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AC134HD AH USER MANUAL

NOMAD HD Product line

R134a Refrigerant Charging and Recovery Unit

Reference : 480A22

Read this user and maintenance manual carefully and thoroughly before use.

Keep this manual in a safe and convenient place for later consultation

Date	Revision	Auteur	Description
2019-12-10	1	EB	Creation of document
2020-01-03	2	EB	Transfer bottle diagram added p.28 Correction of serial number messages p.21 to 24 Removal of customer ticket menu p.19
2020-02-24	3	EB	Added language: English
2020-03-10	4	EB	English chapter numbering updated Added item code on EU declaration and cover page.
2020-07-30	5	EB	Updated central photo with AH faceplate
2022-07-13	6	TB	Update of translations. Addition of parameter 1108 (Density of recovered oil)
2025-04-02	7	SA	PED certification

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CE MARKING

Please affix the supplied identification label here.

CONTENTS

Forward

We thank you for choosing the **AC134HD AH** Service Unit. From its conception, our main aim has been to fulfil all your needs of precision, reliability and endurance, while ensuring maximum security for the operator.

The **AC134HD AH** Service Unit is designed for air-conditioning circuit interventions on vehicles using the R134a refrigerant, such as:

- recovery and recycling of R134a refrigerant,
- circuit vacuum,
- R134a refrigerant charge,

It is equipped with electrical scales to weigh the refrigerant fluid and the recovered oil. Operation stages are managed automatically with a micro-processor. Service Unit **AC134HD AH** can be set automatically or manually to suit operator needs.

The use of the Service unit AC134HD AH is reserved for qualified operators with the necessary professional competence, who understand the fundamental principles of air conditioning systems, refrigerants and the risks involved with pressurised units.

Warranty

Any modifications to the **SNDC AC134HD AH** will invalidate the warranty.

Warranty Terms and Conditions :

The **AC134HD AH** is covered by a warranty for **12 months**, starting from the date of delivery.
36-month warranty: When ordering the **AC134HD AH**, there is the option to sign up for a **3-year Ecoclim** maintenance contract, which will extend the warranty for an additional **24 months**.

The warranty covers component parts and their replacement by **SNDC**-authorised repair technicians.

The warranty does not cover any of the following :

- The costs of periodic maintenance recommended by **SNDC Ecoclim**.
- Replacement of consumables, such as quick fittings, connection hoses charging hoses, refrigerant oil, filters, vacuum pump oil, etc.
- Repair or replacement of components due to normal wear and tear.
- Damage resulting from:
  - Use or handling not in accordance with the instructions provided by **SNDC Ecoclim.**
  - A lack of maintenance in accordance with the instructions provided by **SNDC Ecoclim**.
  - Exceeding the recommended maintenance intervals:
    - **100 hours** of vacuum use (Alert message after 95 hours),
    - **300 kg** of recovered refrigerant (Alert message after 285 kg).
  - Use with accessories or products that do not conform with the specifications provided by **SNDC Ecoclim**.
  - Any modification or repairs carried out by technicians not duly authorised by **SNDC Ecoclim**.
  - Negligence, accidents, fire or the use of liquids, chemicals or other substances not recommended by **SNDC Ecoclim**.
  - Use of a refrigerant fluid other than that for which the unit is intended (**R134A**).
  - Flooding, vibrations, prolonged exposure to excessive heat and inadequate ventilation.
  - Electrical supply faults, power surges, undervoltage, radiation, electrostatic discharges or lightning strikes.

Symbols used

Electrical hazard: Presence of high-voltage parts with a risk of electric shock.
Ensure that you have the necessary electrical qualifications in accordance with current legislation.

R134A Type of refrigerant that the unit is designed for.

Hazard: Pay close attention to conditions or problems that could pose a risk to people's personal safety.

Warning: This symbol identifies conditions or problems that do not pose a risk to people's personal safety.

Read the user manual carefully before using the device.

Wear protective gloves.

Wear protective goggles

Wear appropriate protective clothing.

Glossary

External Bottle	Bottle containing new **R134a** refrigerant used to refill the internal tank of the unit
LP	Low pression
Refrigerant Charging	Introduction of a determined quantity of refrigerant in the system
ECS Circuit	Air conditioning system or vehicle air conditioning
Leak Testing	Test to maintain the vacuum level after depressurising a system
Coupler	Quick connection terminal on the ECS circuit
Cycle	Automatic sequence of the following operations: Recovery / Vacuum / Refrigerant charge
Charging Hose	Hose connecting the unit to the system
HP	High Pressure
Non-condensables	Gases that will not condense into a liquid state within the operating temperatures of the system, such as air
Operator	Person trained and skilled in the handling of refrigerant fluids and use of the charging and recovery unit
Phase	Execution of an operation
Recovery	Removal of refrigerant from an ECS and its storage in the unit's internal tank
Recycling	Reduction of contaminants in the refrigerant through the separation of oil, extraction of non-condensable gases and use of devices such as filter dryers to reduce humidity, acidity and suspended particles
Refrigerant	Refrigerant fluid
Tank	Bottle situated inside the unit and used to store refrigerant
Vacuum	Depressurisation of an ECS with the aid of a vacuum pump in order to remove humidity and non-condensable gases

Safety Guidelines

1. General Rules

📖 We advise you to carefully read this manual in its entirety and familiarise yourself with the operation of the **AC134HD AH** before use. It is essential for both the operator's safety and the integrity of the equipment to respect and follow the procedures and instructions contained in this document.

- For any maintenance, repairs or replacement of parts, please contact **SNDC Ecoclim**. Any modifications or repairs attempted by non-expert personnel could render the equipment unsafe to use and pose a serious risk to the operator.
- Never lean on the **AC134HD AH**; it is not a work surface or a mode of transport.
- When connecting the unit to the system, position the hoses in such a way that they do not become an obstacle or risk causing damage or harm.
- Ensure that you follow all current regulations regarding hygiene and safety at work. Do not leave the **AC134HD AH** Unit unattended, even when it is working in automatic mode.

2. Working Environment

- Use of the **AC134HD AH** is strictly reserved for those technicians who have been appropriately trained and possess the necessary qualifications in accordance with current legislation. Under no circumstances should the unit be used by children.
- Ensure that the **AC134HD AH** is kept well clear of any flame or live heat source. Refrigerant vapour decomposes at high temperatures, releasing toxic substances that are hazardous for both the operator and the environment. The **AC134HD AH** must not be used in any location where there is a risk of fire or explosion.
- Do not smoke in the area where work is carried out. Always ensure that the working environment is sufficiently ventilated. Ensure that you do not inhale refrigerant vapour fumes.
- We recommend using the **AC134HD AH** in a well-lit environment.
- The **AC134HD AH** should always be used and stored in a dry place protected from the weather. You should not attempt to use or store the **AC134HD AH** in bad weather.
- If the **AC134HD AH** control unit is installed in a recognised seismic zone, the installer must take the necessary steps to eliminate this risk. The device is not designed to withstand this risk.
- If climatic events (snow, wind, bad weather, frost, sea spray, etc.) are foreseeable, the installer must take all necessary steps to protect the control unit.

3. When in Use

R134A **The AC134HD AH is designed to be used only with R134A refrigerant. It should not be used with a different type of refrigerant.**

When working with the AC134HD AH, ensure that you wear appropriate protective accessories, such as goggles with side protection, heatproof gloves and protective clothing.

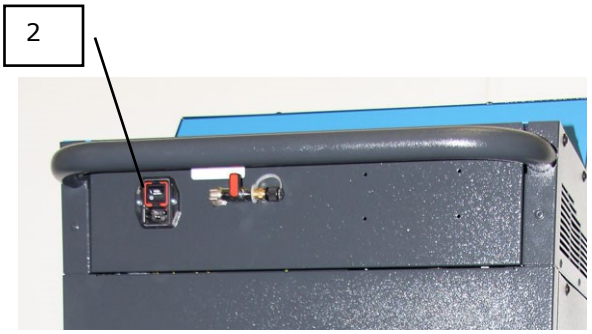
Be particularly vigilant of potential spills or sprays of refrigerant. Given its very low boiling temperature:

- Contact with the eyes can cause serious damage to eyesight.
- Contact with the skin can lead to serious burns.

Should refrigerant spray in the direction of the eyes or skin, rinse the affected area thoroughly and contact a doctor immediately.

The images below show the main areas of risk when using the **AC134HD AH** Unit :

1. Risk of a release of refrigerant.
2. Presence of high-voltage parts.



- Always use the **AC134HD AH** with the in-operation protections. Never make any modifications whatsoever to the **AC134HD AH**.
- The **AC134HD AH** is designed to be used by a single operator. It is advised that other people keep their distance when the unit is in use.
- Always use the couplers attached to the ends of the **HP** and **LP** hoses to connect the unit to the system. Never use these fittings for any other purpose.
- Never remove the refrigerant tank. Never fill the tank with liquid refrigerant over **80%** of its maximum capacity.
- When in operation, visually monitor the level in the recovered oil bottle to prevent it from overflowing.
- Never disconnect the **HP** or **LP** hoses with excessive speed or force. Do not disconnect the hoses when the unit is in operation. Always disconnect the hoses with the greatest of care as they are likely to still contain pressurised refrigerant.
- Never leave the **AC134HD AH** stored inside an unventilated vehicle. Certain temperatures and high-pressure conditions will cause the safety valve to open and refrigerant to be released.

4. Power Supply

- Ensure that the power source used includes all the required electrical safety measures, such as connection to ground, circuit breaker, etc.
- If using an electrical extension cable, always ensure that the cable has been fully unwound and that it is not positioned in such a way that may lead to a risk of damage or harm. Always avoid lying cables across passageways or in humid areas.
- Never open the chassis of the unit whilst in operation or connected to a power source.
- Always check the condition of the power cable before connecting the unit to a power source.
- Should a power cut occur whilst the unit is in operation, the operation in progress will not be saved. You will need to start again from the beginning.

