message display on the LCD when an error is detected.



Resets original parameter value (before flashing of the Fx setting line) and deactivates the parameter key.



YES, or ON, or OPEN, or active, or increase value, or increase audio volume, or select more sensitive test mode.



NO, or OFF, or CLOSE, or deactive, or decrease value, or decrease audio volume, or select less sensitive test mode.

Values adjustment with the control panel

In many menus, some values can be adjusted (reject point, password, timer, ...).

Please follow the procedure described below.

Procedure

Press function key of the desired line (where the value needs to be adjusted).




Nota :

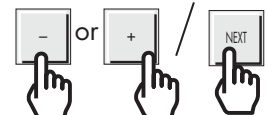
- The cursor positions on the most important digit and not the first.

Example : 1.0E-04

The cursor positions on the 4th digit.

- For the digital values, it will be necessary to adjust each digit individually using the  key .

For each parameter, use modification keys in order to adjust the value and go to the next parameter.



Repeat the same operation as needed.



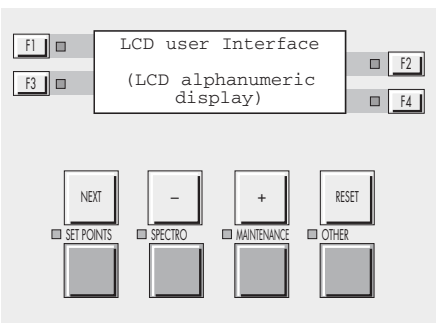
After the last modified parameter, press again the function key to validate the change.

Setting and maintenance part presentation of the control panel

- The control panel can be divided into two different sections.
- The section located on the right of the control panel is dedicated to the operator. **All users with a user level higher than 1 have access to this section.**
 - The section located on the left of the control panel dedicated to the setting and maintenance (adjustments, functions, menu access, etc.).

Setting and maintenance part


Operator interface  A 500



- The detector offers **4 user interface levels** for this section to accomodate any application requirements.

Levels

Description

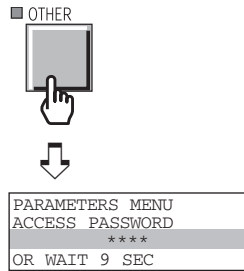
Levels 1 and 2	These levels don't allow the access to the menus except with password ( C 130).
Level 3	Same as levels 1 and 2 but with possibility to set some parameters. This level is generally selected for maintenance applications.
Level 4	This level allows access to all the menus and is generally used for settings all the parameters.

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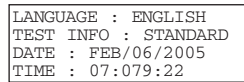
Setting and maintenance part presentation of the control panel

Which is your user interface level?

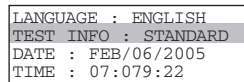
In order to find out what is the current interface level, follow the sequence described below:



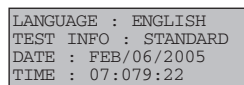
⇒ If this screen appears, your access level is ①.



⇒ If this screen appears, your access level is ②.

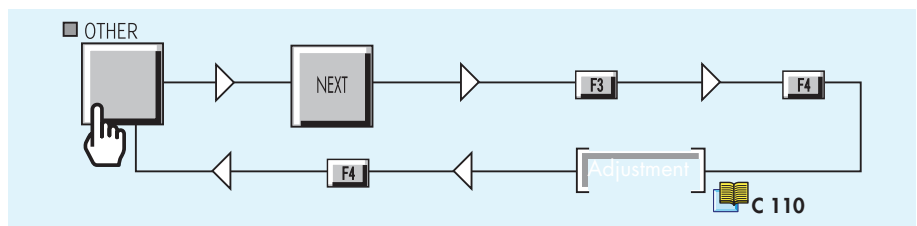


⇒ If this screen appears, your access level is ③.



⇒ If this screen appears, your access level is ④.

To change user interface level








Level ④ access

A 300

Setting and maintenance part presentation of the control panel

Parameters setting and application depending on level of the user interface

Function (with its associated parameters)	 RS 232 operating manual	User Interface				Detector	
		Level required for setting parameters				ASM 142 S	ASM 102 S
		Level 1 	Level 2 	Level 3 	Level 4 		
RS 232	RS 232 operating manual				✓		
User interface	C 120				✓	✓	✓
Password	C 130				✓	✓	✓
Sniffer probe clogged threshold	C 211				✓	✓	✓
Sniffing reject point	C 211			✓	✓	✓	✓
Display	C 213				✓	✓	✓
Auto-calibration (setting)	C 301				✓	✓	✓
Calibrated leak	C 305				✓	✓	✓
Audio alarm	C 520			✓	✓	✓	✓
Digital voice	C 520			✓	✓	✓	✓
Zero function	C 540				✓	✓	✓
Date - Time - Language - Unit	C 570				✓	✓	✓
Massive function	C 590				✓	✓	✓
3 masses option	C 430				✓	✓	✓
Maintenance required	D 200 / 210				✓	✓	✓
Filament information	E 400				✓	✓	✓

Access to level ④ - Password

A help for control panel utilization/access.

Operating principle of the control panel

C 110

Setting and maintenance part presentation of the control panel

C 120

Access to parameters and parameters active depending on authorization

Access to level ④ - Password

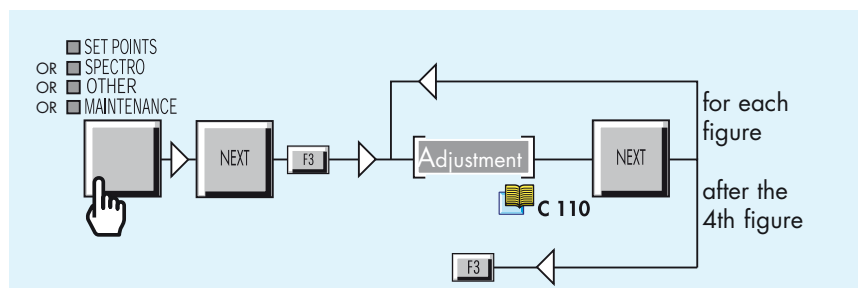
C 130

Summary of screens

C 140

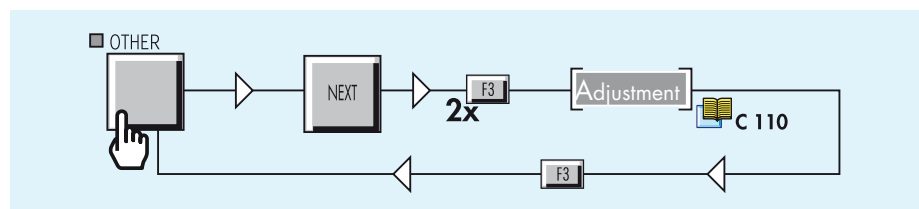
Complete displays list with access way and associated sheet

Access to level ④ Procedure to apply to pass from level ① / ② / ③ to level ④ .

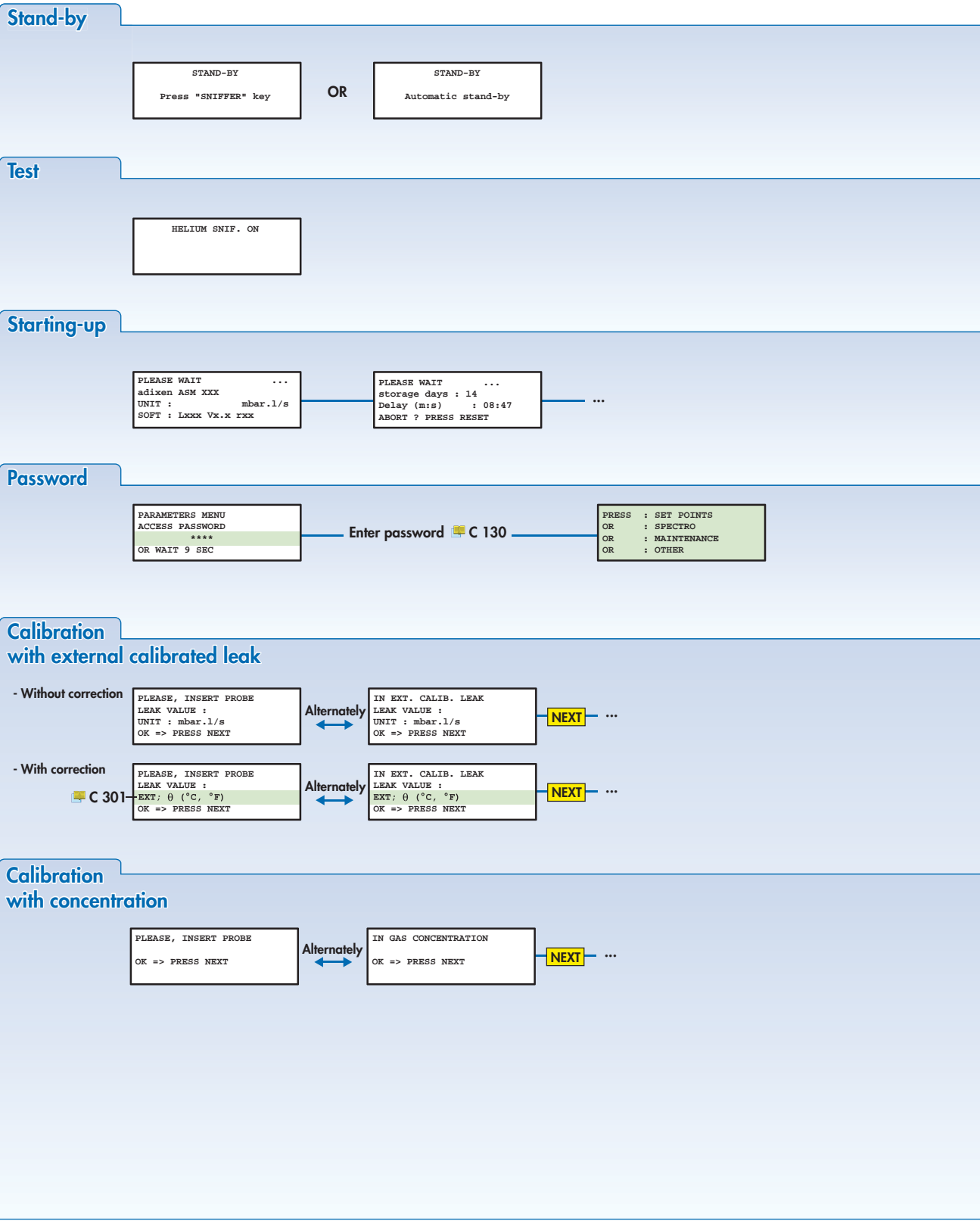


The operator has now reached the level ④ .
The software will automatically come out of level ④ and go back to the previous used level.