Description

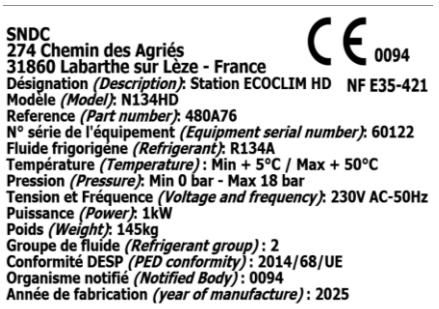
1. Technical Specifications

DESCRIPTION	VALUE
Net Weight	145 kg
Dimensions (H x L x D)	1224 x 563 x 810 mm
Vacuum pump flow rate	180 l/min
Vacuum level	0.01 mbar
Recovery rate	600 g/min
Internal tank capacity	30 kg
Voltage	230 V
Frequency	50 Hz
Max electric power consumption	1000 W
Max Intensity consumption	4 A
Low pressure connection diameter	13 mm
High pressure connection diameter	16 mm
Min operating temperature	5°C
Max operating temperature	50°C
Storage temperature	-30°C à +60°C
Max internal pressure	18 bars

The noise level of the unit has been measured to be below **70dB(A)**. Therefore, there is no requirement for the operator to use hearing protection when the unit is in continuous use (see **ISO 3746**). However, it remains the user's responsibility to assess the operator's exposure to noise in conformance with current hygiene and safety regulations.

The identification plate on the back of the unit contains the following information:

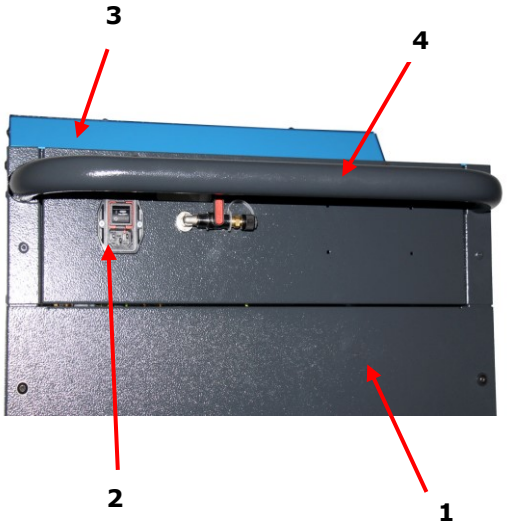
- The manufacturer's name and address
- The name, model and reference of the unit, its year of manufacture and serial number
- The refrigerant for which it is designed, and the refrigerant group,
- The weight of the unit
- The supply voltage and frequency
- The rated power
- The operating temperature range.
- The operating pressure range.
- PED compliance information.


SNDC
274 Chemin des Agriés
31860 Labarthe sur Lèze - France
CE 0094
Désignation *(Description)*: Station ECOCLIM HD NF E35-421
Modèle *(Model)*: N134HD
Reference *(Part number)*: 480A76
N° série de l'équipement *(Equipment serial number)*: 60122
Fluide frigorigène *(Refrigerant)*: R134A
Température *(Temperature)*: Min + 5°C / Max + 50°C
Pression *(Pressure)*: Min 0 bar - Max 18 bar
Tension et Fréquence *(Voltage and frequency)*: 230V AC-50Hz
Puissance *(Power)*: 1kW
Poids *(Weight)*: 145kg
Groupe de fluide *(Refrigerant group)*: 2
Conformité DESP *(PED conformity)*: 2014/68/UE
Organisme notifié *(Notified Body)*: 0094
Année de fabrication *(year of manufacture)*: 2025

The unit **AC134HD AH** is equipped with the following principal components:

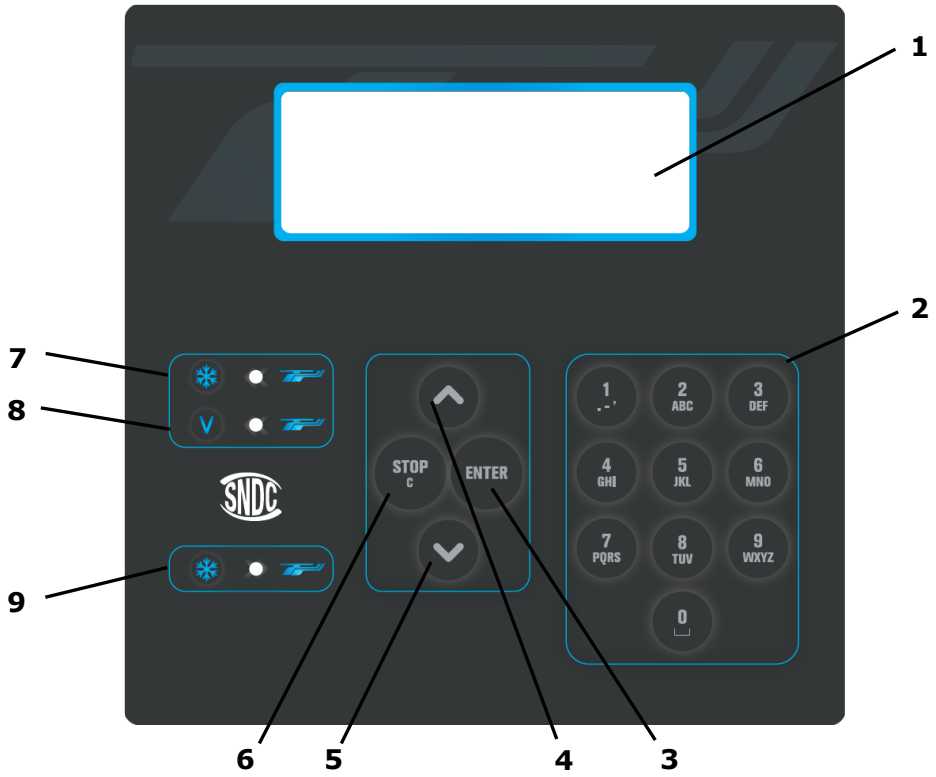
- Digital control panel: It controls all processes via a microprocessor.
- Manometers Ø 80 mm
- High pressure and Low pressure hoses: standard length 5m, equipped with quick connection couplers R134a.
- Internal refrigerant tank: Max capacity 35 kg, it stores recovered refrigerant before it is reused. It has a heat resistor controlled by the electronic device, a safety valve and a purge valve for non-condensable.
- Electric scales for refrigerant: They can weigh up to a maximum of 35 kg of refrigerant with a resolution of 1g. Precision ± 0,5%
- Electric scales of oil: Resolution 1g; Precision ± 1g.
- Vacuum pump: To eliminate air and humidity from the ECS circuit.
- Compressor: Recovers refrigerant from ECS circuit to store it in the unit's internal tank.
- Filter Drier: Filters out the dirt and moisture from the refrigerant.
- Oil separator: Assures that the oil returns to the unit's compressor.
- Distiller: Separates recovered oil from the recovered refrigerant.
- Graduated plastic container of 500 ml for recovered oil.

2. Vue d'ensemble



N°	IDENTIFICATION
1	Back panel
2	Plug socket and on/off switch
3	Storage bin
4	Back handle
5	USB Port
6	Control Panel
7	Front handle
8	Filter
9	HP Hose
10	LP Hose
11	Front tray
12	Front wheel with brake
13	Lifting bar
14	Recovered oil bottle
15	Inflatable rear wheel
16	LP Pressure Gauge
17	HP Pressure Gauge
18	Thermal printer

3. Control Panel



N°	IDENTIFICATION	FONCTION
1	Screen	Menus and functions display
2	Keypad	Editing quantities / values
3	**ENTER** Key	Validation of menu, function or quantities
4	▲ Key	Scroll up
5	▼ Key	Scroll down
6	**STOP / C** Key	Stop a function, correct and return during programming. **Press for 5 seconds interrupts and reboot the unit.**
7	LED **RF◄**	Signals recovery stage
8	LED **VAC◄**	Signals vacuum stage
9	LED **RF►**	Signals refrigerant charge stage

Flashing LED signals that the relevant stage is in operation.
Continually Lit LED signals that the relevant stage is programmed.
A LED that is unlit signals a stage that is not programmed or already performed.

Installation and Prior Checks

1. Component Checks

Once the unit has been removed from its packaging, check that the **AC134HD AH** and its accessories are intact and free from damage. If this is not the case, contact **SNDC** immediately.

Make sure that the following accessories are present :

- User Manual
- Laminated factsheet
- Electrical power cable
- Blue **LP** charging hose and **R134A** coupler
- Red **HP** charging hose and **R134A** coupler
- **HP** adapter for connection to an external refrigerant tank
- PED compliance documentation.

Remove the unit from its packaging platform by lifting it using the rear handle and the front lifting bar.
Do not attempt to lift the unit on your own!

⚠ **Handle the unit with care and avoid knocks.**
Never lift the unit using the front handles!

2. Transportation and Handling

When transporting the unit in a vehicle, ensure that the vehicle is suitable for the transportation of such a unit.

⚠ Whilst the heaviest components are in the lower section of the unit to lower its centre of gravity, there is still a possibility that the unit could tip over.

The unit is fitted with four wheels.
To move the unit, simply push it by hand.

⚠ **Always keep the unit in an upright position.**

Transportation in a vehicule :

⚠ **Weight : 145 kg!**

When loading or unloading the unit, take all necessary steps to avoid any risks and hazards and use a suitable ramp.

⚠ **Do not attempt to lift the unit by yourself!**
The unit should always be moved by a minimum of two people and a ramp should always be used

When transporting the unit in a vehicle:

- Lock the brakes on the front wheels,
- Secure the unit using straps.

The image shows an example of how the unit can be stowed in a vehicle. Configurations may vary depending on the vehicle.

3. Starting the AC134HD AH

Once you have checked that the unit is in good condition, connect the power cable to the socket on the rear of the unit **(1).**

Ensure that the power supply meets the requirements stated on the identification plate.

Start the unit by pressing the start/stop switch.

The display will show the start-up screen:

```
Refrigerant  -xxxx g

Tank         -0.3 bar
```

The screen will show:

- Quantity of refrigerant available
- Internal tank pressure

⚠ **When the tank is empty, the AC134HD AH will display a negative quantity.** The **AC134HD AH** is designed to be used with a reserve of 2 to 3 kg of refrigerant. Therefore, once the tank has been filled to this level, the value shown (which is the usable weight) will become positive

4. Première utilisation Using the AC134HD AH for the First Time

When the unit is delivered, the tank will be empty. To fill the tank, you will need to perform the «**Transfer of Refrigerant**» process as described in Section ***Transfer of Refrigerant.***

Note : Upon delivery, the internal components, such as the compressor and the vacuum pump, will already contain the necessary lubrification oil. Only the vacuum pump will require regular maintenance.

Usage Instructions

1. Safety Reminders

- Always ensure that all the necessary operating conditions are met before using the unit.
- Always use the unit in a well-ventilated area. If you are using the unit inside a vehicle, ensure that there is good ventilation and air circulation.
- Always check that the unit and the hoses are in good condition before use.
- For complete safety, always wear the necessary protective equipment when using the unit.
- Always keep an appropriate fire extinguisher near the places where the unit is used and stored.
- Ensure that the unit is connected to a grounded power supply that conforms with current electrical supply regulations.
- Ensure that the unit is sitting on a flat, stable surface to prevent it from tipping over.

2. Connecting unit to ECS circuit

(1) Connect:

- The unit's **HP** hose to ECS HP pressure port
- The unit's **LP** hose to ECS LP pressure port

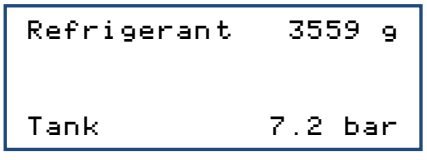
(2) Open the couplers, screwing the knobs.

HP and **LP** manometers indicate pressure in ECS circuit.

Note: Some A/C circuits only have one pressure port. The **AC134HD AH** unit allows the operator to take this into account.

3. Control Panel Overview

Upon starting the unit, the display will light up and the unit will perform an internal cleaning every 3 start-ups (see ***Internal cleaning*** section) and show the start-up screen:

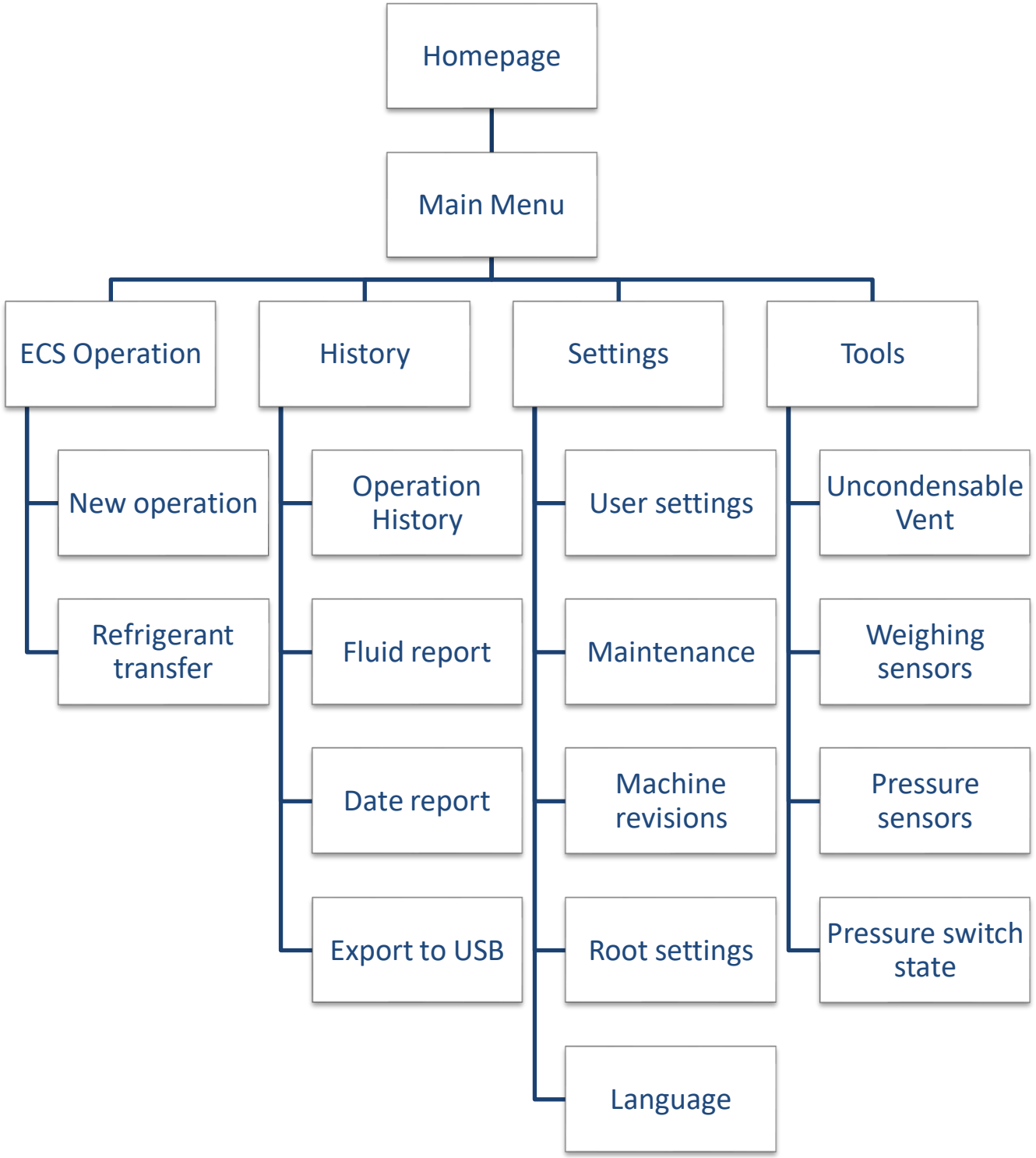


The screen displays:

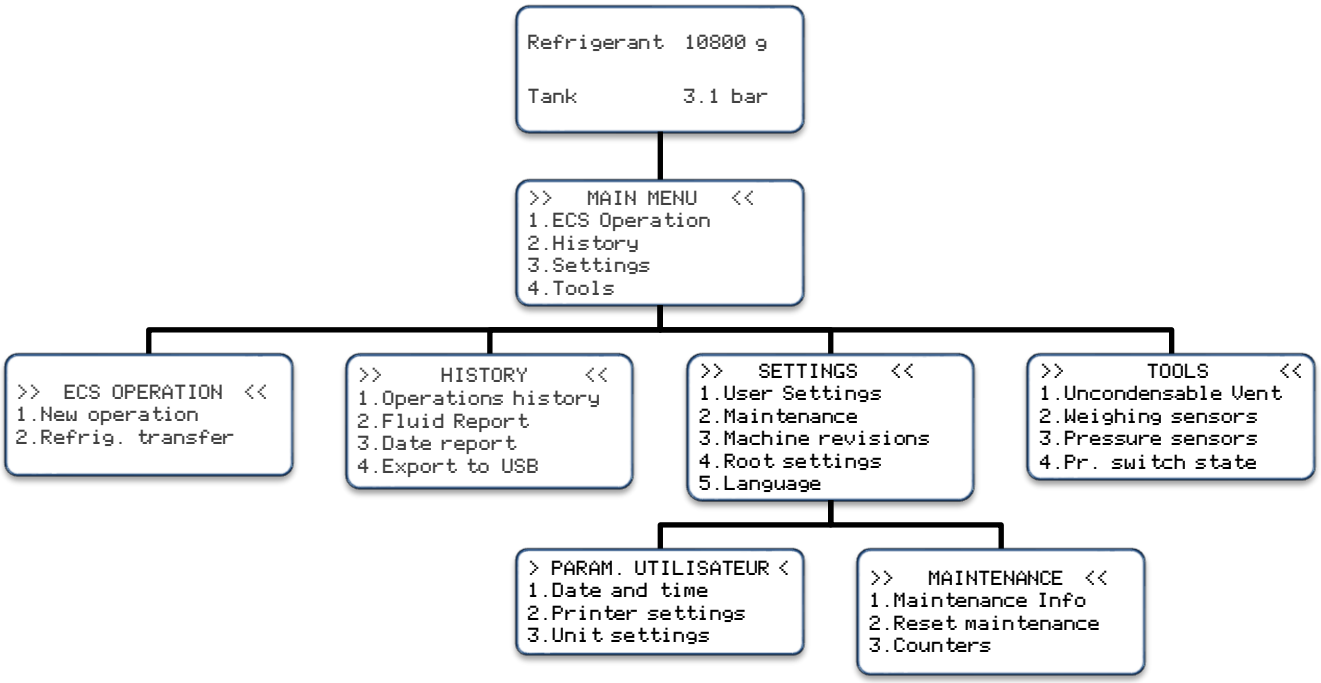
- Quantity of refrigerant available,
- Internal tank pressure.

➢ Access to menus is by pressing **ENTER**.
➢ Warning or information are displayed on the screen before main menu.