Change password



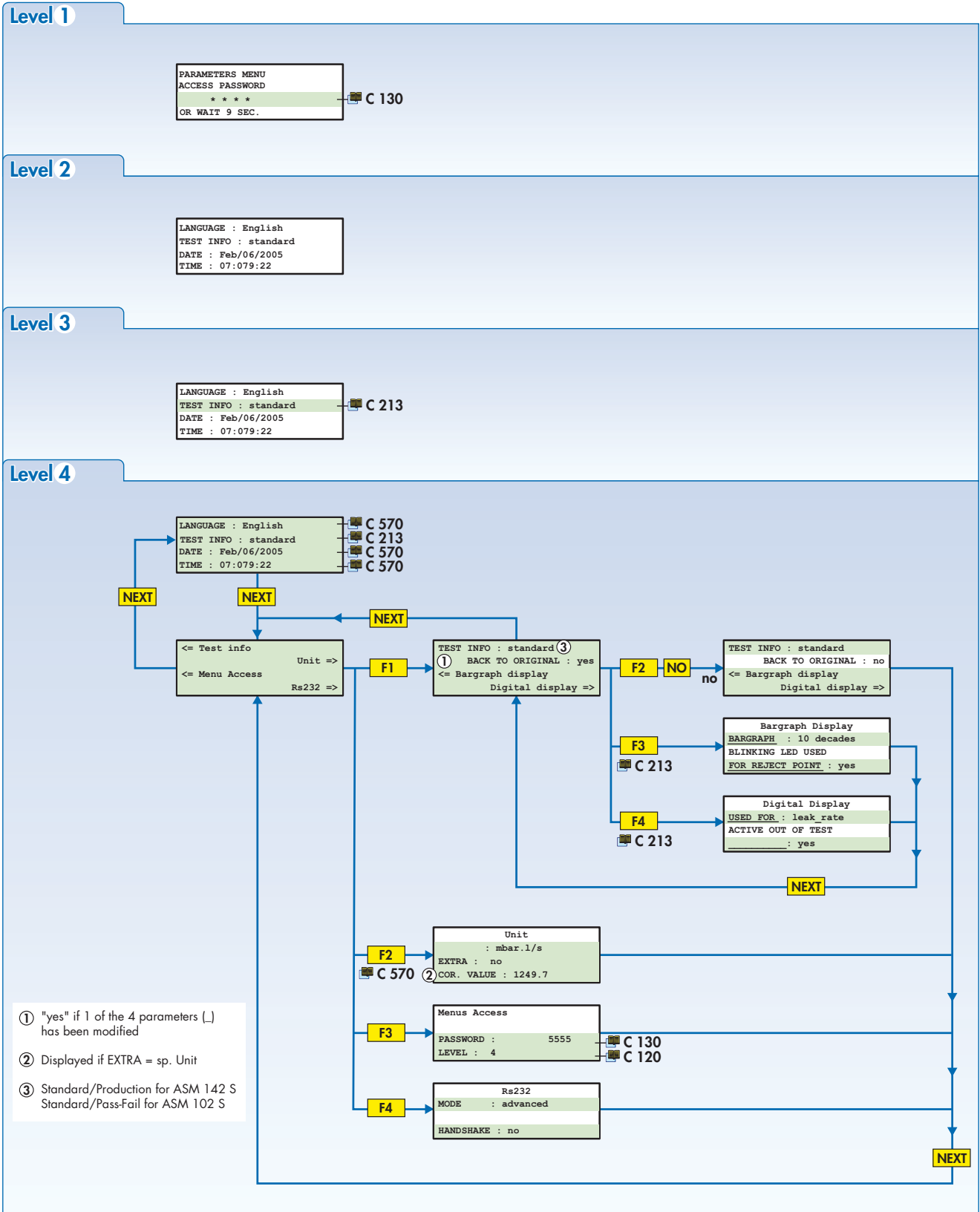
Summary of screens



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Summary of screens

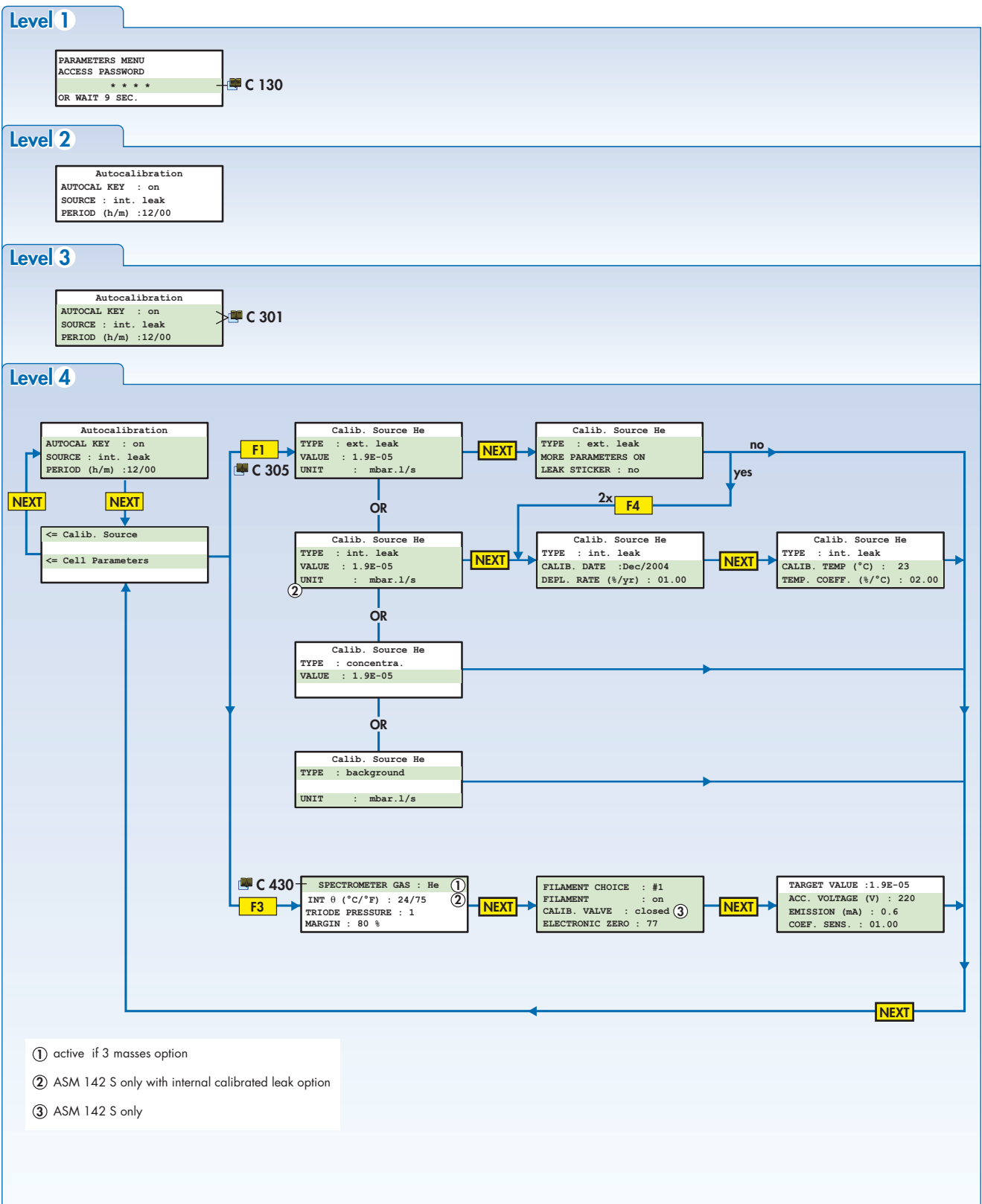
Other Menu



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Summary of screens

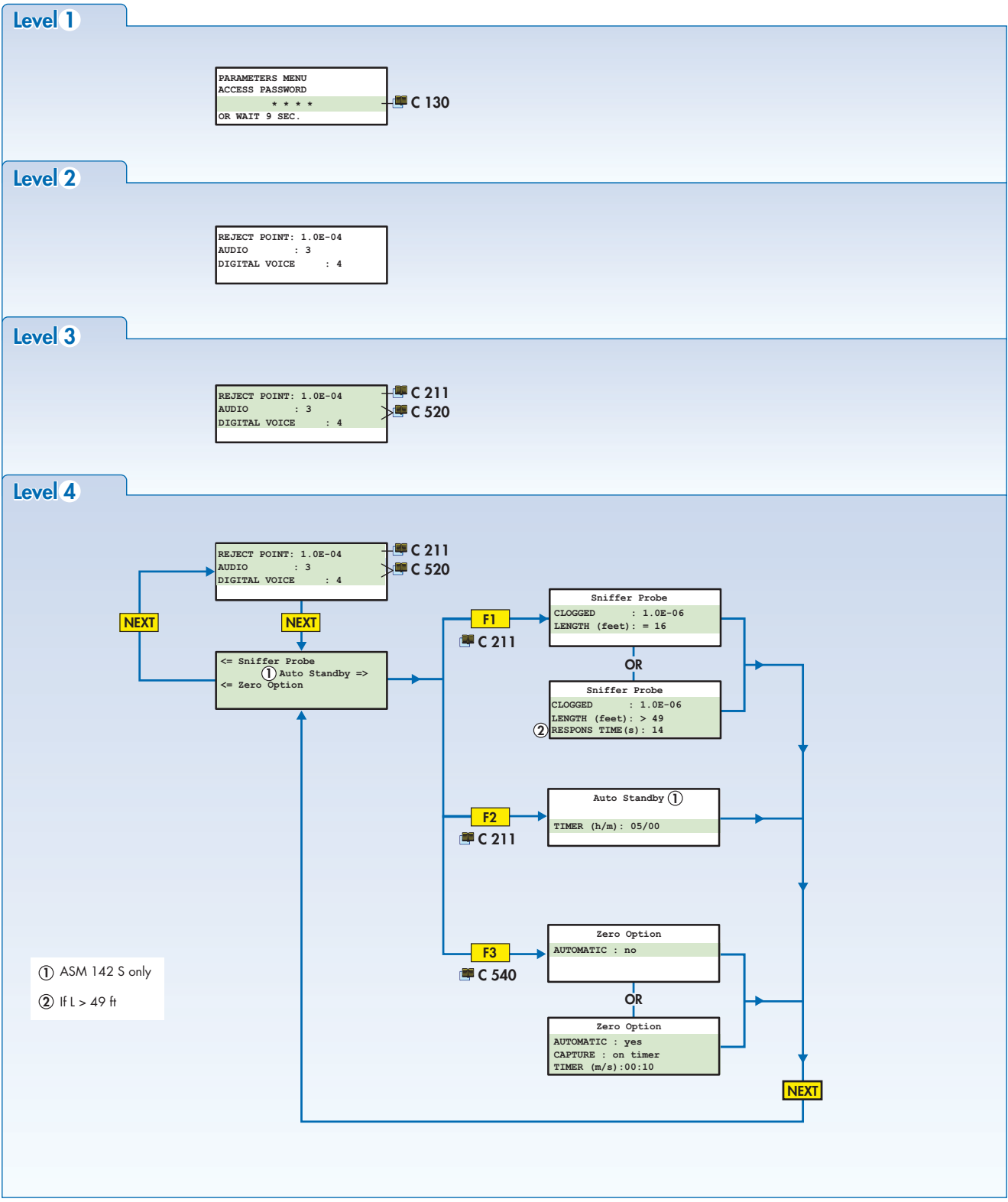
Spectro Menu



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Summary of screens

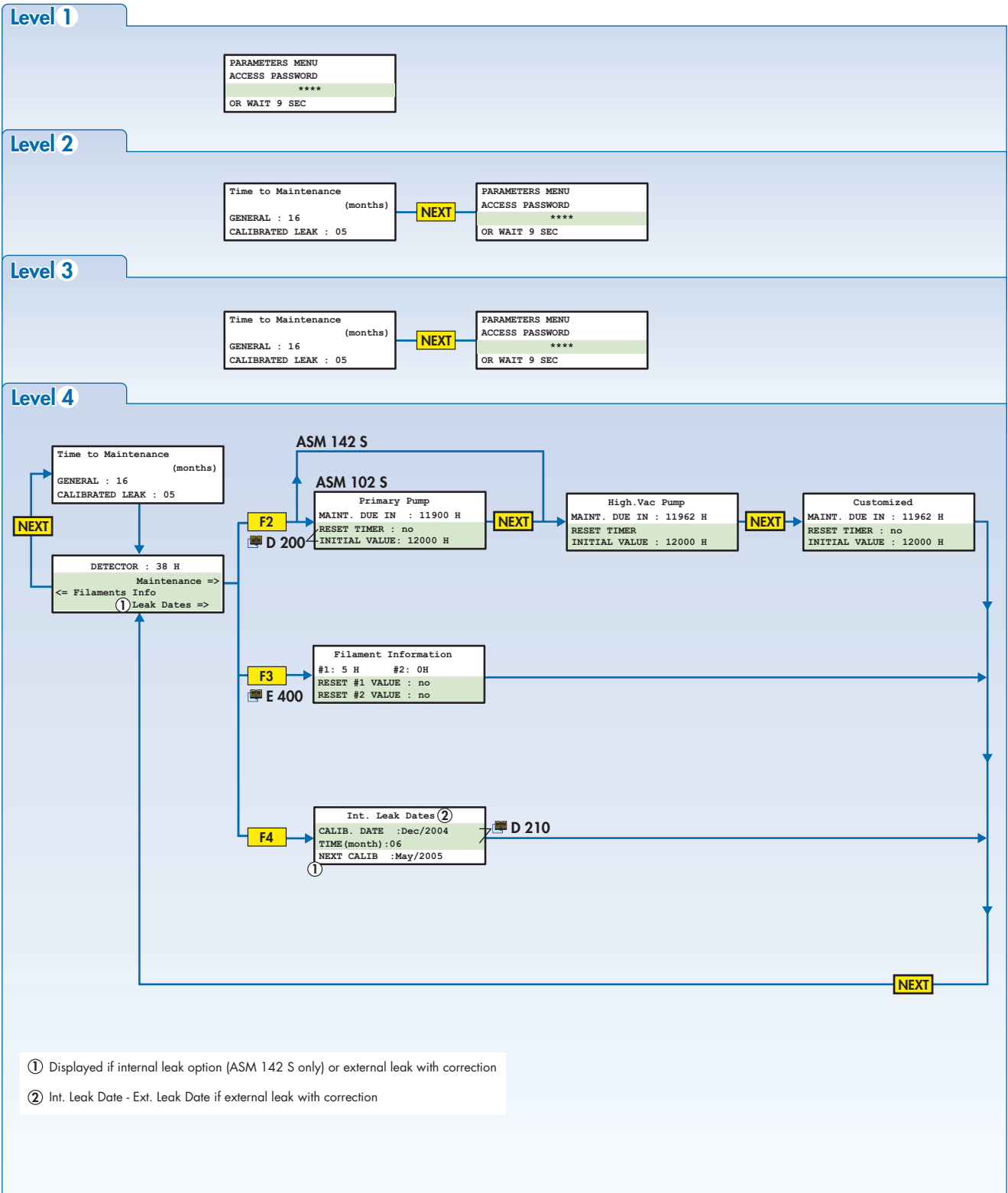
Set point Menu



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Summary of screens

Maintenance Menu



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Starting up / Switching off the leak detector

Starting up after an unused/storage period

• If the operator uses the leak detector, after an unused or storage period, there is an additional time at the normal start-up time for outgassing:

- 10 days < inactivity period ≤ 24 days ⇔ + 3 mn
- inactivity period > 24 days ⇔ + 15 min

Technical characteristics  A 800

• A screen informs the operator in the start-up process:

```
PLEASE WAIT
Storage days: 14
Delay (min:s): 08:47
ABORT?     PRESS RESET
```


Number of days since the last leak detector switching off

Count down of the additional time




The operator can cancelled this additional time by pressing

Starting up the leak detector

Before starting up the detector  B 400.

■ Connect the main power cable of the detector to the proper power outlet.

■ Turn main power switch in the ON position ( B 210).

The primary pump starts instantaneously. Wait a few minutes the appearance of the next screen:

```
F1 | PLEASE WAIT ... | F2
    | adixen ASM... |
    | UNIT HEL.: mbar.1/s |
    | SOFT:L...v... r... |
    | ... |
    | F3 | | F4
```

Audio messages inform the operator about starting-up process during this one.

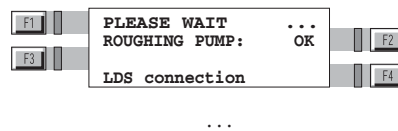
```
F1 | PLEASE WAIT ... | F2
    | Roughing pump: 5% |
    | ... |
    | F3 | | F4
```

This screen indicates the turbomolecular pump starting up.

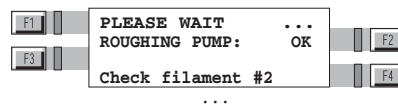
Wait the synchronism.

Starting up / Switching off the leak detector

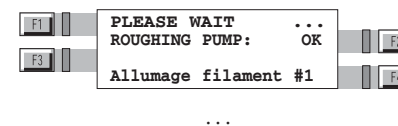
Starting up of the leak detector (continued)




This screen indicates that the pump is with synchronism and the probe is in connection process.



This screen indicates that the filament 2 is in checking process.



This screen indicates that the filament 1 is in starting up process.

After a 10 s temporisation, the screen HELIUM SNIFFER, the green light  and the vocal message «detector ready» indicate that the detector is ready to be used. (if any calibration request warning «i» is activated).

Nota: After the leak detector start, the «AL» message appears in the digital display if the background mesured is lower than the sniffer probe clogged point.

Switching off the leak detector

The leak detector can be switched off at any time by depressing the main power switch to 0 (OFF)

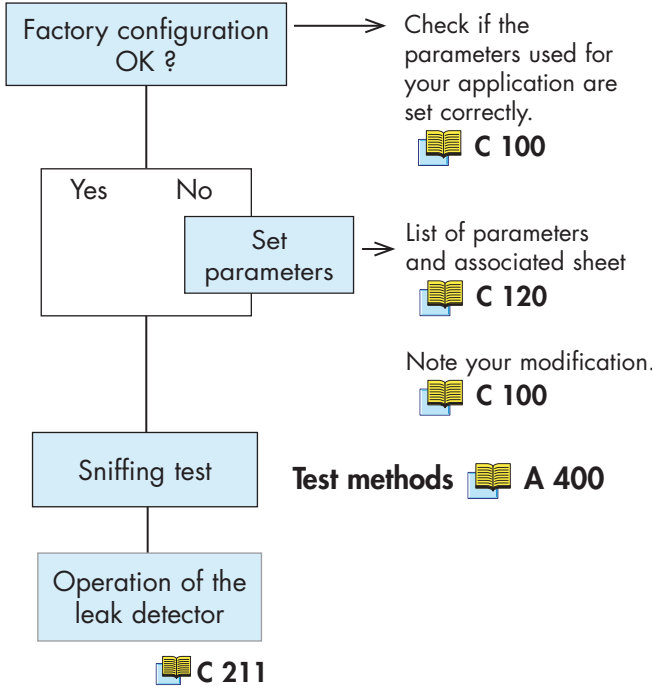
ASM 102 S: Wait 2 minutes before moving the leak detector after its stop.

Operation of the leak detector

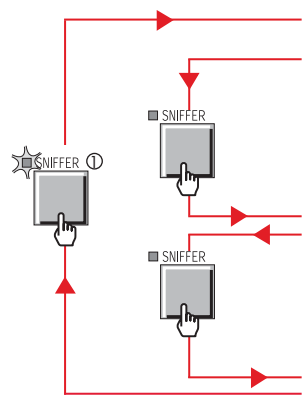
A help for control panel utilization/access.

Operating principle of the control panel Setting and maintenance part presentation of the control panel Access to parameters and parameters active depending on authorization	C 110 C 120	Access to level 4 - Password Summary of screens Complete displays list with access way and associated sheet	C 130 C 140
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How to use your leak detector?



3 detector states



State	Description	LCD screen	Indicator light
Stand by	The detector is in stand by. It doesn't pump surrounding air.	STAND-BY Press «SNIFFER» key <i>Le message clignote</i>	
Preparation	The detector prepares to test.	SNIFFING MODE PLEASE WAIT ...	
Sniffing	The detector is ready to test.	SNIFFING MODE	


Ⓞ ASM 142 S only
 The detector could put back itself in automatic stand by mode as soon as the «automatic stand by» period of time is reached (with the probe in the detector calibration part).

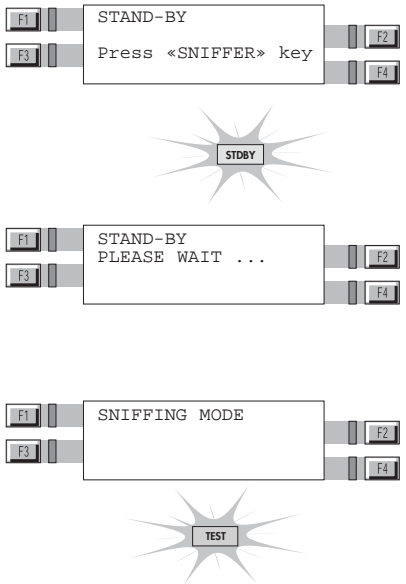
GB 00473 - Edition 02 - December 05

Operation of the leak detector

Sniffing test

Starting a sniffing test


While the leak detector is in standby mode, connect the sniffer probe (accessory to be purchased separately  **A 700**) to the sniffer port of the leak detector.



The sniffing mode message appears on the alphanumeric display. The sniffing test mode is operational.

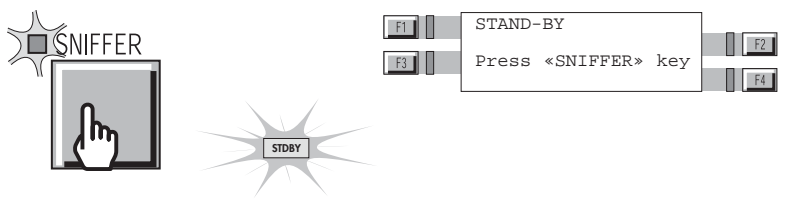
Detector in automatic standby mode

If the detector puts itself in standby mode automatically, it's necessary to put it back in sniffing mode:

- either remove the probe if it is in the leak detector calibration port.
- or press  key.



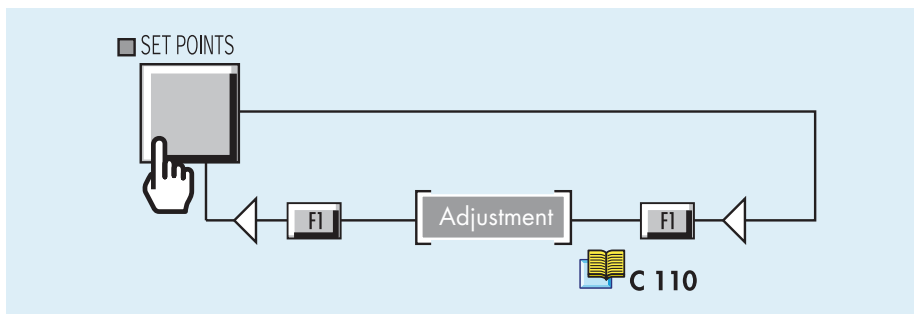
Ending a sniffing test



Display



Reject Threshold Adjustment



Unit change  C 570

Operation of the leak detector

Sniffer probe Accessories A 700

The sniffer probe should be connected to the detector in stand by mode.

In order to materialize the use of a probe with a non standard length (standard probe = 5 m/49 ft), this length is displayed on the LCD display when you connect the probe to the detector.

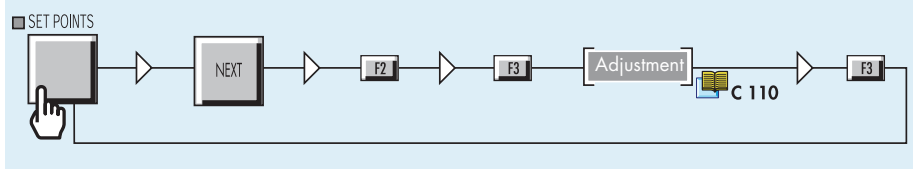
Auto-standby (ASM 142 S only)

To avoid that the probe is clogged too quickly, it is possible to stop the pumping in the probe.

Principle

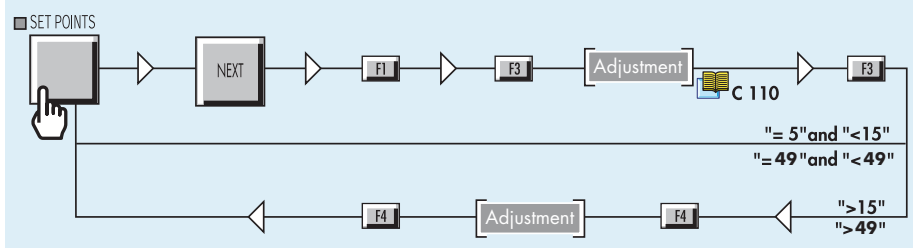
Put the probe in the calibration port.
After a while of not withdrawal of the port, the probe stops pumping.
The detector goes in standby automatically.
From the probe withdrawal, detector in standby automatic, the probe is reactivated: the detector goes in sniffing.

Timer adjustment



Response time adjustment

The response time will depend on the probe length. You should to set it. 3 lengths are proposed: «=5» («=49»), «<15» («<49») and «>15» («>49»). For the «>15» length, it's necessary to set the response time.

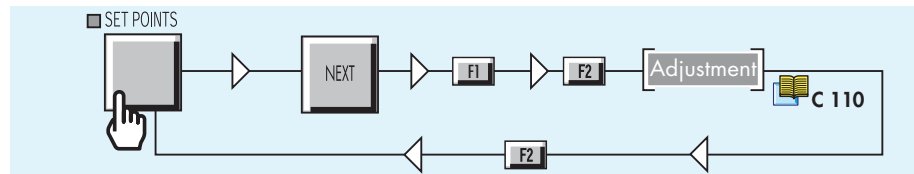


GB 00473 - Edition 02 - December 05

Operation of the leak detector

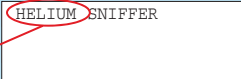
Sniffer probe clogged reject point adjustment

When the Helium signal is lower than the «Sniffer probe clogged» threshold set, an error message will be activated.






Unit change  C 570

Display

To avoid any confusion between the tracer gas and the filling gas, the tracer gas is permanently displayed on the LCD screen in sniffing mode.
Example: 

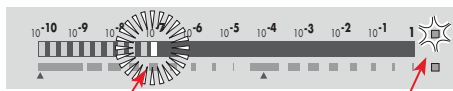
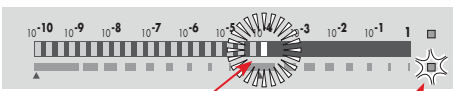
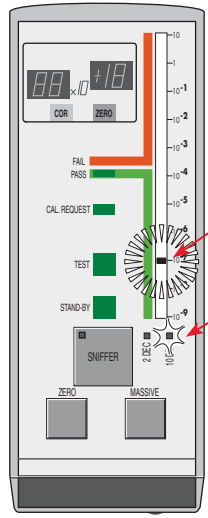
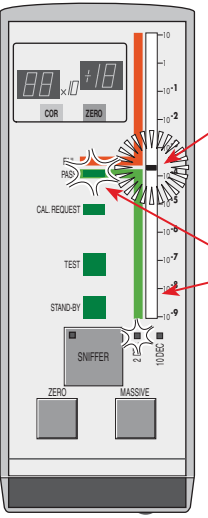
Analogic display You have the possibility to work with 2 display types:
 - 10 decades display
 - 2 decades display.

	10 decades display	2 decades display
Generalities	<ul style="list-style-type: none"> The 10 decades display use is indicated by a specific led, except if a non basic unit is used. <p style="text-align: center;">Units  C 570</p> <ul style="list-style-type: none"> The flashing led indicates the reject threshold ( C 211). It could be affected or not to the reject threshold. If a correction factor «COR» is applied, the bargraph scale is not correct any more: the bargraph allows a visual location compared to the reject threshold but not the leak value reading. 	<ul style="list-style-type: none"> The 2 decades display use is indicated by 2 specific leds. The flashing led indicates the reject threshold ( C 211). It could be displayed or not. The display is centered on the reject threshold (absolute value set in the working unit).
Reading	<p>The helium signal scale displays the value in 2 colors following the measured leak value:</p> <ul style="list-style-type: none"> the reject point is display with a green led (according to setting). if the measured leak value exceeds the reject point, the flashed leds are red (and the blinking led orange). The part is bad. if the measured leak value is under the reject point, the flashed leds are green. The part is good. 	<p>The helium signal scale displays the value in 2 colors following the measured leak value:</p> <ul style="list-style-type: none"> the reject point is display with a green led centered on 2 decades. if the measured leak value exceeds the reject point, the flashed leds are red (and the blinking led orange). The part is bad. if the measured leak value is under the reject point, the flashed leds are green. The part is good.

GB 02849 - Edition 02 - March 12

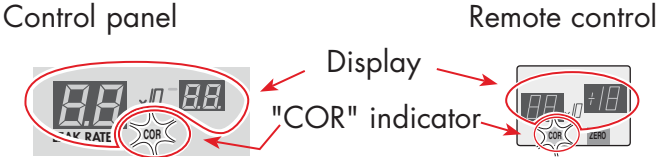
Display

Analogic display (continuation)

	10 decades display	2 decades display
<p>Control panel Example : reject threshold = $1 \cdot 10^{-7}$ mbar.l/s</p>	 <p>Reject threshold</p> <p>10 decades indicator light</p>	 <p>Reject threshold centered on 2 decades</p> <p>2 decades indicator light</p>
<p>Remote control Example : reject threshold = $1 \cdot 10^{-7}$ mbar.l/s</p>	 <p>Reject threshold</p> <p>10 decades indicator light</p>	 <p>Reject threshold centered on 2 decades</p> <p>2 decades indicator lights</p>

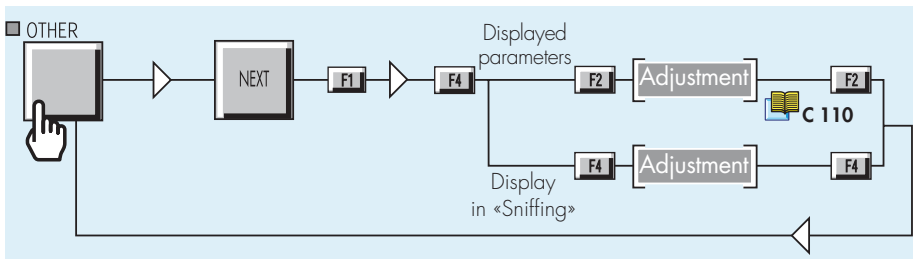
Display

Digital display

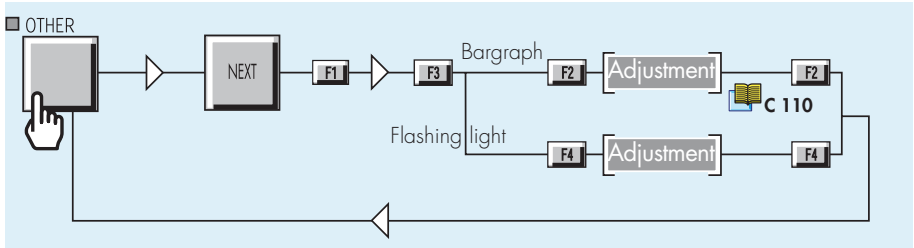


- The digital display allows to display different parameters: the leak value mesured, the reject threshold set or nothing.
- In order to better identify the «sniffing» mode (C 211), it is possible nothing to display in the other modes.

Displayed parameter selection



Flashing light and display selection



Nota : The flashing light allocation to the target value in autocalibration is always active: the light is red.

Display

Displays setting

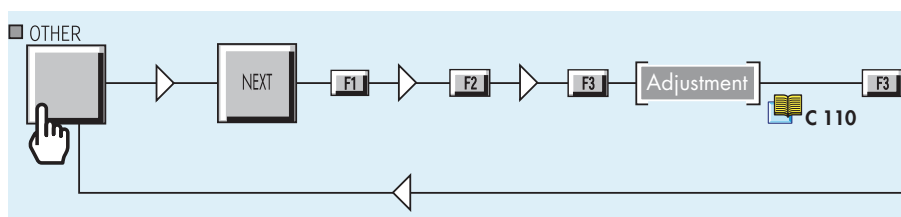
The 4 adjustable parameters of the digital and analogic displays are grouped together in a structure in order to create 2 use configurations. These 2 configurations, and the values of the 4 parameters, are the following:

		Configuration	
		Standard	Production Pass/fail (*)
Analogique display	Bargraph	10	2
	Flashing led	yes	no
Digital display	Paramter displayed	Leak value	Reject threshold
	Display outside «sniffing»	no	no

(*) Production: ASM 142 S - Pass/fail: ASM 102 S
Advised configuration for repetitive test.

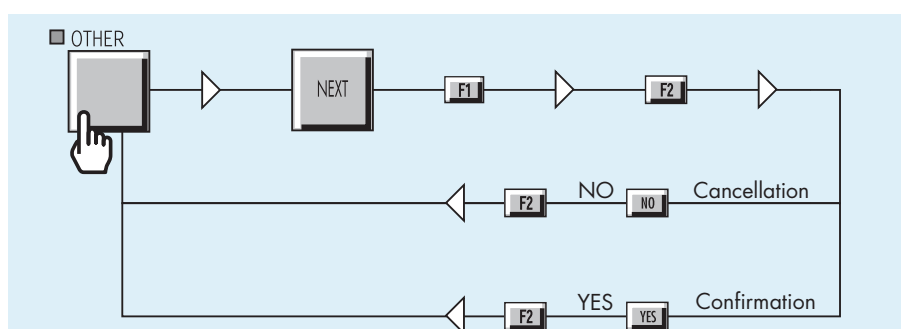
It is possible to adapt these configurations to the user specificities: each parameter could be changed.

Configuration selection



Come back to a preset configuration

In a configuration, it is always possible to change one of the parameters according to our needs. It is after possible to come back to the preset configuration as described previously if necessary.



Calibration of the leak detector

Calibration of the leak detector



C 301

Calibrated leak values programming



C 305

Adaptator for calibrated leak



C 306

Calibration of the leak detector

Purpose of the calibration

Check that the leak detector is correctly adjusted to detect the tracer gas used and to display a correct leak value.
To calibrate the leak detector, a calibrated leak is used as a reference.
Note: The ASM 142 S could be equipped in option with an internal calibrated leak.

The calibration is semi-automatic if the operator uses an external calibrated leak. Otherwise, it is fully automatic.

Different types of calibration

To calibrate the leak detector according to the tracer gas, 3 sources can be used. According to this source, 3 calibration modes are proposed.

Source	Mode de calibration	Mesure
Calibrated leaks	Calibrated leaks	Quantitative measure of flow
Gaseous mixture	Concentration	Quantitative measure of concentration
Background <small>(ex : the background of the surrounding air)</small>	Peak only	Qualitative measure only

Note: ASM 142 S only

- The internal calibrated leak (option) is reserved for He.

When should calibration be performed?

- For high sensitivity test and optimized measurement accuracy: it is advised to let the internal temperature of the leak detector stabilize for about 30 min after start-up and then start a calibration.
- If in doubt regarding the proper operation of the leak detector (capability to properly detect the tracer gas). At any time, a calibration may be started after start up.
- In case of intensive and continuous use: start a calibration at the beginning of each shift (8 hours of operation).
- In case of tracer gas change for the 3 masses option.

Calibration of the leak detector

Internal calibrated leak

ASM 142 S only (option)



The internal calibrated leak is specifically designed to fit the present leak detector. It is composed of:

- a helium reservoir,
- a temperature sensor (used to take into account the effect of temperature on the leak rate),
- a built in membrane (to calibrate the helium leak rate),
- a special quick connection device,
- an identification label (similar to the identification label of an external calibrated leak).

It is delivered with a calibration certificate

Calibrated leak location F 700

Recalibration

- It is recommended to have each calibrated leak recalibrated at regular intervals to validate its value
- A calibration date supervision is proposed. (D 210)

Accessories A 700

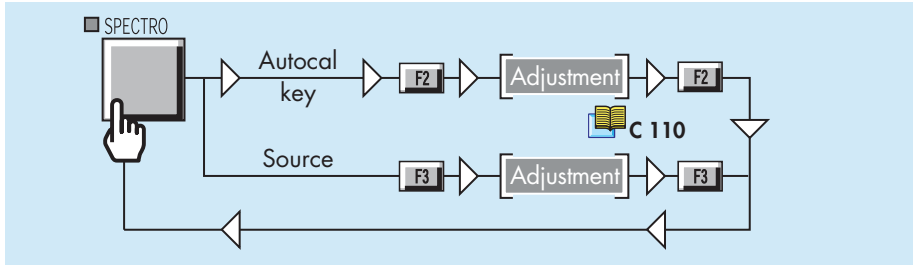
Calibration procedure

According to the source used, the calibration process is different. Take care of the source used unit. A 700

- Note:**
- During a calibration, the bargraph leds are in orange on the control panel and the remote control. The «COR» indicator lights off during the calibration.
 - If the display is set on «2 decades», it will switch on «10 decades» during the calibration and come back to «2 decades» after.

Preliminary conditions

- The operator should select the source used for the calibration, if necessary.
- The operator could start a calibration by pressing key provided that it is not locked by the setting.

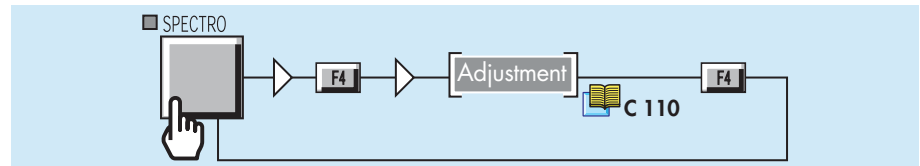


Calibration of the leak detector

Calibration reminder

In order to recall you to do a calibration regularly, you can set a counter which will launch a recall message on the LCD screen in order to do a new calibration.

Counter setting:



Calibration with an internal calibrated leak (ASM 142 S only)

No operator operation is necessary during the calibration.

- Correct the internal calibrated leak value set after each recalibration.



- Detector in sniffing mode



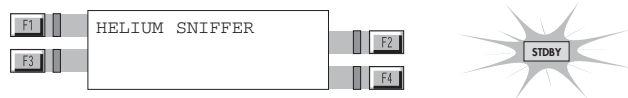
- The operator inserts the sniffer probe in the detector calibration port.

- Start a calibration.

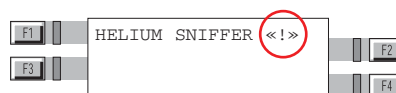


- Different screens appear during the calibration and inform the operator about the process. The detector try to adjust the calibration: if the adjustment is out tolerance ($\pm 15\%$), a complete recalibration is done.

- When the calibration is finished, the detector is ready to test. The digital voice informs the operator: «detector ready».



- Note:**
- It is possible to do a test after a calibration failure. In this case, an error message informs the operator that the detector is not calibrated («AL» displayed permanently).



- If a printer is connected, a calibration ticket is automatically printed at the end of the calibration:

example : **2a** **B 320**

Calibration of the leak detector

Calibration with an external calibrated leak

Several operator operations are necessary during the calibration process.

- Detector in sniffing mode.



- If the 3 masses option is selected, choice the tracer gas used.

C 430

- The selected source should be the external calibrated leak.
- Correct the external calibrated leak values set. C 305
- If the external calibrated leak is equipped with a valve, open it.

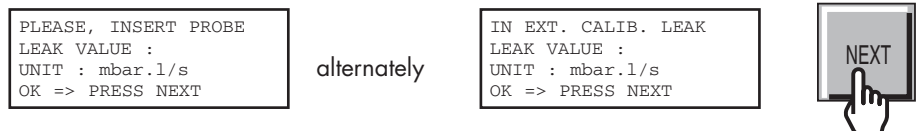
- Start a calibration.



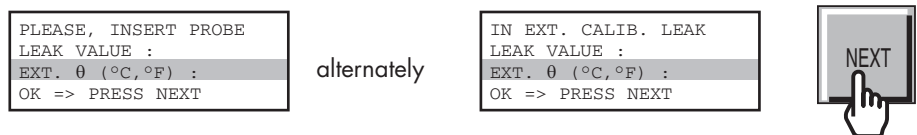
- Insert the sniffer probe as requested: adjust the calibrated leak temperature for a corrected leak.

C 305

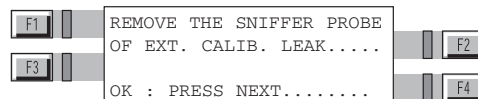
- Not corrected leak:



- Corrected leak:



- Different screens appear during the calibration and inform the operator about the process.

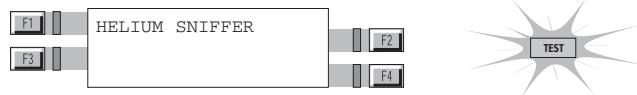


- If the external calibrated leak is equipped with a valve, close it.
- Remove the sniffer probe as requested.

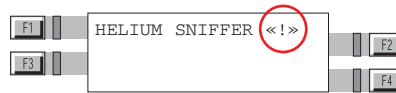


Calibration of the leak detector

- When the calibration is finished, the detector is ready to test. The digital voice informs the operator: «detector ready».



- Note:**
- It is possible to do a test after a calibration failure. In this case, an error message informs the operator that the detector is not calibrated («AL» displayed permanently).



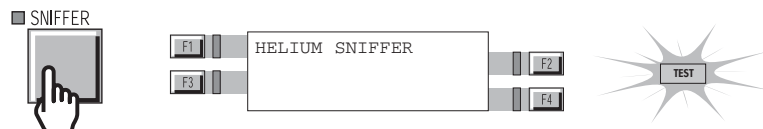
- If a printer is connected, a calibration ticket is automatically printed at the end of the calibration:

example : **2b**  **B 320**

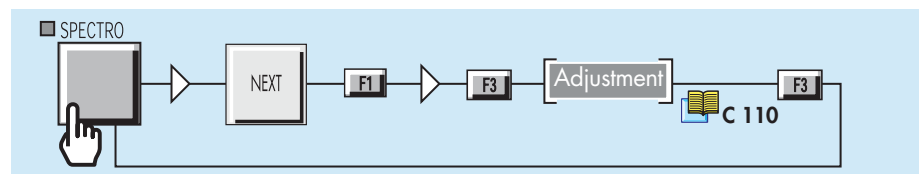
Calibration on concentration

Several operator operations are necessary during the calibration process.

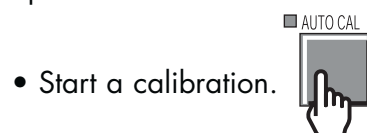
- Detector in sniffing mode:



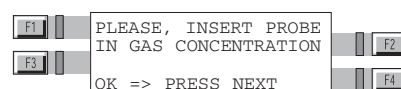
- The selected source should be the concentration.
- Correct the concentration values set:



- If the volume with the gas concentration is equipped with a valve, open it.