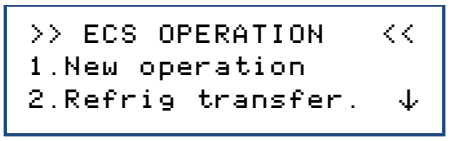
General Introduction to the Menus :



Detailed Diagram of the Menus:



⚠ The presence of a down arrow (↓) in the bottom right of the screen indicates that other menus are available. Press the ▼ button on the keypad to show the rest of the list.



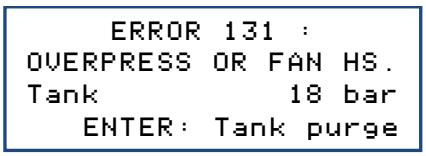
⚠ To select a function, press the corresponding button on the keypad.
Example: Press **1** to access the **« New operation »** sub-menu.

4. Messages et Fault Codes

Refrigerant level too low ENTER: Continue STOP: Abort	There is not enough refrigerant in the tank to perform the chosen operation. Press **STOP** to exit the operation. See Section ***Transfer of refrigerant*** explaining how to transfer refrigerant to refill the tank
Refrigerant level too high ENTER: Continue STOP: Abort	This message indicates that the refrigerant tank will soon be full. The unit will not be able to recover a large amount of refrigerant as a result.
Recovering High tank level ENTER: Continue STOP: Abort	The message indicates that the refrigerant tank will soon be full.
Waste oil level too high ENTER: Continue STOP: Abort	This message indicates that the recovered oil bottle is almost full. To perform recovery or cleaning operations, you will first need to empty the bottle, then press **ENTER** to resume.
RECOVERY TIME OUT ENTER : >>	The timeout for recovery has been reached. Press **ENTER** to stop the operation in progress. Perform a new recovery operation. See section ***Programming a Cycle Manually.***
CHARGE TIME OUT ENTER : >>	The timeout for recovery has been reached. Press **ENTER** to stop the operation in progress. Perform a new recovery operation. See section ***Programming a Cycle Manually***
Waste oil bottle incorrectly inserted Check the bottle ENTER : >>	The waste oil bottle is incorrectly connected or blocked. Check the bottle connection. Press **ENTER** to continue with the current operation.
Please check Maintenance menu	This message will be shown when one (or many) maintenance operations are required: • Filter dryer replacement • Vacuum pump oil replacement • Annual service Press **ENTER** to continue to the start-up screen. Refer to Chapter *Erreur ! Source du renvoi introuvable.*.

Fault Codes :

CODE	COMPOSANT	DÉTAIL	CAUSE POSSIBLE
131	Pressostat **HP**	Overpressure: **P>18 bar** Compressor discharge	Tank closed. Refrigerant level too high. Excess non-condensables in the tank. Pressure switch reset activated.



Check that the fan is working and is properly connected to the control board.
If the fan is not the cause of the problem, press ENTER to vent until the tank pressure drops to the pressure in the table below :

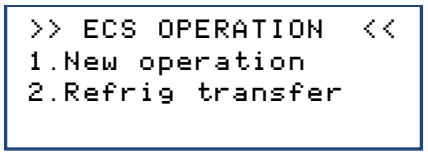
TEMP (°C)	THEORETICAL CYLINDER PRESSURE (BAR) R134A
10	3,2
15	3,9
20	4,7
25	5,8
30	6,7
35	8
40	9,2

This Pressure/Temperature relationship appears on the unit's HP and BP pressure gauges.
The message disappears and the screen returns to the main menu.

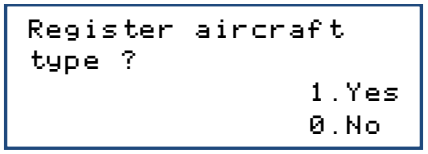
Programming Operations

1. Programming operation

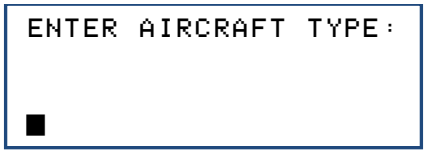
In manual mode, the operator chooses the operations carried out by the unit. He can, for example, programme a recovery before working on a circuit and replace a component.



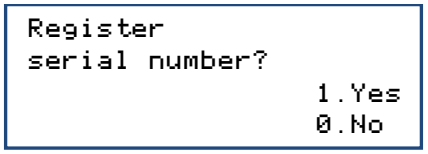
From the **>> ECS OPERATION <<** menu, select **1**.



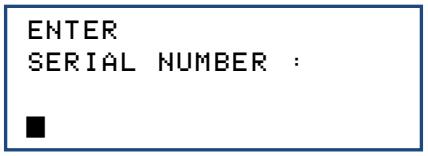
To input an aircraft type during the procedure, select **1.**
Otherwise, **0.**



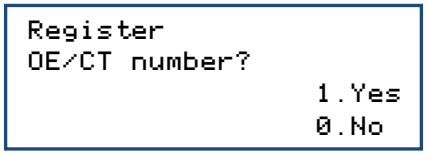
Input aircraft type using keyboard if you have chosen to do so.
The key **(C)** allows you to correct. (20 characters max.)



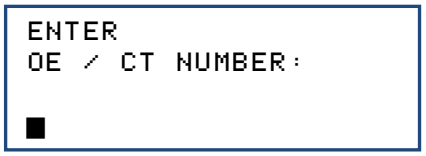
To input a serial number during the procedure, select **1.**
Otherwise, **0.**



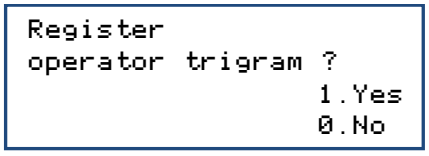
If you have chosen to do so, you can now enter the group registration number.
To enter letters, hold the corresponding number button until the desired letter appears.
Example: **6-M-N-O**
Press the **(C)** button to correct any mistakes.



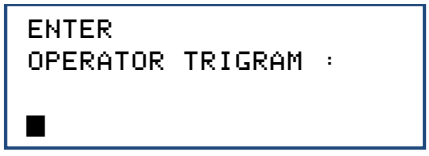
To input OE/CT number during the procedure, select **1.**
Otherwise, **0.**



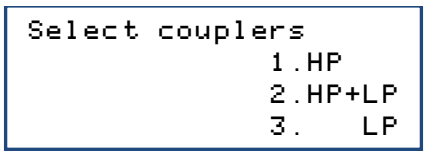
Input OE/CT number using keyboard if you have chosen to do so.
The key **(C)** allows you to correct. (20 characters max.).



To input operator trigram during the procedure, select **1.**
Otherwise, **0.**



Input OE/CT number using keyboard if you have chosen to do so.
The key **(C)** allows you to correct.



Select couplers configuration (indicate which couplers are connected to ECS).

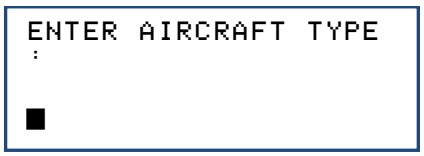
Recovering 1. Yes 0. No	To program a cycle with recovery, select **1**. To program a cycle without recovery, select **0**.
Recovering Pressure control 5 min	By default, the pressure control duration is 5 minutes. To modify, enter the value, and press **ENTER** to confirm. *NB: This screen appears only if recovery was previously selected.*
Vacuum 1. Yes 0. No	To program a vacuum, select **1**. If not, select **0**.
Vacuum duration 30 min	Enter the required duration of vacuum. *NB: This screen appears only if vacuum was previously selected.*
Tightness check 5 min	Enter the required leak test duration. *NB: This screen appears only if vacuum was previously selected.*
Refrigerant charge 1. Yes 0. No	To program a refrigerant charge, select **1**. If not, select **0**.
Charge qty 0 g	To modify the quantity, input the amount and press **ENTER** to confirm.
Start process ENTER : Yes STOP : No	Press **ENTER** to start the programmed cycle.

Operation Sequence: Refer to Section ***Cycle Operation Sequence***

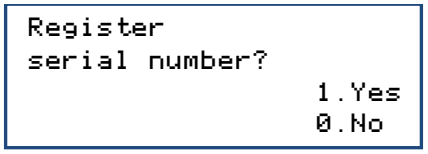
a. Refrigerant Recovery

With this function, the operator empties the ECS circuit before to repair/maintain it.

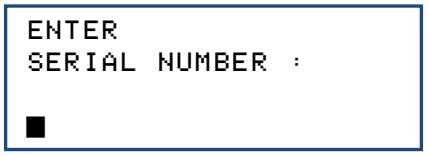
>> ECS OPERATION << 1.New operation 2.Refrig transfer	From the **>> ECS OPERATION <<** menu, select **1**.
Register aircraft type? 1.Yes 0.No	To input an aircraft type during the procedure, select **1.** Otherwise, **0.**



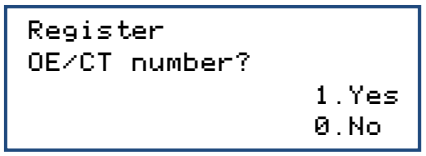
Input aircraft type using keyboard if you have chosen to do so.
The key **(C)** allows you to correct. (20 characters max.)



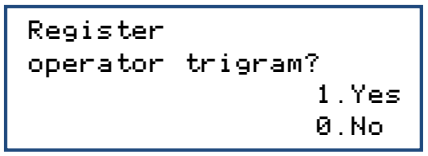
To input a serial number during the procedure, select **1.**
Otherwise, **0.**



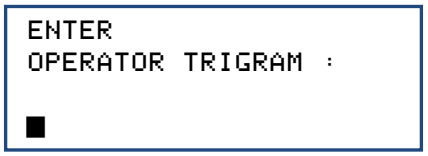
If you have chosen to do so, you can now enter the group registration number.
To enter letters, hold the corresponding number button until the desired letter appears.
Example: ***6-M-N-O***
Press the **(C)** button to correct any mistakes.