- Start a calibration.
- Insert the sniffer probe as requested.

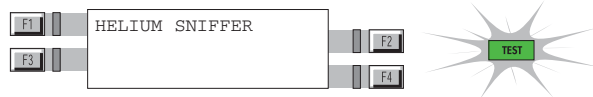


Calibration of the leak detector

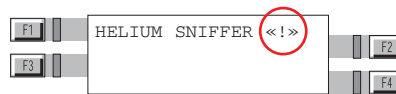
- Different screens appear during the calibration and inform the operator about the process. The detector try to adjust the calibration: if the adjustment is out tolerance ($\pm 15\%$), a complete recalibration is done.



- If the volume with the gas concentration is equipped with a valve, close it.
- When the calibration is finished, the detector is ready to test. The digital voice informs the operator: «detector ready».



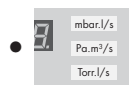
- Note:**
- It is possible to do a test after a calibration failure. In this case, an error message informs the operator that the detector is not calibrated («AL» displayed permanently).



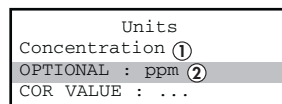
- If a printer is connected, a calibration ticket is automatically printed at the end of the calibration:

example : **2c** **B 320**

- Units:** If the concentration is selected as calibration source, the set units are changed:



- **Basic units indicator suppression.**



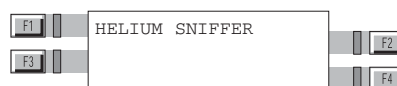
- «concentration» appears at the place of the basic unit ①.
- the operator should set an optional unit: ppm or special are only available ②.

C 570

Calibration on background

No operator operations is necessary during the calibration process.

- Detector in sniffing mode.



Calibration of the leak detector

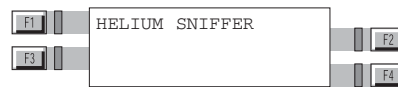
- The selected source should be «background». As soon as the gas selection, the signal digital display disappears to materialize the measure impossibility.

- Insert the sniffer probe in the place choiced by the operator.

- Start a calibration.



- Different screens appear during the calibration.
- When the calibration is finished, the detector is ready to test. The digital voice informs the operator: «detector ready».



Note: It is possible to do a test after a calibration failure. In this case, an error message informs the operator that the detector is not calibrated («AL» displayed permanently).

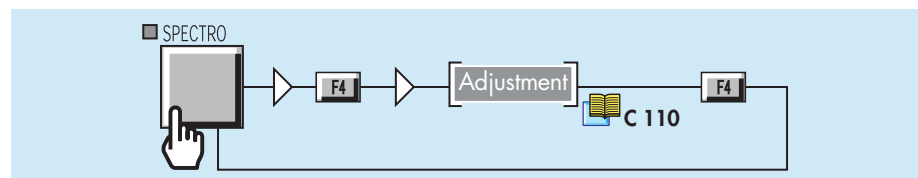
Detector calibration frequency

When the period of time set on the «period» counter is reached, a warning «autocal required» is set on the display panel (LCD) and digital voice.

The led «cal. request» is activated on the remote control.

ASM 142 S with internal leak option only: if the source is the internal leak and if the sniffer probe is inserted in the detector calibration port, the calibration will start immediately.

Detector calibration period adjustment:



Calibrated leak values programming

A help for control panel utilization/access.

Operating principle of the control panel



110

Présentation de la partie réglage et maintenance
du panneau de contrôle



120

Accès aux paramètres et aux paramètres actifs suivant les
autorisations

Access to level  - Password



130

Summary of screens

Complete displays list with access
way and associated sheet



140

Different types of calibrated leaks

Before to start a calibration of the leak detector, with an internal calibrated leak (ASM 142 S only with the internal leak option), the parameters of the calibrated leak used should be programmed by the operator. These parameters allow to correct automatically the leak value.

For a calibration with an external calibrated leak, these same parameters could also be programmed in order to correct it.

It is also possible to use an external calibrated leak without correction of its value.

The leak detector can be calibrated:

- with a helium calibrated leak
- with different gases (Hydrogen and Helium 3) if it is equipped with the 3 masses option. The detector should be calibrated with a leak of the researched gas. The parameters of the 3 possible leaks (He, He3 and H) are memorized when we change of gas.

3 masses option  C 430

Gas	Internal leak calibration (ASM 142 S only - option)	External leak calibration
Helium	X	X
Helium 3	-	X
Hydrogen	-	X

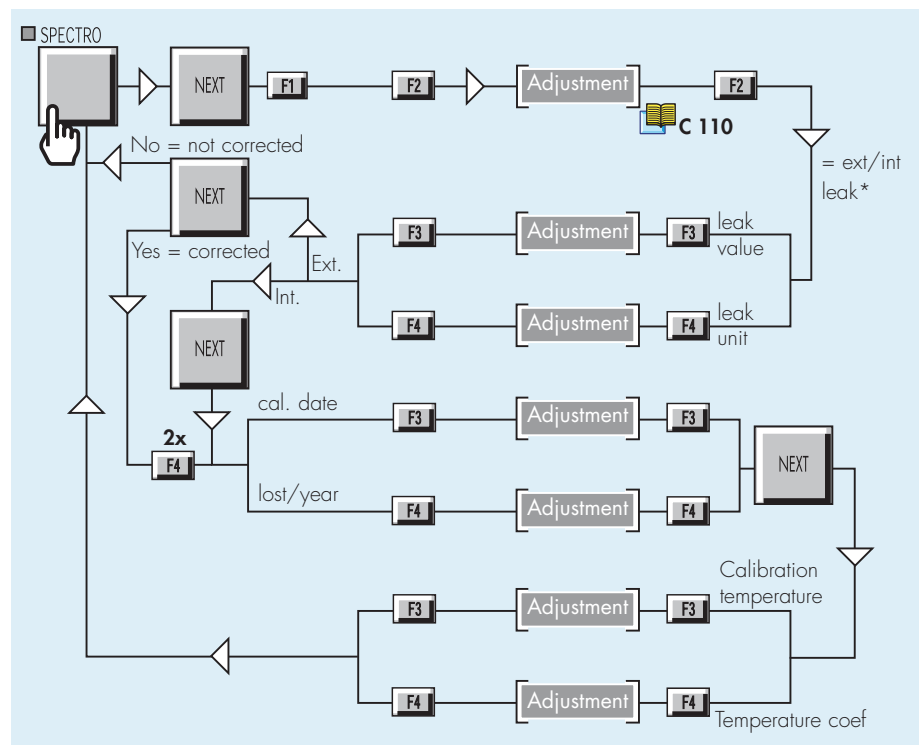
Whatever the type of calibrated leak used, the parameters to program are the same.

Calibrated leak values programming

Programming the calibrated leak parameters

This operation can be made with the data written on the calibrated leak identification label or the calibration certificate delivered with it. Example of identification label:

HELIUM CALIBRATED LEAK
 Helium leak rate : 1.0×10^{-8} mbar.l/s at 20 °C
 Date of calibration : 10 Dec 2001
 % loss per year : 2 %
 % increase per °C : 3 %



(*) internal : only ASM 142 S (option)

Calibrated leak supervision

A recalibration date supervision is programmed.

This supervision allows to follow the calibrated leak recalibration date selected as current source.

Supervision  D 210

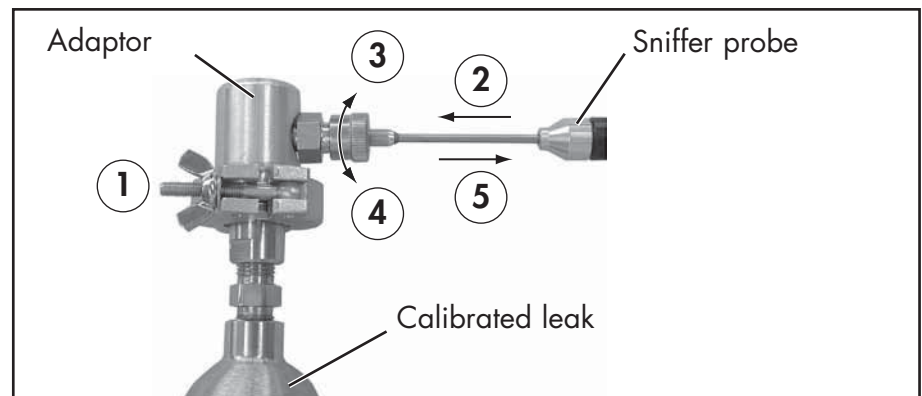
Adaptor for calibrated leak in sniffing mode

An adaptor DN 16 or DN 25 for calibrated leak has been designed for the calibration of the detector with an external calibrated leak.

Accessories  A 700

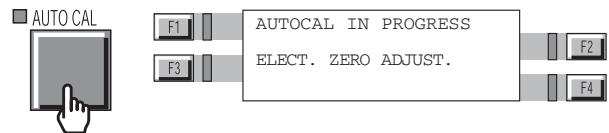


How to use the adaptor ?



- 1 Place the adaptor to your calibrated leak used for the calibration.

Start a calibration



- 2 Place the sniffer probe in the calibration port.

- 3 Tighten the fixing screw. Follow the auto-calibration.

Calibration of the leak detector  C 300

- 4 Untighten the fixing screw.

- 5 Remove the sniffer probe of the calibration port. Follow the auto-calibration.

Notes

- Waiting 10 s (mini) for the signal stabilization before reading of the leak value.

- The leak value displayed on the LCD consider the He of the air.

Example : calibration with a leak of 2×10^{-5} mbar.l/s

The value displayed is:

$$2 \times 10^{-5} + 5 \times 10^{-6} = 2.5 \times 10^{-5} \text{ mbar.l/s}$$

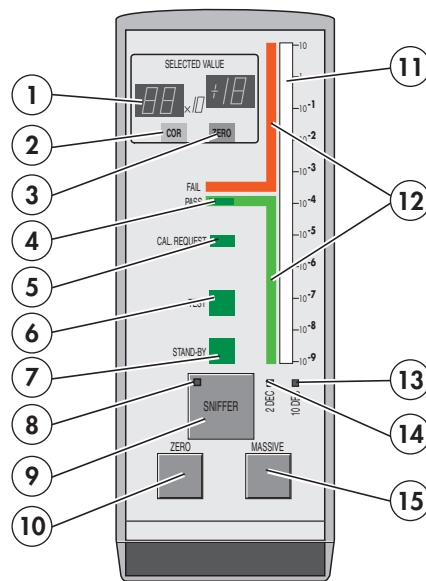
Remote control



Remote control interface

The remote control is an accessory.

The remote control is equipped with a magnet allowing the operator to place it on a metallic surface. The operator can read the helium signal and has access to control keys such as test command zero function and measure function.



1	Helium Signal digital display
2	Correction factor COR indicator
3	Zero function indicator
4	2 decades scale indicator
5	Request calibration indicator
6	Test indicator
7	Standby detector indicator
8	Test indicator (ON when activated)
9	Test control key
10	Zero function control key
11	Tracer gas analogic display
12	Silkscreen print associated to the «pass» light for a production use (green below the threshold, red above)
13	10 decades scale use indicator
14	2 decades scale use indicator
15	ON/OFF massive function control key

Remote control


Remote control connecting




Location and connecting  B 210

Units The remote control displays the value in the unit selected in the leak detector.

Users levels

All the keys of the remote control are available as soon as the user level set in the detector is ≥ 1 .

 C 310 and C 120

In this cases ,  and  keys are available as soon as a menu is in progress (password activated).

Use and display

The remote control:

- allows to display leak measured value or the reject point,
- allows to go in sniffing mode, to start zero and massive functions,
- allows to indicate detector state and a calibration need,
- doesn't allow to adjust leak detector parameters.

Analog and digital displays

On remote control and control panel, the displayed values on the analog and digital displays are exactly the same.

Operation of the leak detector  C 211

Detector standby/test

Put the detector in standby/TEST. By default, the detector is in test mode. The operator can put it in standby mode (any pumping by the probe, any electric emission) to reduce the service interventions. If you press the «SNIFFER» key when the detector is in test mode, you deactivate the TEST led.



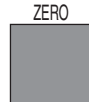

To go back in test mode, press again on «SNIFFER» key.


Remote control

Use and display (ctd)

Zero function In order to start zero function, operator can use either the ZERO control key on the control panel or remote control.


Display The zero indicator is ON when the function is activated.




Zero function  C 540

Massive function This function is only accessible by the remote control: long press on the MASSIVE touch.

Display The green led becomes red (or orange), when the function is activated.



Massive function  C 590

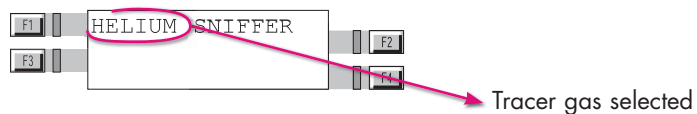
3 masses option

Purpose Leak detection is used to detect micro-openings, porosities, etc. in test parts. The detection of these passages involves the use of a light gas, which is capable of infiltrating the smallest passages quickly. The standard gas used is the Helium 4 but the operator has the possibility with the 3 masses option to use another gases: Hydrogen or Helium 3.

Background is much higher in H₂.

The unit equipped with the 3 masses option does not have any external differences in relation to the standard unit. The modifications are inside the unit (analysis cell magnet and electronic supervisor board).

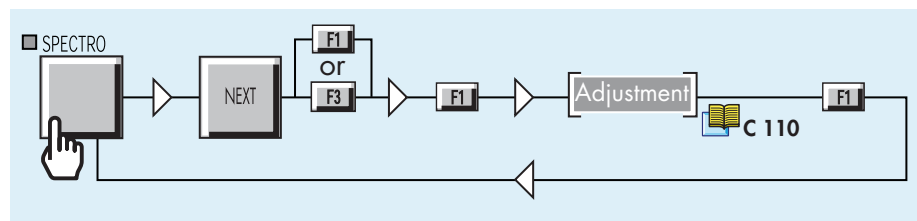
The tracer gas selected is displayed on the control panel LCD screen:



The 3 masses option purpose, used with Hydrogen, is the leak research only and not the continuous analysis of the hydrogen concentration of a gas.
The leak detector is not adapted for a hydrogen concentration continuous analysis. The leak detector use in such conditions, as well as the hydrogen concentration of the gas used, are under the supervision of the user.

The functions are the same as the standard detector.

Gas selection



3 masses option

Calibration in Hydrogen or Helium 3

The leak detector can be calibrated in Hydrogen or Helium 3 with an external calibrated leak.

Procedure

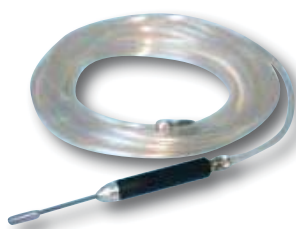
The operator should adjust the parameters of the calibrated leak used before a calibration.


Calibrated leak values programming  C 305

Calibration of the leak detector  C 300

Long distance sniffer probe and Helium spray gun

Please refer to the specific sheets for the instruction:



Long distance sniffer probe
 G 400 / G 410



Helium spray gun  G 500

Audio alarm / Digital voice

A help for control panel utilization/access.			
Operating principle of the control panel	C 110	Access to level 4 - Password	C 130
Setting and maintenance part presentation of the control panel Access to parameters and parameters active depending on authorization	C 120	Summary of screens Complete displays list with access way and associated sheet	C 140

Audio alarm definition

The Audio alarm appears differently, based on the Zero function.

- Zero function is not activated:
The standard Audio alarm is started when the helium signal is exceeding a set point and called reject point.
- Zero function is activated and 10 decades analogic display: «Bip» are emitted permanently with a more and more fast rythm according to the number of leds on. They are stopped and replaced by the standard audio alarm as soon as the signal is above of the reject set point.

Zero function C 540

Digital voice definition

The digital voice informs the operator by sending audio messages in the following cases:

- starting-up process and auto-calibration process
- when detector is ready
- fault or warning.

General

At any time it is possible to adjust the volume if any menu is activated:

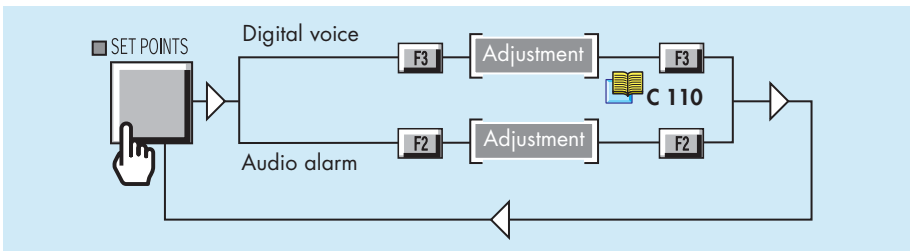
- to increase volume
- to decrease volume



Sound level

The level varies from 0 to 9 (= 90 dBA).

Adjustment



Zero function

A help for control panel utilization/access.

Operating principle of the control panel



C 110

Setting and maintenance part presentation of the control panel



C 120

Access to parameters and parameters active depending on authorization

Access to level 4 - Password



C 130

Summary of screens



C 140

Complete displays list with access way and associated sheet

Purpose Zero function is provided:

- to help the operator to identify a very small fluctuation of the helium signal out of the ambient background,
- to enlarge small fluctuations of the helium signal on the analog display.

The zero function allows the operator to work with a reject point below to the background.

The zero function could be activated:

- by the operator,
- in automatic.

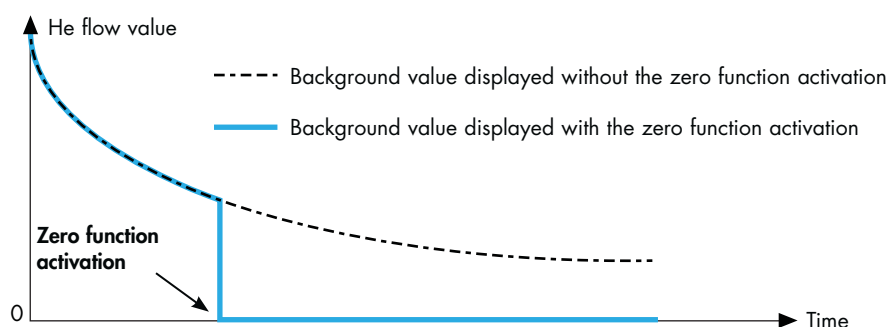
It's advised to use this function when helium background signal is not instable other wise, the instabilities will be amplified.