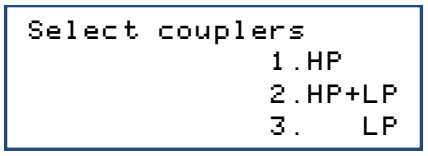
To input OE/CT number during the procedure, select **1.**
Otherwise, **0.**



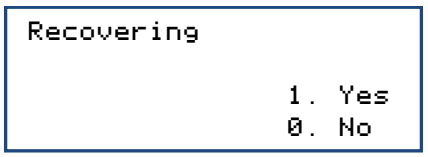
To input operator trigram during the procedure, select **1.**
Otherwise, **0.**



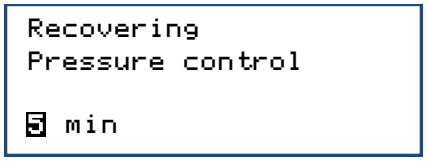
Input OE/CT number using keyboard if you have chosen to do so.
The key **(C)** allows you to correct.



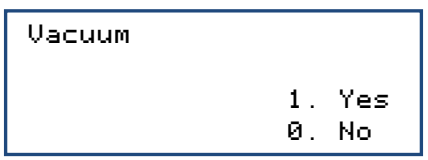
Select couplers configuration (indicate which couplers are connected to ECS).



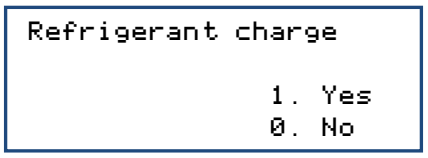
Select **1**.



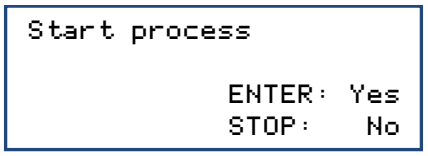
By default, the pressure control duration is 5 minutes.
To modify, enter the value, and press **ENTER** to confirm.



To end the task after recovery, select **0**.



Select **0**.



Confirm by pressing **ENTER** to start the cycle.

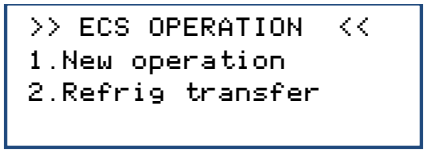
Operation Sequence: Refer to Section ***Cycle Operation Sequence***

b. Charge ECS after repair

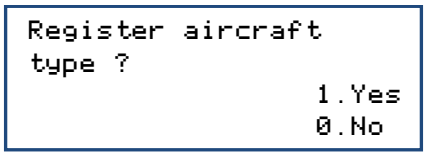
After a repair that required opening of the ECS, the operator can perform the following tasks:

- Circuit vacuum with tightness check,
- Refrigerant charge.

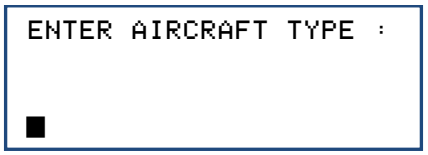
By starting the ECS, the operator can test its performance.



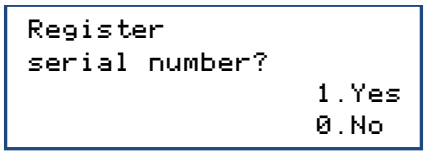
From the **>> ECS OPERATION <<** menu, select **1**.



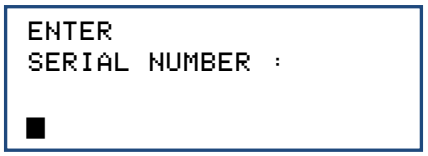
To input an aircraft type during the procedure, select **1.**
Otherwise, **0.**



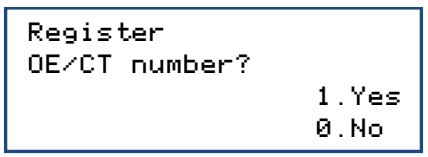
Input serial number using keyboard if you have chosen to do so.
The key **(C)** allows you to correct. (20 characters max.).



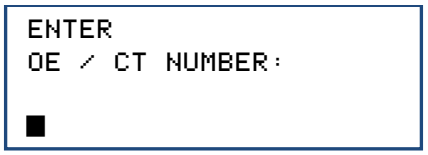
To input OE/CT number during the procedure, select **1.**
Otherwise, **0.**



If you have chosen to do so, you can now enter the group registration number.
To enter letters, hold the corresponding number button until the desired letter appears.
Example: ***6-M-N-O***
Press the **(C)** button to correct any mistakes.



To input OE/CT number during the procedure, select **1.**
Otherwise, **0.**



Input OE/CT number using keyboard if you have chosen to do so.
The key **(C)** allows you to correct. (20 characters max.)

Register operator trigram ? 1.Yes 0.No	To input operator trigram during the procedure, select **1.** Otherwise, **0.**
ENTER OPERATOR TRIGRAM : ■	Si la saisie du trigramme a été choisie, saisir le trigramme (6 caractères maximum). La touche **(C)** permet de corriger la saisie.
Select couplers 1.HP 2.HP+LP 3. LP	Select couplers configuration (indicate which couplers are connected to ECS).
Recovering 1. Yes 0. No	Select **0.**
Vacuum 1. Yes 0. No	To choose vacuum, select **1**.
Vacuum duration 90 min	By default, vacuum duration is 90 minutes. To modify, enter the value, and press **ENTER** to confirm.
Tightness check 5 min	By default, the leak test duration is 5 minutes. To modify, enter the value, and press **ENTER** to confirm.
Refrigerant charge 1. Yes 0. No	To program a refrigerant charge, select **1**.
Charge qty 0 g	To modify the quantity, input the required amount and press **ENTER** to confirm.
Start process ENTER: Yes STOP: No	Press **ENTER** to start the programmed cycle

<u>Operation Sequence</u>: Refer to Section ***Cycle Operation Sequence***

2. Cycle Operation Sequence

a. Recovery Phase

```
RECOVERING
Scale initialization
Stabilizing:    2.1
```

Before starting recovery, the unit initializes the scales and checks that the measurement is stable. If the unit is subject to movements, this stabilisation may take some time due to the sloshing of the liquid in the tank.

```
RECOVERING
Recovering ref...
 1.27 bar       255 g
Tank. 8.1 bar
```

Throughout the recovery, the screen displays:

- The ECS circuit pressure,
- The amount of recovered refrigerant,
- The tank pressure

```
RECOVERING
Pressure control
-0.05 bar       402 g
Tank. 8.1 bar     120
```

When the system pressure drops below **-0.3 bar**, the unit will analyse the pressures for the programmed time.

NB: During this stage of analysis, if the pressure rises beyond **0,2 bar**, the service unit restarts an automatic recovery.

```
RECOVERING
Internal recovering
-0.45 bar       412 g
```

The unit extracts the refrigerant from the internal separator.

```
RECOVERING
Draining oil      5 g
Ref. recov.:    418 g
                 30 s
```

The unit empties the recovered oil into the used oil container.

```
RECOVERING
Compressor oil loop
Oil recov.:       5 g
Ref. recov.:    418 g
```

The unit returns oil to the compressor and shows the quantity of recovered refrigerant and oil.

b. Vacuum Phase

```
VACUUM
Vacuum in progress
-1.00 bar
Tank  9.2 bar  13:37
```

Throughout the vacuum cycle, the screen displays:

- The ECS circuit pressure,
- The tank pressure,
- The remaining vacuum time.

```
VACUUM
Tightness check
-1.00 bar
Tank 10.0 bar   4:59
```

After vacuum, the unit performs a leak test for the programmed duration. The screen displays:

- The ECS circuit pressure,
- The tank pressure,
- The remaining test time.

```
TIRAGE AU VIDE
Leak detected
Operation stopped
Tank 10.1 bar   4:39
```

During the leak test, if the pressure exceeds **-0.95 bar**, the cycle will stop, and the unit will display a warning message.

c. Refrigerant Charging Phase

```
CHARGE: 600 g
Scale initialization
Stabilizing:   2.1
```

Before beginning the charging phase, the unit will initialise the scales and check that the measure is stable. If the unit is subject to movement, this stabilisation could take some time due to the movement of liquid in the tank.

```
CHARGE : 600 g


Tank. 8.2 bar   213
```

The screen will show the tank pressure, and the amount of refrigerant charged into the system over the course of the charging phase.