Procedure The process of the zero function is the same whatever the activation mode (operator or automatic).

In automatic mode, the zero function captures automatically the residual in TEST, according to a defined rhythm (see setting below).

Note: The zero key is no more active and the capture is materialized by the 2 decades led flashing.

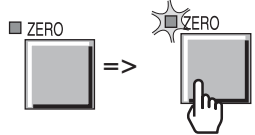
Principle



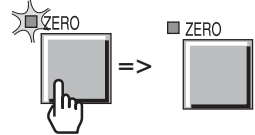
Zero function

Activate/desactivate the zero function manually

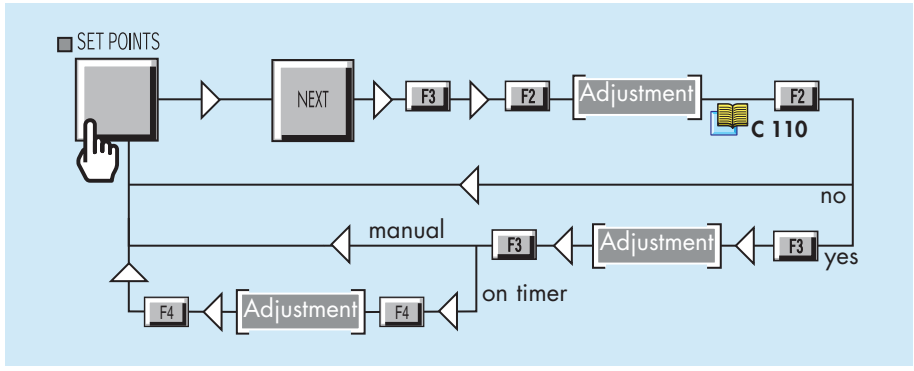
Activation




Desactivation



Zero function setting



The period of time corresponds to the period of time between each capture (zero up dating).

Note : In automatic, the press on the  key starts a new capture.

Audio level

 C 520

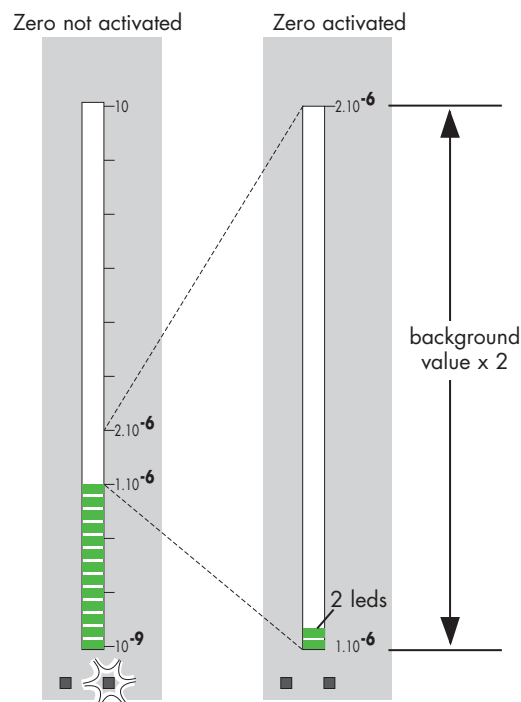
Zero function

Display

10 decades display

• **Analogic display:**

When the zero function is activated, the 10 decades led is off. 2 leds on the bargraph are always off. A signal increase equal to the background value will induce the bargraph filling.



• **Digital display :**

The display value is the real signal value, reduced by the captured value when you pressed the  key.

Note: All coefficients remain applied to the signal.

Example: Background = 1.10^{-6} mbar.l/s

Zero not activated

Zero activated

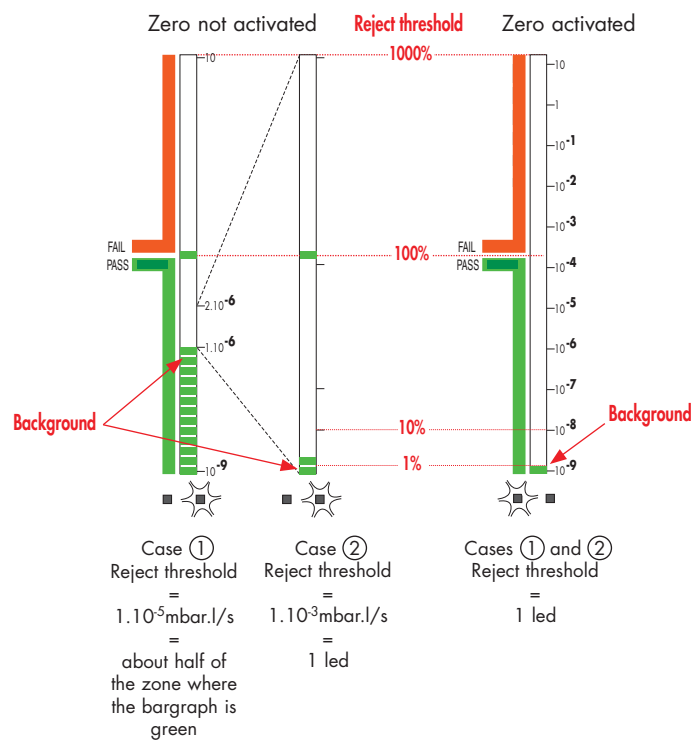


Zero function

2 decades display

• **Analogic display:**
 When the zero function is activated, only the number of displayed leds could decrease according to the background value compared to the reject threshold.

Example: Background = $5 \cdot 10^{-6}$ mbar.l/s cases ① and ②



• **Digital display:**
 The value displayed corresponds to 1 % of the reject point parametered, with a limit of $1 \cdot 10^{-7}$ mbar.l/s.

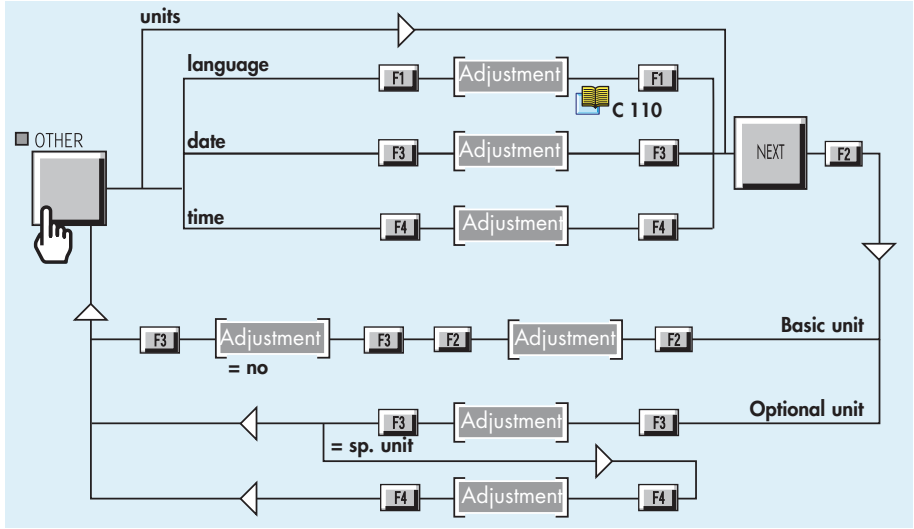
Example : background = $5 \cdot 10^{-6}$ mbar.l/s

	Zero not activated	Zero activated	
Reject point = $1 \cdot 10^{-3}$ mbar.l/s			= 1 % of the reject point
Reject point = $1 \cdot 10^{-5}$ mbar.l/s	 = Detector background		
Reject point = $1 \cdot 10^{-6}$ mbar.l/s			= 1 % limited to $1 \cdot 10^{-7}$ mbar.l/s

Date - Time - Language - Unit

A help for control panel utilization/access.			
Operating principle of the control panel	C 110	Access to level 4 - Password	C 130
Setting and maintenance part presentation of the control panel	C 120	Summary of screens	C 140
Access to parameters and parameters active depending on authorization		Complete displays list with access way and associated sheet	

Adjustment procedure



Date The leak detector calculates its storage period since the last switching off C 200

Take care to set the correct date.

Language The leak detector offers 2,3 or 4 languages, according to the model. A 600

- Notes:
- All messages on the LCD are on the selected language.
 - The selected language is the language of the digital voice.

Digital voice C 520

Date - Time - Language - Unit

Units The leak detector proposes:

- basic units
- optional units.

• **Basic units:**


These units are used for the leak flow, and the calibrated leak flow:

- mbar.l/s
- Torr.l/s
- Pa.m³/s

In order to use the basic units, the optional unit must be set on «no». A light indicates the unit set:



The leak flow unit could be different of the calibrated leak flow unit.

Calibrated leak setting  C 305

When the operator connects a remote control on the leak detector, the remote control is automatically configured with the basic unit set on the detector.

In case of units change:

- the following parameters are automatically recalculated:

- reject threshold,
- probe clogged.

- the new values are displayed on the digital display.

- the leds (bargraph and flashing) position changes only with 10 decades display.

It's so necessary to change the unit before to change the reject threshold.

• **Optional units:**

These units are used for:

- the concentration: ppm
- the flow : gr/yr, oz/yr and lb/yr of the tracer gas used.

They will be used in priority on the basic units as soon as the optional unit value is other than «no».

Date - Time - Language - Unit

If an optional unit is selected, it is displayed permanently on the test screen.



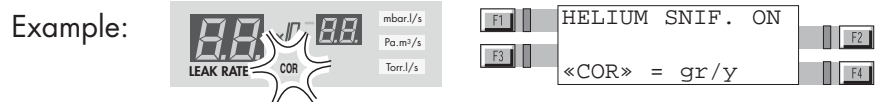
If an optional unit was selected for a calibration source and you change of calibration source, this unit applies to the new selected source.

If you want to use another unit (optional or basic), it is also necessary to change the unit when you select the new source.

A user customization is also possible (sp. unit).

In the case of a customization, the user should set the correction value.

When the «COR» indicator is on, the unit used is displayed on the LCD screen.



Note: If the concentration is selected as a calibration source, the units set are changed: See  **C 301**.

Fault / information indicator and display

Fault and information

At any time, the leak detector can display on the LCD clear Information or Fault messages based on the analysis of the leak detector status.

There are 3 basic types of faults: **minor fault**, **major fault** and **critical failure**.

There are 2 basic types of information: **user information** and **service information**.

The messages are displayed on a specific display by order of importance:

1. critical failure
2. major fault and minor fault
3. user information and service information

Faults Minor fault

3 fault types: minor fault, major fault and critical failure.

- Warning:
 - on the digital display alternatively the helium signal and "Er" are shown.
 - on the LCD, a "!" flashing at the right end of the 1st line.



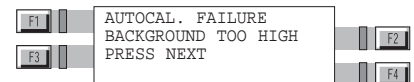
The digital voice advises the operator of the procedure to follow.

- Result:
 - This will not stop the functions of the leak detector but can affect the validity of the test result.

- Message:
 - To read the message



A clear message describes the error on line 2 and 3. The most important warning message is displayed on the 1st line.



Up to 3 messages may be displayed on the message display.

- Duration: may be temporary or permanent
 - temporary if the fault appears and then disappears without a corrective action from the user
 - permanent until the cause is erased by the user.
- Remedy:
 - Temporary: the indicator disappears and the warning message is erased.
 - Permanent: both indicator and message are memorized until the fault is eliminated.

Fault / information indicator and display

Faults (cont.)

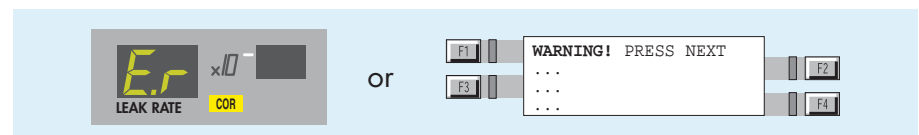
ASM 142 S and ASM 102 S special case:

- If after the start, the background is lower than the sniffer probe clogged point:
 - The "AL" message appears permanently on the digital display,
 - a «!» flashing at the right end of the screen.
- This default, although minor, is blocking. It is necessary to launch a calibration to make it disappear.



Major fault


- Warning:
 - on the digital display, "Er" is permanently displayed.
 - a flashing message occurs on the LCD



The digital voice advises the operator of the procedure to follow.

- Result:
 - May prevent the leak detector from making a vacuum test or an autocalibration

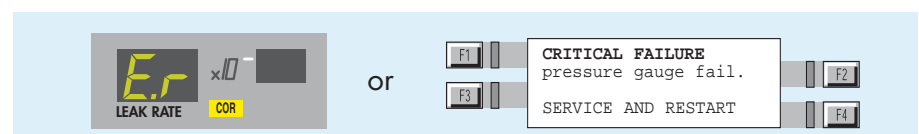
- Message:

To read the message 

Note: A major fault can behave like a temporary minor fault if the origin of the error has disappeared.

Critical failure

- Warning:
 - on the digital display, "Er" is permanently displayed. All indicators are turned off.
 - on the LCD the clear message of a critical failure is directly displayed. Details are displayed on line 2 and 3.



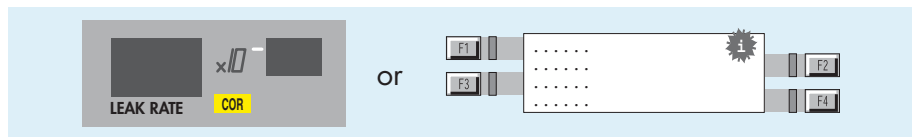
The digital voice advises the operator of the procedure to follow.

- Result:
 - Complete shut down of the leak detector is required.
- Remedy:
 - Need the servicing of the leak detector before starting it again.

Fault / information indicator and display

Information 2 information types: **user** and **service information**.

- Warning:
 - no indicator on the digital display
 - on the LCD, a "i" flashing at the right end of the 1st line.



- The digital voice advises the operator of the procedure to follow.

- Result:
 - Doesn't affect the functions of the leak detector

- User information

Only an indication that the leak detector is in a particular status which may require an action from the user in order to return to a standard situation

- Service information

Only an indication that the leak detector requires a service or maintenance action.

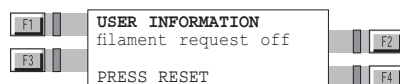
- Message:

To read the message

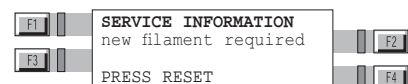


A clear message describes the fault on line 2 and 3.

User information display



Service information display



- Duration:

After display of the clear message, the indicator and the clear message are erased but they will be reactivated at the next start-up of the leak detector or at each unauthorized request by the user or 30 min later, if the origin of the message is still present.

- Remedy:

- User information

Can be eliminated by an action which is accessible by the user.

- Service information

Can be eliminated by a service action on the involved component and by resetting the corresponding configuration parameter. This is only accessible by the customer service.

Service instructions  E

Fault / information indicator and display

List of messages

For all messages, note their contents in order to identify the origin of the message and take the corresponding corrective action if necessary.

General troubleshooting guide  D 300

The RS 232 codes of these messages are described in the specific RS 232 user manual.