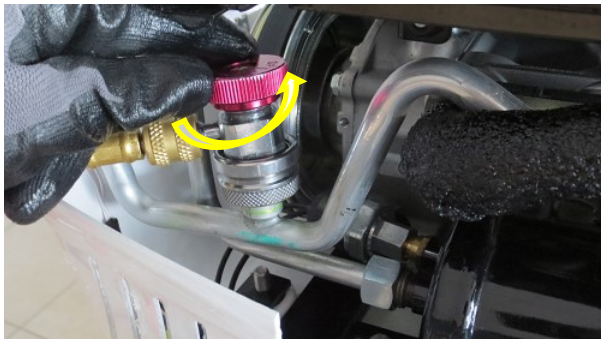
d. Hoses refrigerant recovery phase

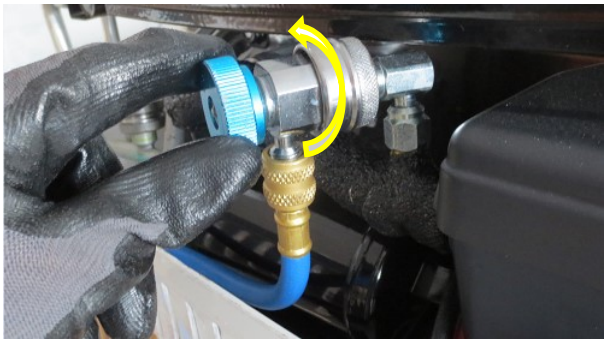
```
CHARGE: 600 g

Charge complete
            ENTER: >>
```

Once the system is charged with refrigerant, the unit will emit a sound and show an information message. Press **ENTER**.

```
CHARGE: 600 g
Hoses recovering
> Close couplers
            ENTER: >>
```

Unscrew the **HP** and **LP** coupler caps to disconnect the hoses from the ECS circuit. Then, **Press ENTER** to confirm.





```
CHARGE: 600 g
Hoses recovering

  2.78 bar
```

The unit will empty the refrigerant remaining in the two hoses.

```
       SAVING

      DO NOT
   SHUT DOWN...
```

The unit records the intervention data.
Wait a few seconds.

```
 Operation finished

            ENTER: >>
```

The process is complete. The **AC134HD AH** will print out a ticket summarising the operations carried out and the display will return to the **>> ECS OPERATION <<** menu.

The hoses are now empty, and the operator can safely disconnect them and replace the caps on the system charging ports.

3. Transfer of Refrigerant

This function fills the tank in the **AC134HD AH** using a bottle of virgin refrigerant.

From the start-up screen, press **ENTER** to access the main menu.

```
>>     MAIN MENU    <<
1.ECS Operation
2.History
3.Settings           ↓
```

Select **1**.

```
>> ECS OPERATION  <<
1.New operation
2.Refrig transfer
```

Select **2**.

```
REFRIGERANT TRANSFER
Qty to transfer
Maximum :
1200  g
```

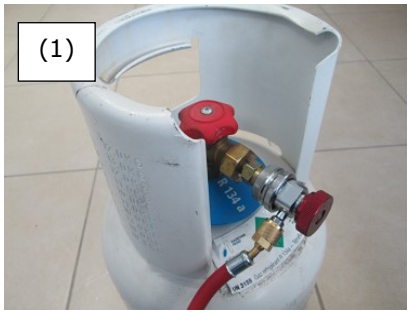
The screen shows the maximum amount that can be added to the tank. Enter the amount of refrigerant to transfer and press **ENTER**.

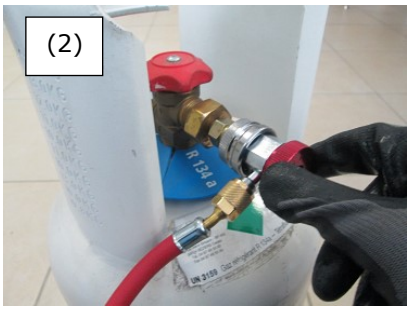
```
REFRIGERANT TRANSFER
Prep in progress
Hoses vacuum
Please wait...   009s
```

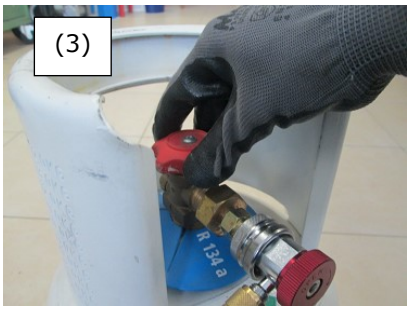
The **AC134HD AH** performs a vacuum drawing of the hoses to eliminate non-condensables.

```
REFRIGERANT TRANSFER
>Connect HP hose
>Open cylinder valve
1200  g          ENTER
```

(1) Connect the **HP** hose to the refrigerant gas cylinder.
(2) Screw the HP coupler cap.
(3) Open the refrigerant gas cylinder valve.
Press **ENTER** to confirm.

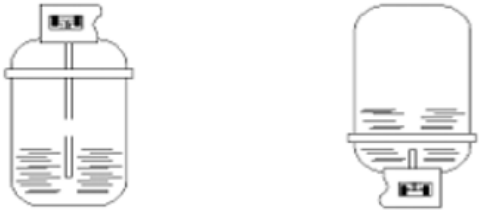






<u>Important:</u> If gas cylinder is not equipped with dip tube, turn cylinder upside down will make transfer easier.

Gas cylinder types



Cylinder with dip tube | Cylinder without dip tube

REFRIGERANT TRANSFER Scale initialization Stabilization 1200 g ENTER	The unit performs an initialisation stage and stabilises the scale before starting the transfer.
REFRIGERANT TRANSFER Please wait... 4.8 bar 648 g Tank 10.2 bar	The screen will show the amount transferred in real time.
REFRIGERANT TRANSFER Cylinder empty -0.28 bar 942 g Tank. 11.3 bar	If the bottle becomes empty before the desired amount of refrigerant has been transferred, the screen will display this message.
REFRIGERANT TRANSFER Recovering hose > Close cylinder Tank. 11.2 bar	This message will be shown when the programmed amount has been transferred or if the bottle is empty. Close the tap on the bottle and press **ENTER**.
REFRIGERANT TRANSFER Recovering hose In progress... 1.5 bar	The **AC134HD AH** will recover the refrigerant contained in the **HP** hose.
Transfer completed Quantity: 1263 g ENTER: >>	The screen will show the total amount charged in the tank. This includes the amount programmed by the operator, as well as the amount recovered from the **HP** hose and the circuit in the **AC134HD AH** itself.

Operation Complete

- The unit will print out a ticket.
- Unscrew the coupler cap and disconnect the **HP** hose from the refrigerant bottle.
- Press **ENTER** to return to the **>>ECS OPERATION<<** menu.

4. Internal cleaning

When the unit is started up, it performs an internal cleaning every 3 start-ups.

Internal cleaning Please wait...	Wait during the entire internal cleaning operation.
Internal cleaning Draining oil 10.1 bar	At the end of the cleaning operation, the unit drains the waste oil. The waste oil is propelled by a very low proportion of gaseous refrigerant **R134A**.

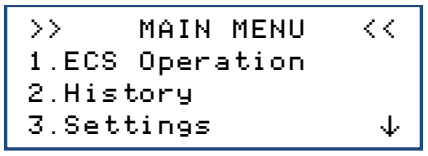
At the end of the draining process, the screen will display to the home page

History

1. Operation History

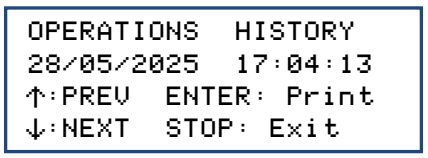
The Operation History lists all the previous operations carried out using the **AC134HD AH**. From this menu, it is possible to reprint the ticket corresponding to a past operation.

From the start-up screen, press **ENTER** to access the main menu.



Select **2**.

Select **1**.

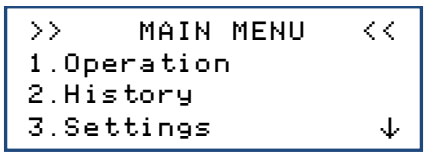


Use the up and down arrows (▲ and ▼) to scroll up and down the saved operations.
When you find the desired operation, press **ENTER** to print the corresponding ticket.
Press **STOP** to return to the menu.

2. Fluid Report

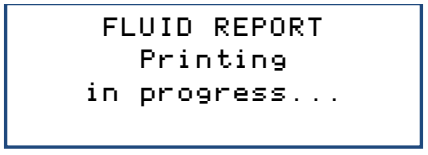
This screen shows the total amount of refrigerant recovered, charged or transferred for the previous twelve months.

From the start-up screen, press **ENTER** to access the main menu.



Select **2**.

Select **2**.



The unit prints the fluid balance for the last 12 months, then returns to the **>> HISTORY <<** menu.

3. Operations by Date

This function prints all operations for a given date chosen by the operator.
From the start-up screen, press **ENTER** to access the main menu.

```
>>     MAIN MENU    <<
1.Operation
2.History
3.Settings           ↓
```

Select **2**.

```
>>      HISTORY     <<
1.Operations history
2.Fluid report
3.Date report        ↓
```

Select **3**.

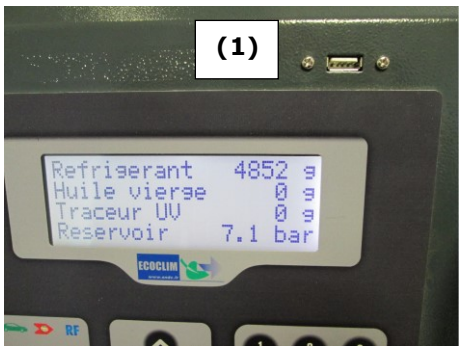
```
ENTER DATE :
Day?
01/12/2024
STOP:<-      ENTER:->
```

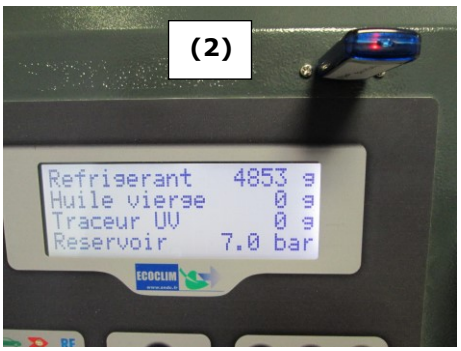
Enter the date and confirm by pressing **ENTER.** The **AC134HD AH** will then print all the operations carried out on that date.

4. Export => USB

With this function, it is possible to export an Excel file of previous operations to a USB stick.

(1) Remove the cap from the USB port above the control panel.
(2) Connect a USB stick.