	User Information	Service Information	ASM 182 T	ASM 192 T	ASM 192 T2	ASM 182 TD+	ASM 192 TD+	ASM 192 T2D+	ASM 122 D	ASM 142	ASM 142 D	ASM 142 S	ASM 1002	ASM 102 S
Information messages														
auto. cal. required		•												
filament request off	•		•	•	•	•	•	•	•	•	•	•	•	•
manual calibration	•		•	•	•	•	•	•	•	•	•	•	•	•
auto. cal. aborted	•		•	•	•	•	•	•	•	•	•	•	•	•
drift too high (zero)	•		•	•	•	•	•	•	•	•	•		•	
He too high for zero	•		•	•	•	•	•	•	•	•	•		•	
He too low for zero	•		•	•	•	•	•	•	•	•	•		•	
external calib. Leak	•		•	•	•	•	•	•	•	•	•		•	
new fil#1 required		•	•	•	•	•	•	•	•	•	•		•	•
new fil#2 required		•	•	•	•	•	•	•	•	•	•		•	•
maintenance required		•	•	•	•	•	•	•	•	•	•		•	•
fil1-collector short		•	•	•	•	•	•	•	•	•	•		•	•
fil2-collector short		•	•	•	•	•	•	•	•	•	•		•	•
press zero & spray He	•		•	•	•	•	•	•	•	•	•		•	
no Hy leak for calib	•		•	•	•	•	•	•	•	•	•		•	
rough. MDP pump maint.		•						•(5)						
rough. ATP pump maint.		•						•(2)						•
auto. cal. required	•		•	•	•	•	•	•	•	•	•		•	•
external leak maint.		•											•	•
internal leak maint.		•											•	
primary pump maint.		•				•(4)	•(4)	•(4)	•(8)		•(10)			•(12)
high. vac pump maint		•	•(1)	•(1)	•(1)	•(1)	•(1)	•(1)	•(7)	•(9)	•(9)	•(9)	•(11)	•(5)
roughing pump maint.		•			•(2)	•(3)	•(3)		•(6)		•(5)			

(1) TMP 5154
 (2) ATP 100
 (3) MDP 5011
 (4) ACP 28

(5) MDP 5006 HDS
 (6) ATH 31+
 (7) ATH 31
 (8) Dry pump

(9) AMP 007 I
 (10) AMD 1
 (11) ATH 164
 (12) Diaphragm pump

Fault / information indicator and display

Error message	Minor failure	Major failure	Critical failure	ASM 182 T	ASM 192 T	ASM 192 T2	ASM 182 TD+	ASM 192 TD+	ASM 192 T2D+	ASM 122 D	ASM 142	ASM 142 D	ASM 142 S	ASM 1002	ASM 102 S
autocal failure	•			•	•	•	•	•	•	•	•	•	•	•	•
temperature too low	•			•	•	•	•	•	•	•	•	•	•	•	•
temperature too high	•			•	•	•	•	•	•	•	•	•	•	•	•
cal. leak year error	•			•	•	•	•	•	•	•	•	•	•	•	•
peak search error	•			•	•	•	•	•	•	•	•	•	•	•	•
peak adjust error	•			•	•	•	•	•	•	•	•	•	•	•	•
background too high	•			•	•	•	•	•	•	•	•	•	•	•	•
emission loss	•			•	•	•	•	•	•	•	•	•	•	•	•
cell. zero off limits	•			•	•	•	•	•	•	•	•	•	•	•	•
cell. zero stability	•			•	•	•	•	•	•	•	•	•	•	•	•
calib. test mode lost	•			•	•	•	•	•	•	•	•	•	•	•	•
sensitivity too high	•			•	•	•	•	•	•	•	•	•	•	•	•
background trouble	•			•	•	•	•	•	•	•	•	•	•	•	•
lack of sensitivity	•			•	•	•	•	•	•	•	•	•	•	•	•
cell.pressure safety		•		•	•	•	•	•	•	•	•	•	•	•	•
triode safety		•		•	•	•	•	•	•	•	•	•	•	•	•
emission failure		•		•	•	•	•	•	•	•	•	•	•	•	•
snif. probe clogged		•		•	•	•	•	•	•	•	•	•	•	•	•
high. vac pump speed		•		•	•	•	•	•	•	•	•	•	•	•	•
cell pres.>0.01 mbar			•	•	•	•	•	•	•	•	•	•	•	•	•
high. vac pump fail			•	•	•	•	•	•	•	•	•	•	•	•	•
cell pres.>1e-04 mbar			•	•	•	•	•	•	•	•	•	•	•	•	•
filaments #1 bad			•	•	•	•	•	•	•	•	•	•	•	•	•
no collector voltage			•	•	•	•	•	•	•	•	•	•	•	•	•
time keeper ram fail.			•	•	•	•	•	•	•	•	•	•	•	•	•
cell. gauge failure			•	•	•	•	•	•	•	•	•	•	•	•	•
rough. pump failure	•					•(2)	•(3)	•(3)	•(2)	•(6)		•(5)			
24 V DC troubles	•			•	•	•	•	•	•	•	•	•	•	•	•
mini reject point on	•													•	
check ATH connector			•							•(7)					
check AMP connector			•								•(9)	•(9)	•(9)		•(5)
check TMP connector			•	•(1)	•(1)	•(1)	•(1)	•(1)	•(1)					•(11)	
check ATH connector			•							•(6)					
check MDP connector			•				•(3)	•(3)	•(5)			•(5)			
check ATP connector			•			•(2)			•(2)						
LDS probe problem		•											•		•

Fault / information indicator and display

	Minor failure	Major failure	Critical failure	ASM 182 T	ASM 192 T	ASM 192 T2	ASM 182 TD+	ASM 192 TD+	ASM 192 T2D+	ASM 122 D	ASM 142	ASM 142 D	ASM 142 S	ASM 1002	ASM 102 S
Error message															
dynamic cal failure	•														
bad RAM integrity	•														
fil1-collector short		•		•	•	•	•	•	•	•	•	•	•	•	•
fil2-collector short		•		•	•	•	•	•	•	•	•	•	•	•	•
fil1-collector short			•	•	•	•	•	•	•	•	•	•	•	•	•
fil2-collector short			•	•	•	•	•	•	•	•	•	•	•	•	•
high. vac pump speed			•	•	•	•	•	•	•	•	•	•	•	•	•
rough. pump failure			•			•(2)	•(3)	•(3)	•(2)	•(6)		•(5)			
primary pump failure			•		•(12)	•(12)	•(4)	•(4)	•(4)					•(12)	

- (1) TMP 5154
- (2) ATP 100
- (3) MDP 5011
- (4) ACP 28

- (5) MDP 5006 HDS
- (6) ATH 31+
- (7) ATH 31
- (8) Dry pump

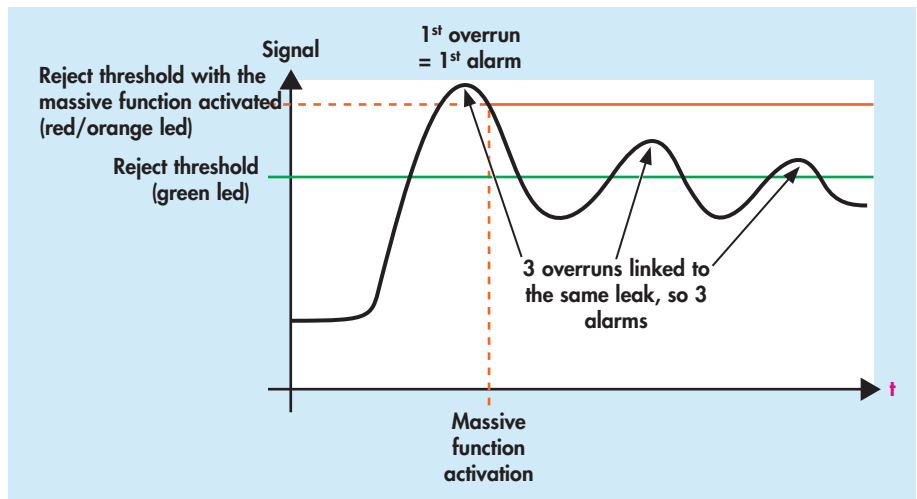
- (9) AMP 007 I
- (10) AMD 1
- (11) ATH 164
- (12) Diaphragm pump

Massive Function


Purpose This function allows to do gross leak localization easier.

This function is only accessible with the remote control.

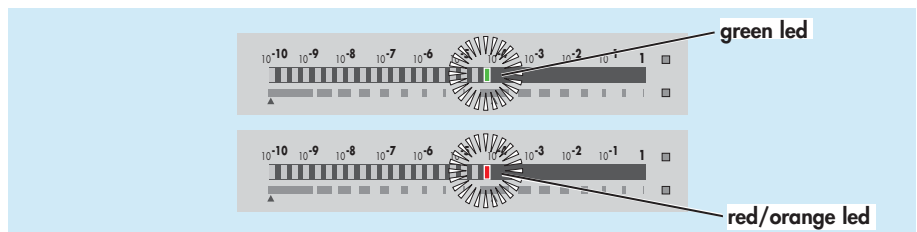
Principle The reject threshold is automatically placed at 130 % of the signal in progress at the function entry. This allows to detect a small signal variation from the entry but principally to place quickly the reject threshold near maximum signal detected.



Preliminary conditions


- The remote control should be connected to the control panel.
- The reject point flashing led should be activated ( C 211).
- The 10 decades bargraph should be selected.


Note: The associated warning will be displayed if the required conditions are not present at the function entry.



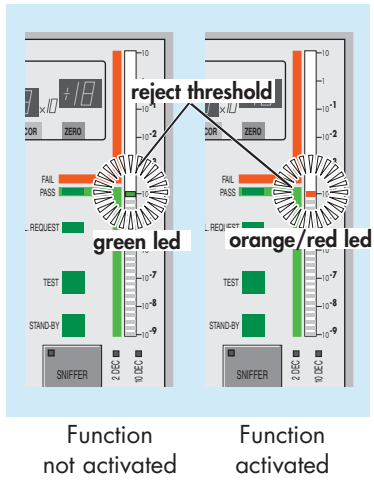
Massive Function


Start/Stop of the massive function

- To start the function, press on  key a long time until the green led becomes red/orange.

- To stop the function, press on  key a long time until the red/orange led becomes green.

The reject threshold comes back to its initial value set in the menu.




Note: Massive function activated, each time you press normally the  key, you reposition the reject threshold in process.

$$\text{Reject threshold} = \text{signal in process} \times 130 \%$$



ASM 102 S Operating instructions Detailed contents

Preliminary remarks Throughout this operating manual, you could find this type of message “Summary of screen  C 140”: it refers to a specific chapter of the operating manual. Please read it for further information.

G 100 *Declaration of conformity*

G 200 *Wiring diagram - ASM 102 S*

G 300 *Analog outputs*

- 0 - 10 Volt
- 0 - 8 Volt

G 400 *Long distance sniffer probe user manual*

- Dimensions
- Technical characteristics
- Use precautions with the flexible sniffer probe
- Flow adjustment
- Available spare parts
- Filter exchange
- Needle replacement
- O’ring installation
- « Sniffer probe clogged » message
- Adaptor for calibrated leak

G 500 *Helium spray gun user manual*

- Description
- Technical characteristics
- Use precaution
- Spare parts

G 600 *Service*

G 800 *Tools*

- ASM View supervisory Software
- ASM Downloader software
- ADX Dialog (Detection) software
- ASM Pocket Dialogue software

Declaration of conformity



Declaration of conformity

We hereby declare that the product cited below satisfies all relevant provisions according to the following EC directives :

- Machinery 2006/42/EC (Annex II, No. 1 A)
- Electromagnetic Compatibility 2014/30/EU
- Restriction of Hazardous Substances 2011/65/EU
- Waste of Electrical and Electronical Equipments 2012/19/EU

The technical file is drawn up by Mr Gilles Baret, Pfeiffer Vacuum, Société par Actions Simplifiées [simplified joint stock company], 98, avenue de Brogny B.P. 2069, 74009 Annecy cedex, France.

ASM 102 S

Harmonised standards and national standards and specifications which have been applied :

Standards NF EN-61000-6-2 : 2005
Standards NF ENV-50204 : 1996
Standards NF EN-60204-1: 2006

Signatures :

Pfeiffer Vacuum SAS
98, avenue de Brogny
B.P. 2069
74009 Annecy
France

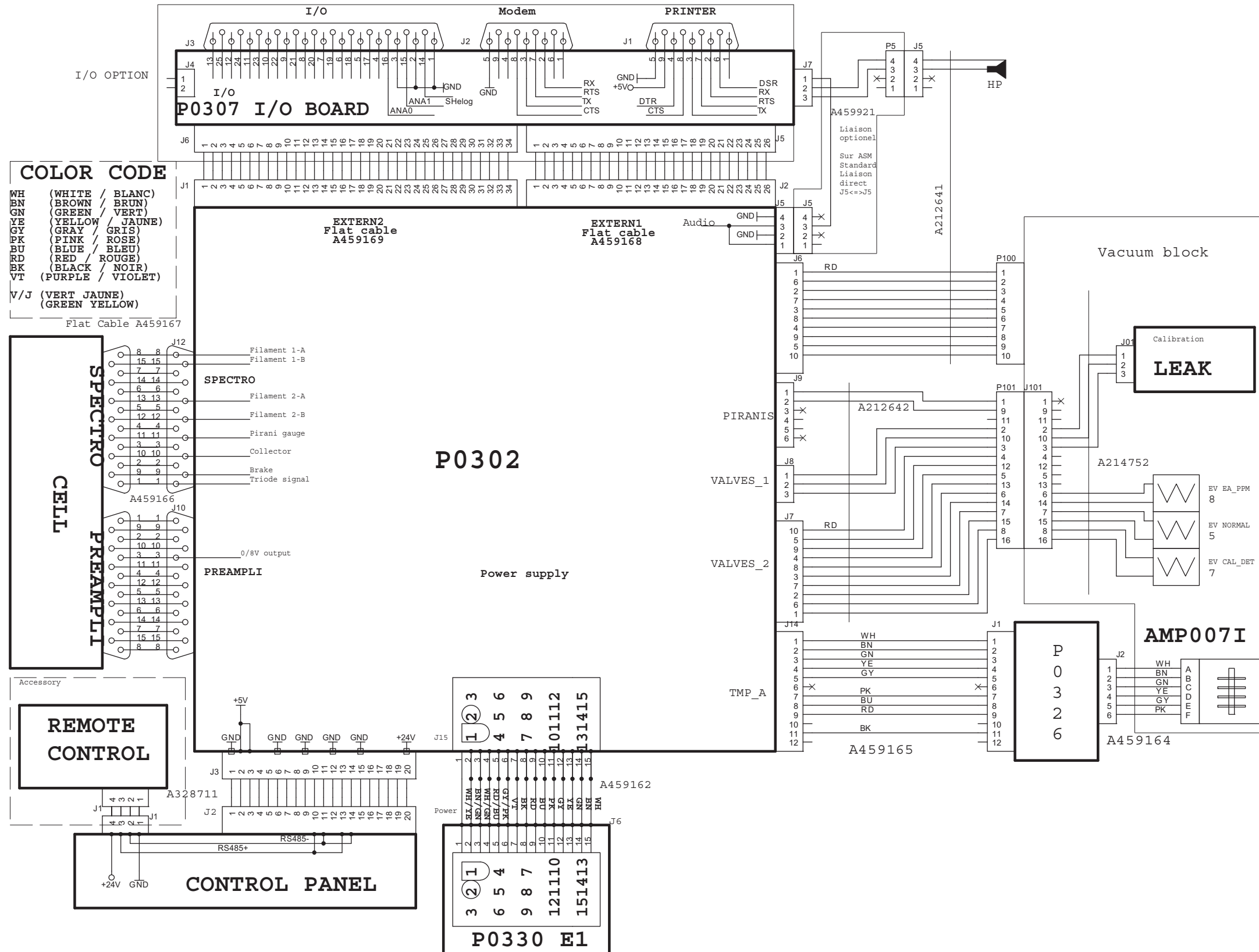
(M. Taberlet)
Président

(M. Baret)
Directeur Produits et Technologies

Date
06/12/2016

G 200


Wiring diagram - ASM 102 S (index -)



Analog outputs

The purpose of the present chapter is to present the logarithmic response of this output.

0 - 10 Volt

To get directly the corrected helium signal as it is displayed on the Digital display, use the 0 - 10 Volt linear output (refer to  B 300) on the same I/O interface connector.

Note: the pressure analog output is not the same as the helium output.

$$\begin{array}{l} \text{Pressure P (mbar)} \\ \text{Voltage V (volt)} \end{array} \left| \begin{array}{l} \rightarrow \\ \rightarrow \end{array} \right. P = 10^{(U-5,5)} \text{ mbar}$$

0 - 8 Volt

Reminder:

- The 0 - 8 Volt logarithmic output is located on the I/O interface connector:


	Ground	0 / 8 V
ASM 182/192 family - ASM 1002	Pin 15	Pin 14
ASM 142 family - ASM 122 D - ASM 102 S - ASI 22	Pin 1	Pin 14

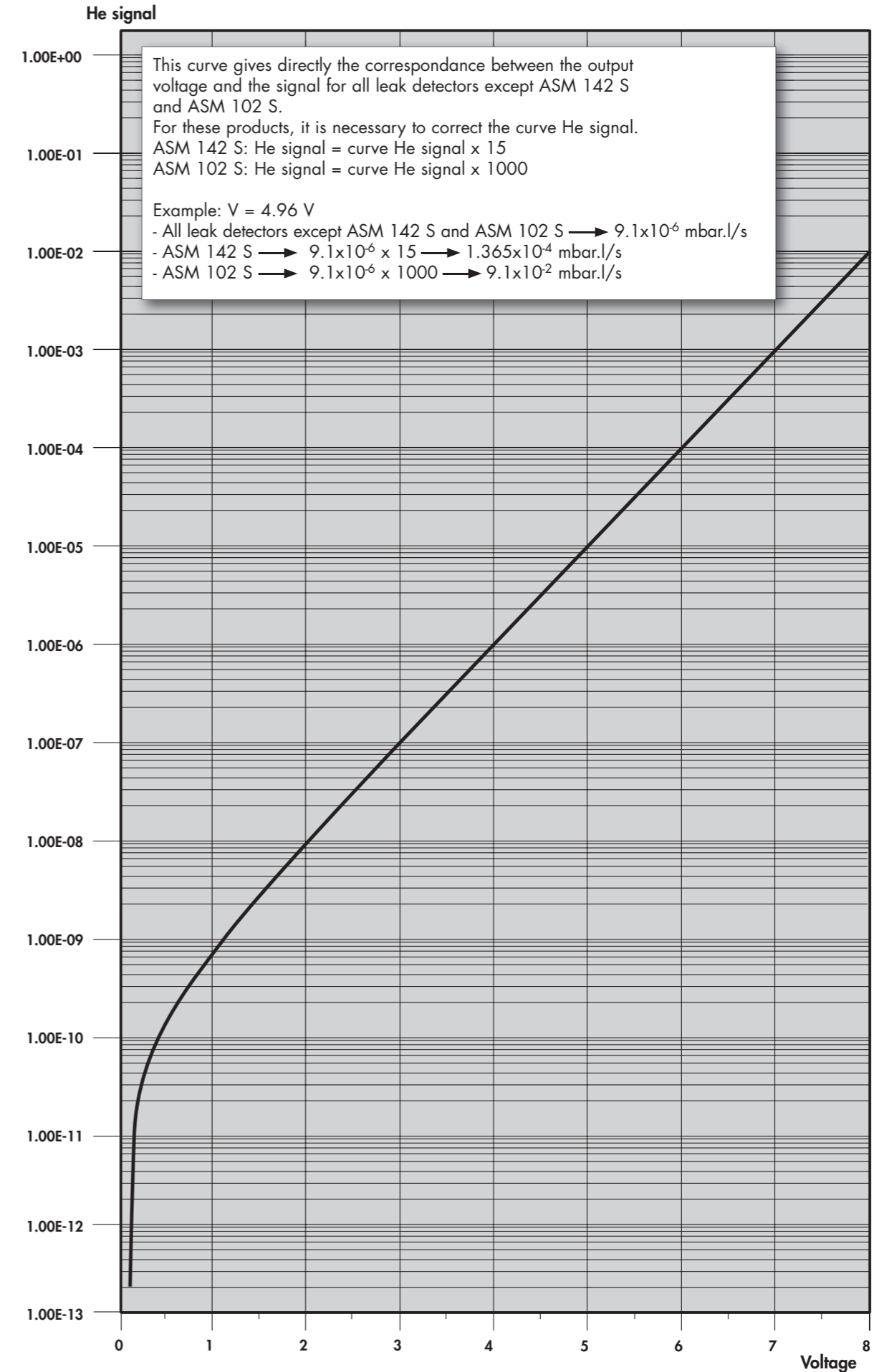
- ASM 182/192 family, ASM 1002: signal connected (COEF.SENS and COEF.MODE applied)
- ASM 142 family, ASM 122 D, ASM 102 S, ASI 22: signal not corrected.

- This output corresponds to the electronic signal obtained with the best sensitivity mode of the leak detector.

- This output corresponds to the electronic signal obtained at the level of the analyzer cell (VHS amplification system) and does not include the correction factors generated by the internal and external calibration.

- The chart and curve shows the correspondance between output voltage and helium signal. **The helium signal given by the present chart needs to be multiplied by COEF.SENS which is adjusted during the internal (auto)calibration:** refer to Calibration or Configuration menus (see Chapter C) in order to get access to COEF SENS value. This COEF.SENS value is modified at each autocalibration: its takes into account the fact that the characteristics of the leak detector (analyzer cell and pumps status) and evolves as it is used.

- If an external correction ratio like VAC COR, SNIF COR or GL COR is activated, the helium signal given by the present chart also needs to be multiplied by this ratio: refer  C 300.



Long distance sniffer probe user manual

This sheet concerns the p/n SNCxExTx long distance sniffer probes.

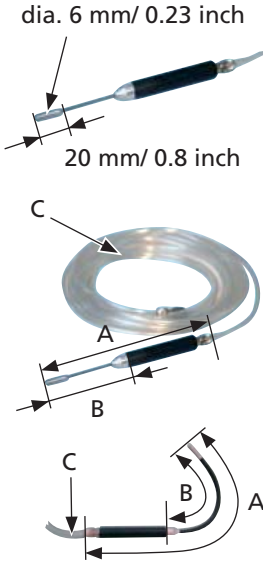


For all service operations, the long distance sniffer probe should be disconnected from the helium leak detector.

The parts involved are small: be careful not to loose them.

Dimensions

Dimensions of the sniffer probe end, for all sniffer probe models.



To calculate the complete size of the sniffer probe, add (A) and (C) depending on the sniffer probe model.

Example: sniffer probe p/n SNC1E1T1

$$= \text{gun (A) } 19 \text{ cm} + \text{tubing (C) } 5 \text{ m}$$


$$\text{gun (A) } 7.5 \text{ inch} + \text{tubing (C) } 197 \text{ inch}$$

End (B)		Sniffer probe part number	Gun (A)
Rigid	9 cm/3.5 inch	SNCxE1Tx	19 cm/7.5 inch
	30 cm/11.8 inch	SNCxE2Tx	40 cm/15.7 inch
Flexible	15 cm/5.9 inch	SNCxE3Tx	25 cm/9.8 inch
	45 cm/17.7 inch	SNCxE4Tx	55 cm/21.6 inch

	Sniffer probe part number	Tubing (C)
PVC flexible (external dia. : 6 mm/0.23 inch)	SNC1ExTx	5 m/197 inch
	SNC2ExTx	10 m/394 inch

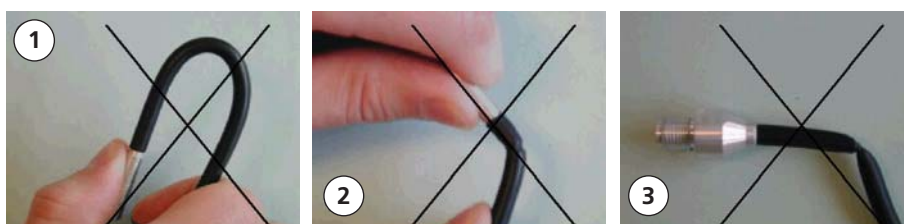
Long distance sniffer probe user manual

Technical characteristics

	Sniffer probe with rigid nipple (part number SNCxE1Tx and SNCxE2Tx)	Sniffer probe with flexible nipple (part number SNCxE3Tx and SNCxE4Tx)
Compatibility with leak detectors	All models	All models except ASM 310 and ASM 102 S
Helium concentration in the air	5 ppm	
Maximum flow taken by the probe	60 ± 10 sccm (1 mbar l/s)	≈ 100 sccm
	Note: A flow variation in the sniffer probe does not modify the sensitivity but only the response time. ↗ Flow = ↘ Response time	
Leak flow (Q) read on the leak detector during a measurement of the He in the air without correction factor	$Q = 5 \cdot 10^{-6}$ mbar l/s	$5 \cdot 10^{-6}$ mbar l/s ≤ Q ≤ 10^{-5} mbar l/s
Correction factor (Cor) to apply in order to read a leak flow in the leak detector of $5 \cdot 10^{-6}$ mbar l/s	1	$0.5 \leq \text{Cor} \leq 1$
Note		 Sniffer probe not designed for precise measurements
Working pressure maxi recommended	Atmospheric pressure + 0.5 bar	

Use precautions with the flexible sniffer probe

- Do not step on the probe or flatten it.
- The nipple should not be curved (ref. ①) without respect the instructions below.
- The nipples should not be bent as shown below (ref. ② and ③).



- In case of use with an ASM 142 S, it is necessary to realize a leak detector calibration in sniffing mode before using the leak detector.

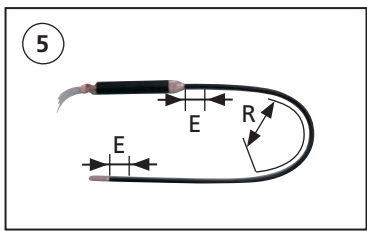
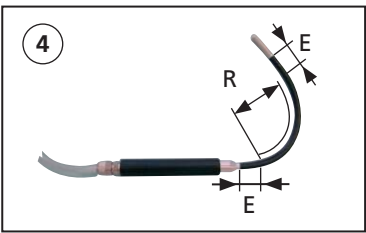
Long distance sniffer probe user manual

Use precautions with the flexible sniffer probe (continued)

- The sniffer probe nipple can be bent if necessary but you should respect a **minimum radius of curvature** (ref. ④ and ⑤).

Sniffer probe with a flexible nipple of 15 cm / 5.9 inch (part number SNCxE3Tx)

Sniffer probe with a flexible nipple of 45 cm / 17.7 inch (part number SNCxE4Tx)



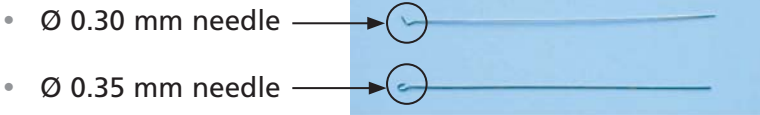
$R > 5 \text{ cm (2 inch)}$ $E > 2 \text{ cm (1 inch)}$: do not twist/bend the E section

Flow adjustment

In order to adjust the flow inside the sniffer probe, it comes equipped with 2 needle types: dia. 0.30 mm (0.11 inch) or 0.35 mm (0.14 inch). This choice is done in factory and it is permanent.

How to identify the needle set in your sniffer probe?

- The needle shape is different:



- The sniffer probe nozzle is marked:



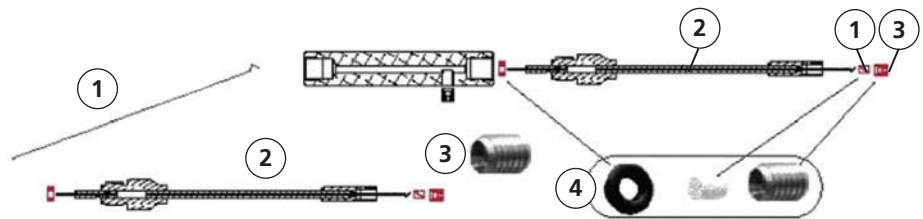
Sniffer probe equipped with a dia. 0.30 mm needle has no mark or is marked "0".



Sniffer probe equipped with a dia. 0.35 mm needle is marked "5".

Long distance sniffer probe user manual

Available spare parts

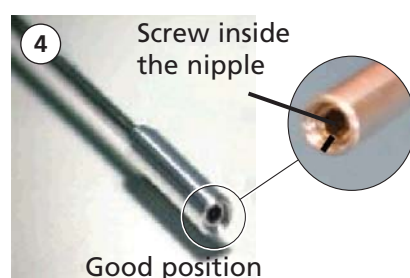
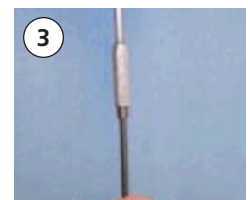
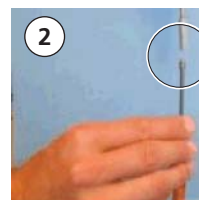
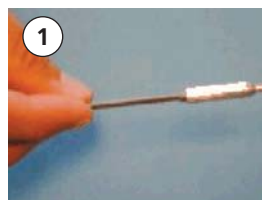


Designation	Reference	
dia. 0.30 mm needle	J 001	1
dia. 0.35 mm needle	J 002	1
Rigid nozzle of 9 cm/3.54 inch (*)	J 003	2
Rigid nozzle of 30 cm/11.81 inch (*)	J 004	
Flexible nozzle of 15 cm/5.90 inch (*)	J 005	
Flexible nozzle of 45 cm/17.71 inch (*)	J 006	
(*) (delivered with the suitable needle not cut)		
Screw alone	J 007	3
Kit for sniffer probe with 5 filters, 2 O'rings and 2 screws	J 008	4

Reference part number F 1000

Filter exchange

- With the 2.5 hexagonal key, remove the screw at the end of the sniffer probe (ref. ①).
- Take out the old filter. Put the new filter in the port (ref. ②).
- Hold this assembly straight up and screw on the nipple of the sniffer probe (ref. ② and ③): torque < 1 N.m
- Install the screw so that it is totally inside the nipple : you should see a few threads (ref. ④ and ⑤).



Long distance sniffer probe user manual

Filter exchange (continued)

When you change the filter, we recommend cleaning the needle and the nipple (sniffer probe with rigid nipple only):

- Take out the needle with needlenose pliers.
- Clean delicately the needle with alcohol and a lint-free cloth.
- Clean the rigid nipple with alcohol and compressed dry air.
- Put back the needle.
- Put back the filter with its screw: torque < 1 N.m.

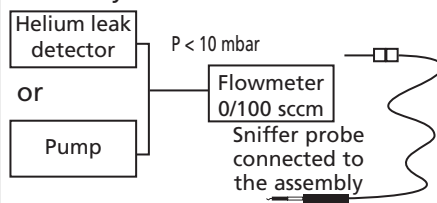
Needle replacement

With this kind of sniffer probe, it is normally not necessary to change the needle.

For every needle replacement in a sniffer probe, put a new needle with the same diameter as the old needle.

3 methods can be used for the new needle adjustment :

- | | | |
|---|---|---------------------|
| <ul style="list-style-type: none"> ① flowmeter use ② standard sniffer probe use ③ old needle use | } | Recommended methods |
|---|---|---------------------|

① Flowmeter use in order to measure the flow in the sniffer probe	② Standard sniffer probe use as reference
<p>Assembly to do:</p> 	<p>This method requires keeping a new sniffer probe as a standard probe. Do an auto-calibration in sniffing mode with the standard sniffer probe. Do a measure of the He in the air with the standard sniffer probe.</p>
<p>Cut the new needle to 85 mm/3.35 inch. Prepare it (see below "③ Use of the old needle as a reference", picture ③) and put it correctly in the nozzle (see "Needle exchange" §).</p>	

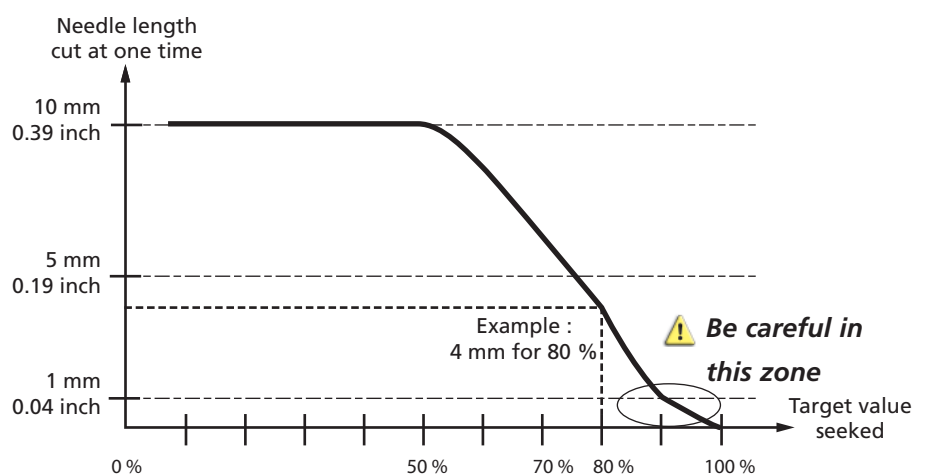
Long distance sniffer probe user manual

Needle replacement (continued)

① Flowmeter use (cont.)	② Standard sniffer probe use (cont.)
	In a no helium polluted environment, do a measure of the helium in the air with the sniffer probe to adjust.
Depending on the measurement result, cut the needle according to the precautions indicated below. Put back correctly the needle in the nozzle.	
Repeat these operations until the flowmeter displays the value of the maximum flow taken by the sniffer probe (60 ± 2 sccm).	Repeat these operations until the display corresponds to the display with the standard sniffer probe in the helium of the air.
If the message "sniffer probe clogged" appears in the control panel display during these adjustments, please refer to "'Sniffer probe clogged" message" §.	

Precautions to cut the needle.

It is necessary to cut small amounts of the needle, especially when we are near the target value: refer to the figure below.



Example: • target value = 60 sccm

- value displayed on the flowmeter : 48 sccm (= 80 % of the target value)

➔ remove the needle from the nozzle and cut 4 mm from the straight end.

③ Use of the old needle as a reference

With this method, the uncertainty about the maximum flow taken by the sniffer probe is more important :

- Maximum flow taken: 60 ± 10 SCCM
- Leak flow (Q): $4 \cdot 10^{-6}$ mbar l/s < Q < $6 \cdot 10^{-6}$ mbar l/s.

Take out the filter (see "Filter exchange" §).

Long distance sniffer probe user manual

Needle replacement (continued)

With needlenose pliers, take out the original needle.

Put the new needle (ref. ①) and cut to **the same length** as the original needle.

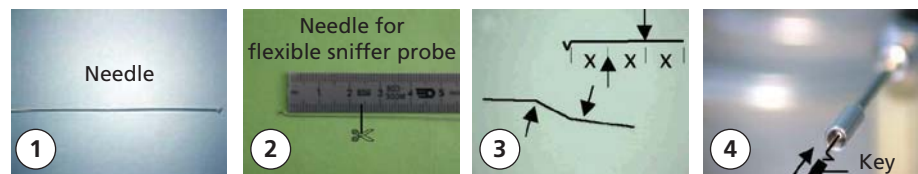
Note:

For the flexible sniffer probe (SNCxE3Tx and SNCxE4Tx), the needle length should be 2.5 cm/0.98 inch (ref. ②).

Bend the needle as shown in the picture ③.

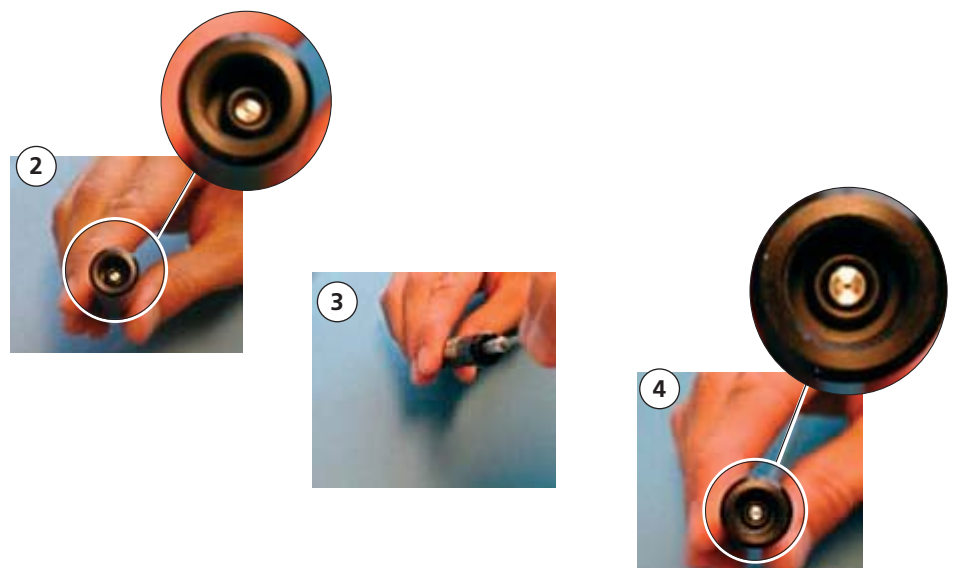
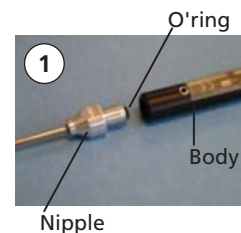
Put the needle in the nipple, the crooked end to outside (ref. ④) and push it in with a 2.5 hexagonal key to stop.

Put back the filter.



O'ring installation

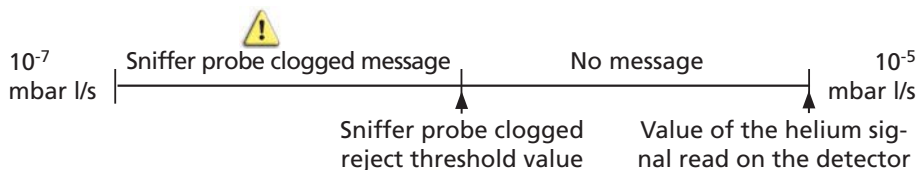
- When you unscrew the nipple from the probe, it is possible for the o'ring to come out with the nipple : you should put it back (ref. ①).
- Place the o'ring on the nipple of the aspiration tube in the sniffer body (ref. ②).
- Push the o'ring with the nipple of the sniffer probe (ref. ③).
- The o'ring is correctly placed on the nipple (ref. ④).
- Screw on the nipple of the sniffer probe.