From the start-up screen, press **ENTER** to access the main menu.

```
>>     MAIN MENU    <<
1.Operation
2.History
3.Settings           ↓
```

Select **2**.

```
>>    HISTORIQUE    <<
1.Operations history
2.Fluid report
3.Date report
4.Export to USB
```

Select **4**.

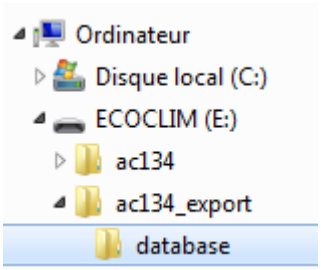
EXPORT IN PROGRESS	The unit will export the data.
15 operations exported	Once the export is complete, the display will show this message and then return to the **>> HISTORY <<** screen.

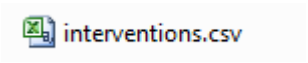
Note : If a USB stick is not connected when attempting the export data, the following message will be displayed :

ERROR: USB drive missing	Connect a USB stick and restart the export. If the error persists, restart the unit.

<u>Using the Data</u>:

- Remove the USB stick from the unit and plug it into a computer.
- Navigate to the USB drive and then to the folder entitled **ac134_export/database.**
- Open the Excel file entitled « interventions.csv ».





Each line corresponds to a past operation and will contain information such as the date, time, amounts of refrigerant recovered, charged or transferred and vacuum time.
Pressures are measured in millibars, and the refrigerant quantities are measured in grams.

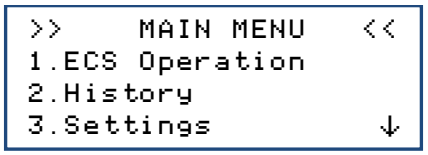
Settings

1. User Settings

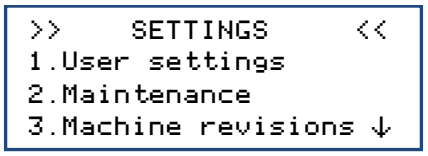
a. Date and Time Settings

This menu allows you to set the date and time on the unit.

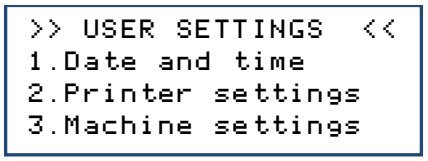
From the start-up screen, press **ENTER** to access the main menu.



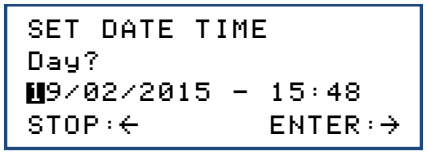
Select **3**.



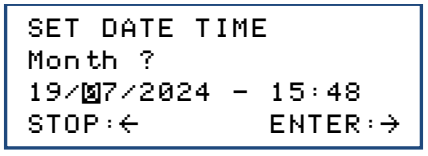
Select **1**.



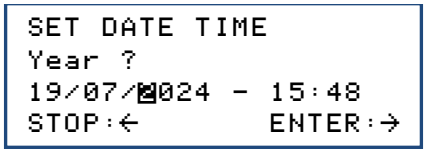
Select **1**.



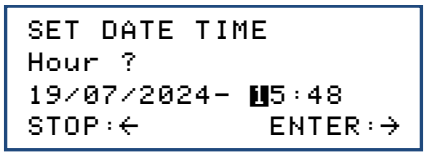
Enter the number of the day and press **ENTER**.



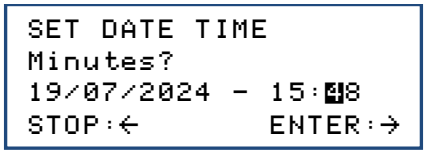
Enter the number of the month and press **ENTER**.



Enter the year and press **ENTER**.



Enter the hour and press **ENTER**.

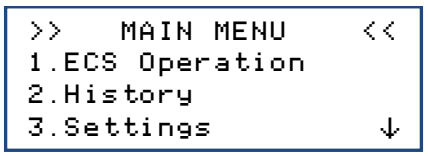


Enter the minutes and press **ENTER**. The settings have now been saved.

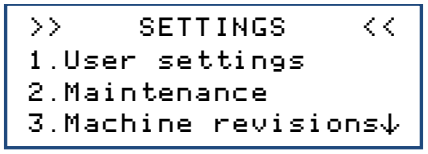
b. Printer Settings

The operator can personalise the ticket header with the name of the company, address, etc.

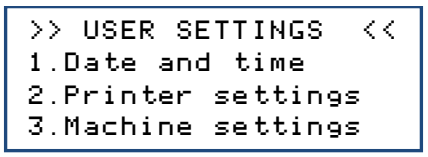
From the start-up screen, press **ENTER** to access the main menu.



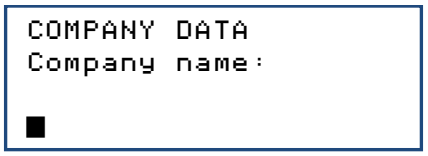
Select **3**.



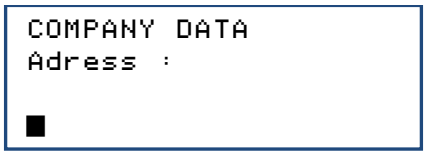
Select **1**.



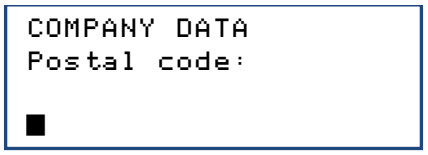
Select **2**.



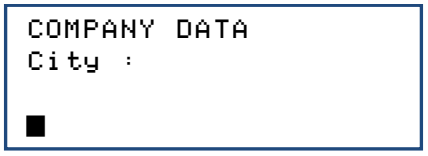
Enter the name of the company by using the number keys.
Example: To type the letter A, hold the (2) key until the letter appears.
Use the **STOP** button to correct any mistakes.
Once the company name has been entered, press **ENTER**.



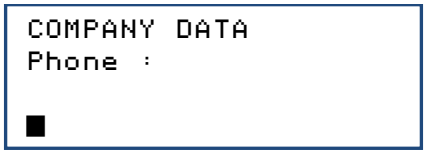
Enter the address and press **ENTER**.



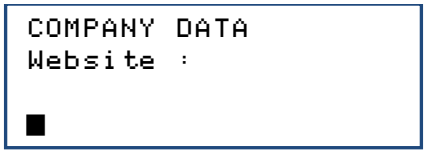
Enter the postcode and press **ENTER**.



Enter the town or city and press **ENTER**.



Enter the telephone number and press **ENTER**.



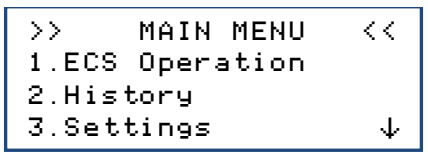
Enter the company website, if desired, and press **ENTER**.
The screen will then return to the **>> USER SETTINGS <<** menu.

c. Unit Settings

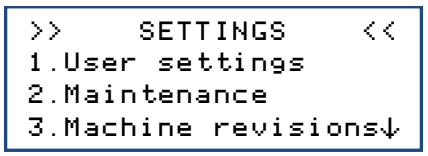
This menu allows the operator to:

- Customise the default settings
- Calibrate the sensors
- De-gas the tank.

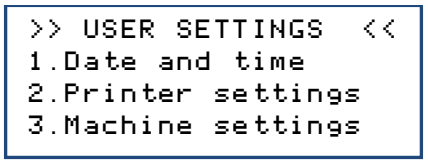
From the start-up screen, press **ENTER** to access the main menu.



Select **3**.



Select **1**.



Select **3**.

Consult the table below to find out the access code required to modify a setting or carry out a maintenance operation.
Enter the access code and confirm by pressing **ENTER.** Then, change the setting or carry out the maintenance operation.

SETTING/OPERATION	DEFAULT VALUE	ACCESS CODE
Default vacuum time	90 minutes	1045
Default leak test time	5 minutes	1048
Default refrigerant charge quantity	0 g	1001
Tare tank scales to zero		9220
Calibrate tank scales		3220
Calibrate recovered oil scale		3480
Calibrate manifold sensor		2276
Calibrate tank pressure sensor		2272
Update software		6257
Hose length	500 cm	1004
Default amount of refrigerant for additional charge	100 g	1065
Tank degassing		3429

2. Maintenance Menu

Maintenance should be carried out by trained and skilled personnel. It is forbidden for anyone else to carry out work on any part of the unit that is not indicated in this section. Please contact **SNDC** in case of any incident or breakdown.

The **AC134HD AH** unit is subject to the Pressure Equipment Directive.
The customer must check the obligations for monitoring pressure equipment in service, applicable according to the country of operation, and draw up an appropriate inspection plan.

OPERATIONS	FREQUENCE	OPERATEURS
Draining the vacuum pump	100 hours of vacuum	User / Dealer Ecoclim
Replacement of filter drier	300 Kg of refrigerant recovered	User / Dealer Ecoclim
Cleaning hose filters	Annual	User / Dealer Ecoclim
Replacement of hose seal	Annual	User / Dealer Ecoclim
Check the accuracy of operations	Annual	Ecoclim dealer only
Calibration of load cells	Annual (if required)	Ecoclim dealer only
Calibration of pressure sensors	Annual (if required)	Ecoclim dealer only
Updating the software	Annual	Ecoclim dealer only
Replacement of the electronic battery	3 years	Ecoclim dealer only

a. Maintenance Info

This menu displays the maintenance interval counters.

From the start-up screen, press **ENTER** to access the main menu.

```
>>    MAIN MENU   <<
1.ECS Operation
2.History
3.Settings          ↓
```

Select **3**.

```
>>    SETTINGS    <<
1.User settings
2.Maintenance
3.Machine revisions↓
```

Select **2**.

```
>>   MAINTENANCE  <<
1.Maintenance info
2.Reset maintenance
3.Counters
```

Select **1**.

```
MAINTENANCE INFO
35284 g ref recycled
   824 min vacuum
   158 days
```

This screen will show:

- The total amount of refrigerant recovered in grams.
- The total vacuum time carried out in minutes.
- The number of days since the last service.

Explanation of Counters

COUNTER	WARNING LEVEL	MAXIMUM LEVEL	ACTION
Amount of refrigerant recycled « **g ref recycled** »	**285 kg**	**300 kg**	Replace the dryer filter
Total vacuum time « **min vacuum** »	**90 h**	**100 h**	Replace the vacuum pump oil
Number of days since the last maintenance or commissioning « **days** »	**347 days**	**365 days**	Carry out annual service

When the warning level is reached, the message **« Please check Maintenance menu »** will appear to warn the operator when the **AC134HD AH** is started.
If one of the maximum levels is reached, the operator will not be able to access the « ECS OPERATION » menu until the required maintenance has been carried out.

b. Reset maintenance

This menu allows the relevant counters to be set to zero after maintenance. Access to his menu is reserved for personnel carrying out maintenance tasks and requires a password.

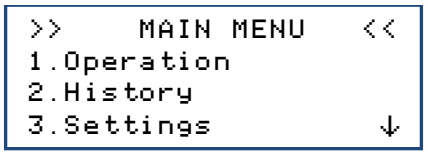
c. Counters

Access to the **AC134HD AH** general counter is reserved for the manufacturer and requires a password.

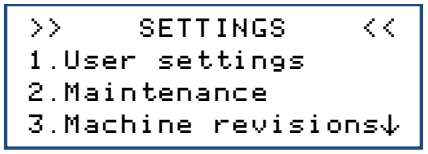
3. Unit Versions

You may be asked for the version of your unit when repairs, maintenance or assistance is required.

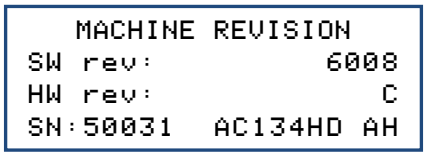
From the start-up screen, press **ENTER** to access the main menu.



Select **3**.



Select **3**.



The screen will show:

- The software version: SW
- The version of the unit control panel: HW
- The unit serial number: SN
- The name of the unit : **AC134HD AH**

Press **STOP** to exit the menu.

4. Manufacturer Settings

Access to this menu is reserved for the manufacturer and requires a password.

Servicing Menu

1. Degassing of non-condensables

This menu allows you to perform a de-gassing and purge any non-condensable gases contained in the internal tank. Take all necessary precautions before performing this operation:

- Wear appropriate protective equipment. Do not stay near the unit.
- Ensure that the ventilation grills are free of obstruction. Ensure that the working environment is well ventilated.

From the start-up screen, press **ENTER** to access the main menu

```
>>    MAIN MENU   <<
1.ECS Operation
2.History
3.Settings
4.Tools
```

From the main menu, select **4**.

```
>>     TOOLS      <<
1.Uncondensable out
2.Weighing sensors
3.Pressure sensors ↓
```

Select **1**.

```
TANK AIR PURGE
Tank          11.1 bar
           ENTER: Yes
            STOP:  No
```

The screen will show the tank pressure.
To perform a de-gassing, press **ENTER.** The unit will open the degassing solenoid valve for 2 seconds.
To exit the menu, press **STOP**.

2. Weight Sensors

This menu shows the values of the unit's weight sensors.

From the start-up screen, press **ENTER** to access the main menu.

```
>>    MAIN MENU   <<
1.ECS Operation
2.History
3.Settings
4.Tools
```

Select **4**.

```
>>     TOOLS      <<
1.Uncondensable out
2.Weighing sensors
3.Pressure sensors ↓
```

Select **2**.

```
Tank            8483 g

Waste oil         14 g
```

The screen will show the following quantities measured by their respective scales:

- Refrigerant (internal Tank)
- Used oil

Press **STOP** to exit this screen.

3. Pressure Sensors

This menu shows the values measured by the pressure sensors and whether the heat belt is on or off.

From the start-up screen, press **ENTER** to access the main menu.

```
>>    MAIN MENU   <<
1.ECS Operation
2.History
3.Settings
4.Tools
```

Select **4**.

```
>>     TOOLS      <<
1.Uncondensable out
2.Weighing sensors
3.Pressure sensors ↓
```

Select **3**.

```
Manifold P: 0.00 bar
P Tank:    11.15 bar
Heating belt:  OFF
Psetpoint: 7.00 bar
```

This screen will show:

- The pressure measured in the manifold.
- The pressure of the unit's internal tank.
- Whether the tank heat belt is on or off.
- Target pressure for the heating belt (**Psetpoint**)

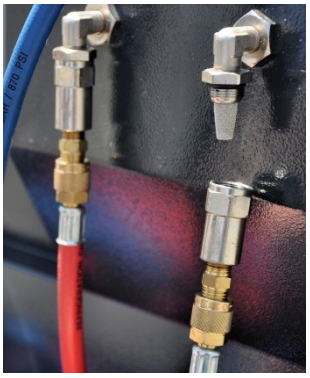
Maintenance

1. Cleaning of Hose Filters

The hose filters serve to protect the internal components of the **AC134HD AH** from particles and solid impurities contained in the recovered refrigerant**.**

They should be cleaned as often as possible and should be cleaned:

- **After every recovery of refrigerant from a contaminated ECS circuit**
- **Before an ECS circuit charge.**



⚠ **Check that the hoses do not contain any refrigerant before disconnecting. Perform a recovery operation if required.**

Procedure:

- Unscrew the lower part of the filter.
- Clean with compressed air.
- Refit the lower part of the filter.

Filter reference: 470D25

2. Replacement of Filter Dryer

To guarantee the best performance, the filter dryer must be replaced once the unit has recovered a total of **300 kg** of refrigerant. The warning level for replacing the filter dryer is reached, the display will show the following message on start-up:

Please check Maintenance menu

Press **ENTER** to continue to the start-up screen.
Refer to section ***Maintenance Info.***

⚠ Any maintenance operations that require the **AC134HD AH** to be opened must only be carried out by trained personnel. Please contact your **ECOCLIM** service centre

3. Replacement of the Vacuum Pump Oil

To guarantee the best performance, the vacuum pump oil should be replaced every **100 hours** of use. When the warning level for replacing the vacuum pump oil is reached, the display will show the following message on start-up:

Consulter le menu maintenance

Press **ENTER** to continue to the start-up screen.
Refer to section ***Maintenance Info.***

⚠ Any maintenance operations that require the **AC134HD AH** to be opened must only be carried out by trained personnel. Please contact your **ECOCLIM** service centre.

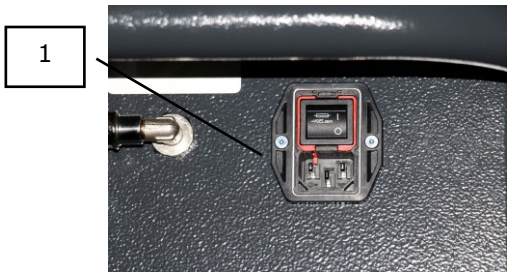
4. Annual Maintenance

In accordance with current regulations, an overall service of the unit must be carried out once a year. When the warning level for an annual service is reached, the display will show the following message on start-up **« Please check Maintenance menu »**. Refer to section ***Maintenance Info***.

Shutdown

5. Shutting Down the AC134HD AH

To shut down the unit, press the start/stop switch **(1)** on the back of the unit.



⚠ It is imperative (unless in case of an emergency) that the unit is not switched off while it is performing an operation. This could cause a loss of data and render the unit unusable.

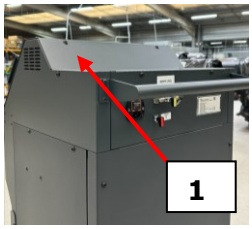
6. Long-term Shutdown

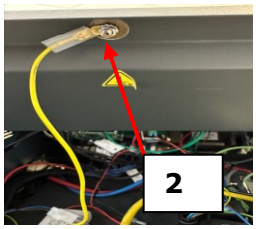
If the AC134HD AH is not going to be used for a long period of time:

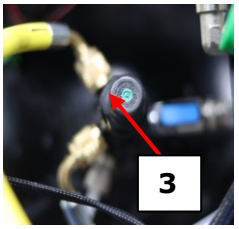
- The unit should be disconnected from the electrical supply and stored upright in a dry, mild and well-ventilated place.
- The refrigerant tank must be closed.
- The unit should be protected with a cover.

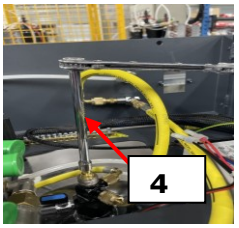
<u>Procedure to close the refrigerant tank :</u>

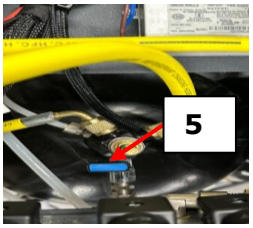
- Disconnect the **AC134HD AH** from the electrical supply.
- Remove the storage tray **(1)**.
- Disconnect the ground connection from the storage tray **(2)**
- Remove the black cap from the tank **(3)**.
- Screw down the tank valve to close **(4)**.
- Close the hibernation valve **(5)**.
- Replace the cap on the tank, reconnect the ground connection and replace the storage











⚠ **When using the AC134HD AH once again after it has been unused for a long time, ensure that the tank valve is open again before starting the unit.**

Notes

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