Long distance sniffer probe user manual

"Sniffer probe clogged" message

A "Sniffer probe clogged" message could appear on the control panel LCD display or be announced by the digital voice: the leak detector compares the helium signal read on the detector to the sniffer probe clogged reject threshold.



During the needle adjustment, this message could appear without the sniffer probe necessarily being clogged: this is why the needle length is so important.

For more details, please consult the operating manual delivered with your leak detector.

Advice:

Block the sniffer probe end from time to time with a finger to check that the helium signal goes down. If not, the sniffer probe may be clogged.

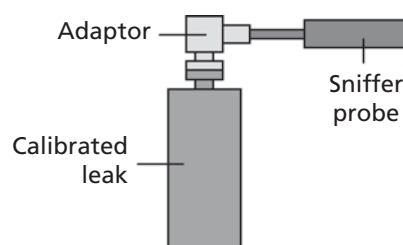
Adaptor for calibrated leak

Description	P/N
Adaptor for DN 16 calibrated leak	A 006
Adaptor for DN 25 calibrated leak	A 007

Reference part number F 1000



Special adaptors for calibrated leaks Pfeiffer Vacuum have been designed to ensure a good connection and repetitive and reliable calibration with a sniffer probe.

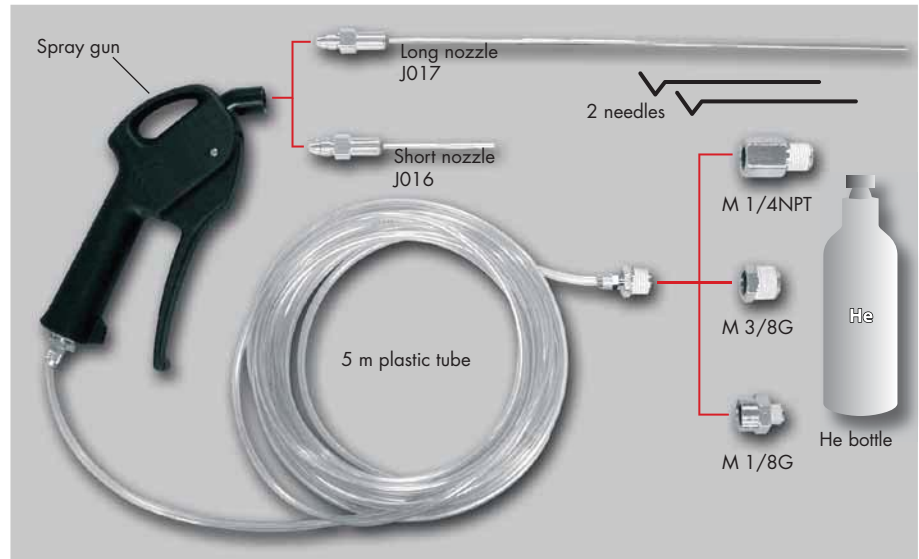


With the adaptor for calibrated leaks use:

$$\text{Value read on the leak detector} = \left\{ \begin{array}{l} \text{calibrated leak value} \\ + \\ \text{value of the helium in the air} \end{array} \right.$$

Helium spray gun user manual

Description



Kit part number  **A**

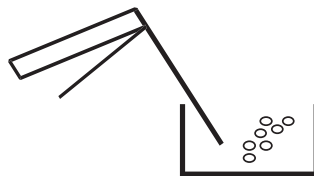
Technical characteristics

Maximum pressure at the outlet of the helium bottle regulator	3 Bars relative / 42 PSI
Recommended pressure at the outlet of the helium bottle regulator	1.5 Bar relative / 7 PSI

	short end				long end			
	needle		regulator pressure	flow	needle		regulator pressure	flow
	used	length			used	length		
rough and fast detection	no		0.5 / 1 bar	> 1000 ml/mn	no		0.5 / 1 bar	> 500 ml/mn
highly specialized detection	yes	80 mm	0.5 bar	60 ml/min	yes	175 mm	0.5 bar	60 ml/min

Helium spray gun user manual

Use precaution It is possible to reduce the flow: put the needle as show on the picture and cut if necessary.



Before testing, always check helium goes out of the end.

Spare parts

Description	Reference
Long end	J 017
Short end	J 016
Needle	J 001

Reference part number  F 1000

Service

Pfeiffer Vacuum offers first-class customer service!

- On-Site maintenance for many products)
- Overhaul / repair in the nearby Service Location
- Fast replacement with refurbished exchange products in mint condition
- Advice on the most cost-efficient and quickest solution

Detailed information, addresses and forms at: www.pfeiffer-vacuum.com (Service).

Overhaul and repair in the Pfeiffer Vacuum Service Center

The following general recommendations will ensure a fast, smooth servicing process:

- ➔ Fill out the «Service Request/Product return» form and send it to your local Pfeiffer Vacuum Service contact.
- ➔ Include the confirmation on the service request from Pfeiffer Vacuum with your shipment.
- ➔ Fill out the declaration of contamination and include it in the shipment (mandatory!). The Declaration of contamination is valid for any product/device including a part exposed to vacuum.
- ➔ Dismantle all accessories and keep them.
- ➔ Close all the ports flange openings by using the original protective covers or metallic airtight blank flanges for contaminated devices.
- ➔ If possible, send pump or unit in its original packaging.

Sending of contaminated pumps or devices

No devices will be accepted if they are contaminated with micro-biological, explosive or radioactive substances. "Hazardous substances" are substances and compounds in accordance with the hazardous goods regulations (current version).

- ➔ Neutralize the pump by flushing it with nitrogen or dry air.
- ➔ Close all openings airtight.
- ➔ Seal the pump or device in suitable protective film.
- ➔ Return the pump/device only in a suitable and sturdy transport container and send it in while following applicable transport conditions.

Pump or device returned without declaration of contamination form fully completed and/or non-secured in a suitable packaging, will be decontaminated and/or returned at the shipper's expense.

Exchange or repaired devices

The factory operating parameters are always preset with exchange or repaired devices. If you use specific parameters for your application, you have to set these again.

Service orders

All service orders are carried out exclusively according to our general terms and conditions for the repair and maintenance, available in our website.

Tools

ASM View supervisory Software **2/7**

Presentation

ASM Downloader software **3/7**

Presentation
Detectors concerned

ADX Dialog (Detection) software **6/7**

Presentation
Interface (main functions)
Use

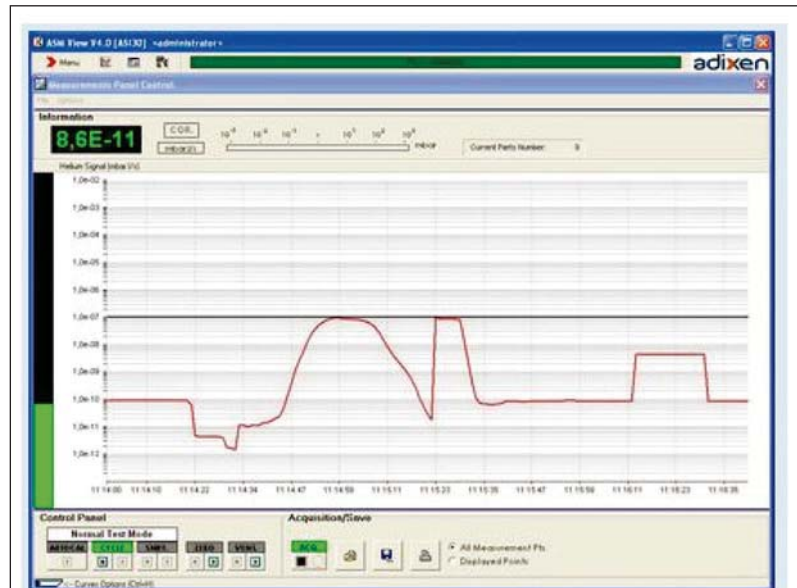
Software are free. To load the latest software version, go on our website www.pfeiffer-vacuum.com

[Info center](#) → [Download Center](#) → [Category "Software"](#)

Tools

ASM View supervisory
software

Presentation



Software for data acquisition, storage and graphical display to be used with all Helium Leak Detectors

The **ASM View** software allows you to control, display and save data through a PC from any Adixen Helium Leak detector. Whatever your application ASM View provides a wide range of possibilities, several windows are available. The Measurement window is designed to collect the leak detector information in real time: helium signal, inlet pressure and detector status.

The Part Test window is designed to display on the graphic the information of the leak detector when the cycle is stopped (transition Cycle -> Stand by). The Detector Parameters window allows the adjustments of the leak detector parameters. You have the possibility of modifying them, then applying them to the leak detector with the corresponding button. You can also save these parameters in a file and then download the saved parameters in the leak detector. You can also access all the software events, the detector faults and its status changes thanks to the Archive window.

Requirements:

PC : 500 MHz, 128 Mb RAM, 50 Mb hard drive, Graphic card 1024x768x256 colors
Operating system: Windows 2000, Windows XP, Windows Vista

Download tool :


ASM View v4.0.5

Download

Tools

ASM Downloader software

Presentation



Software to download inboard recorded data from Adixen Helium Leak Detectors equipped with the color graph display.

Your Adixen Helium leak Detector is equipped with a touch screen graphic color display. With the ASM Downloader software, you can visualize and record the evolution of the helium signal, the inlet pressure and set points via color graphs. Further, you can enjoy the touch panel for quicker parameter settings, check the pressure inside the mass spectrometer or follow the status of the leak detector main components by enjoying the dynamic vacuum diagram.

Simply connect your computer to the leak detector using the specific interface (RJ9/9pin Sub-D) cable delivered with the detector and thanks to ASM Downloader, download up to 900 hours of memorized leak detection data.

Requirements:

- Helium leak detector equipped with a Graph interface
- PC : 500 MHz, 128 Mb RAM, 50 Mb hard drive, Graphic card 800x600x256 colors. Operating system: Windows 2000, Windows XP, Windows Vista

Download tool :

ASM Downloader v2.0.0 [Download](#)

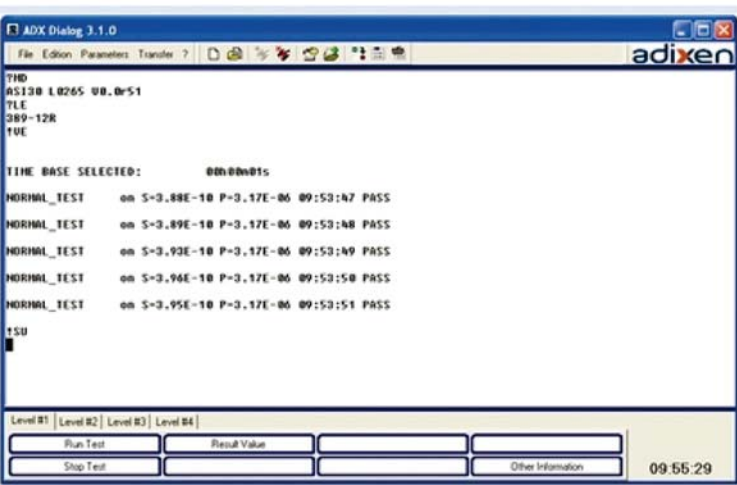
Detectors concerned

- ASM Graph - ASM Graph D - ASM Graph D+
- ASM 182 T and ASM 182 TD+ equipped with "Tactil interface operator" option.

Tools

ADX Dialog software
(Detection)

Presentation



Communication with products having a serial communication interface

ADX Dialog is an easy to use terminal program for your Windows® PC to communicate with all products having an RS232 serial interface: the ideal little tool to test a new vacuum pressure measurement installation or a leak test bench. It runs without installation.

The ADX Dialog software comes along with a set of configuration files for use with Adixen helium leak detectors (and Adixen Series 2000 gauge controllers). These files can be modified to your needs and stored on your PC.

Just open the appropriate file, connect the RS232 interface of your ACS2000 or ACM2000 controllers to your computer by a standard 9pin Sub-D cable (transmitting and receiving wires crossed) and send your commands and requests by pushing the pre-programmed function keys. If your computer has no RS232 interface please use a RS232-to-USB adapter, available from your local computer shop (e.g. ATEN UC-232A). Commands can also be keyed in as text. The complete communication can be stored for further use.

ADX Dialog works also with RS485 gauges (appropriate RS232/RS485 or USB/RS485 adapter necessary).

Requirements:
 PC 500 MHz, 128 MB RAM, 50 MB hard drive, Graphic card
 1024x768x256 colors
 Operating system: Windows 2000, Windows XP, Windows Vista

Download tool :

ADX Dialog v3.1.0 [Download](#)

Tools

Interface (main functions)

Port closing
Port opening
Terminal parameters setting
Function keys setting
Communication parameters setting

4 levels available
(1 level = 1 function keys package)

Function keys set in the selected level

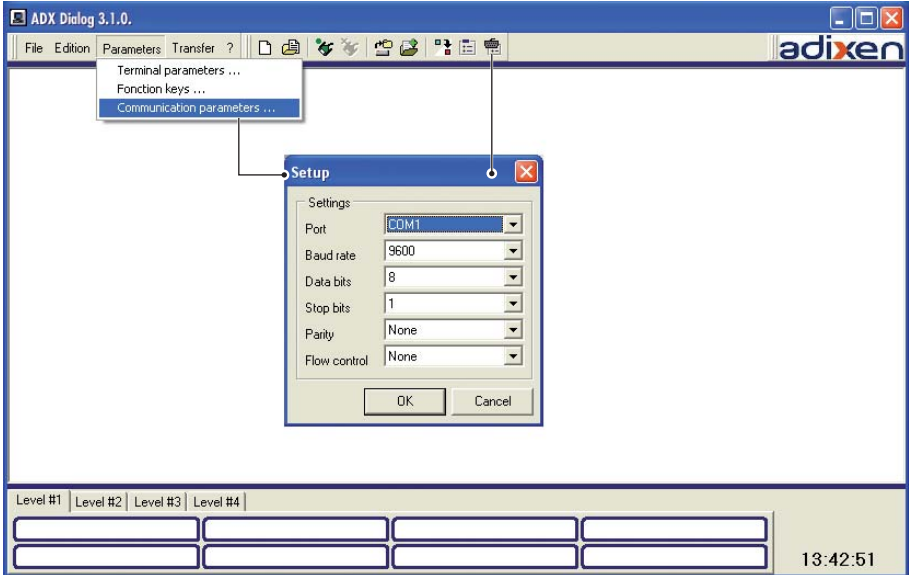
Tools

ADX Dialog software (Detection) (ctd)

Use 1 - Set the communication parameters

ASM Dialogue communication parameters set are the same as the leak detector communication parameters defined in the RS 232 operating manual (chapter C).

If you change leak detector values ("Baud rate" for example), you must change also the ASM Dialogue values

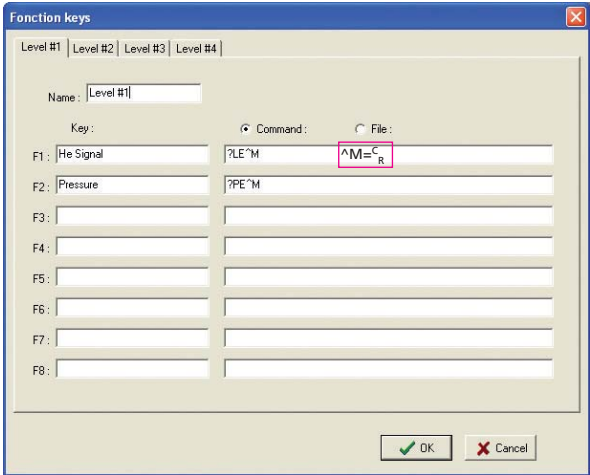


2 - Set the Terminal parameters

Optional.

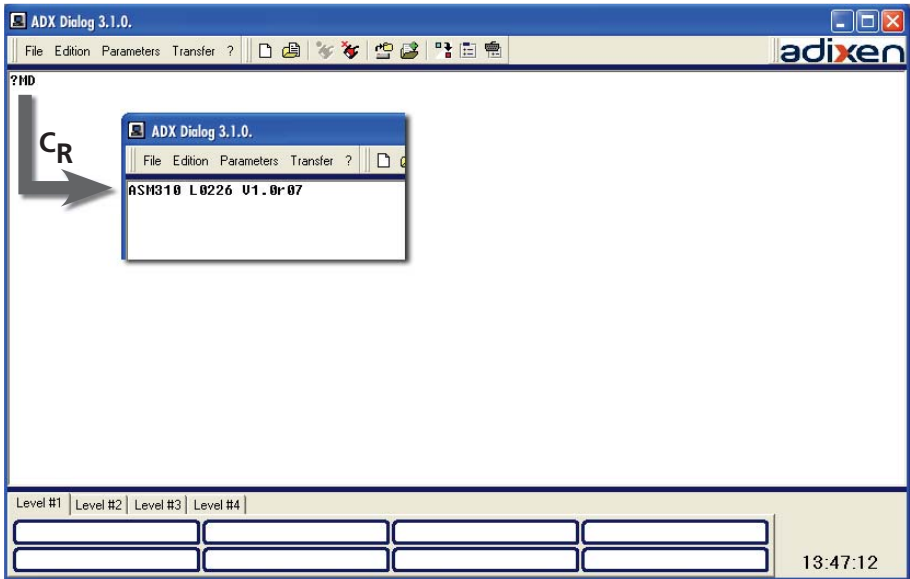
Tools

Use (ctd) 3 - Define Function keys
Optional.



4 - Open the port

5 - Write the command and press a carriage return for the answer (or select a function key).



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Ed 05 - Date 2016/04 - P/N:109714EN



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