# ACX 350/450


Original Instructions
AC Service Units

Ver. 1.5

# 1 CONTENTS

# 2 General instructions

## 2.1 General notes



## 2.2 General instructions

Pressure equipment undergoes checks before commissioning and periodical checks during operation, in compliance with rules and law provisions in force in the country where the tool is used.
The operator is responsible for operating the equipment in conformity with local legislation.

Only for model ACX 350.
**The equipment is designed for recovering and recycling R1234yf/R134a refrigerant fluid from automotive A/C system.**
**The equipment is intended to be used by automotive and similar repair and service workshops.**
**The switch between the two refrigerant types, from R134a to R1234yf, can only be performed by a technician of an Authorised MAHLE Centre.**

This equipment is intended solely for use by **professionally trained operators** familiar with the basics of refrigeration, refrigeration systems, refrigerants and the hazards associated with pressurised equipment.
Careful reading of the present manual by the owners, the users and the operators is required for a correct and safe use of the tool.
The user shall not be entitled to open the product since maintenance operations are reserved to the authorised service centre.

## 2.3 Manufacturer identification

The ACX equipment is manufactured by:
MAHLE Aftermarket Italy S.r.l.
via Diesel 10/a, Italy
Phone: +390521954411

## 2.4 Environmental precautions

Any service operation with the equipment must be carried out being careful not to disperse fluorinated gases (R134a) into the environment, in order to prevent the greenhouse effect and the subsequent global warming of the planet. The release of refrigerant gas R134a into the atmosphere is forbidden by laws that were enacted within the framework of the Kyoto protocol.
For information only, we will mention in particular, for the European Union, REGULATION (EU) No 517/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.
The waste coming from the service activities must be placed in collection centres foreseen by the enforced laws, they must not be dispersed in the

environment and they must not be disposed of with urban waste.

# 3 Safety conditions

## 3.1 Personal safety information

### 3.1.1 Definitions

DANGEROUS AREAS:
Any area within or close to the equipment implying risk for the safety and health of exposed persons.

EXPOSED PERSON:
Any person completely or partially standing in a dangerous area.

OPERATOR:
The person/s charged with operating the machine for its intended purpose.

CLASSIFICATION OF OPERATORS
The operator can be classified according to two main categories, which, in some cases, refer to one single person:

- The operator charged with the equipment operation has the duty to:
  - Start up and monitor the machine's automatic cycle;
  - Carry out simple setting operations;
  - Remove the causes of equipment stop not implying breakings of members but simple operating anomalies.

- Maintenance technician a technician trained by an authorised MAHLE centre, capable of working on the machine's mechanical and electrical components with its guards open to make adjustments and to service and repair it.

USER
Body or person legally responsible for the equipment.

### 3.1.2 Personal safety information

The A/C service station is particularly simple and reliable due to its adjustments and functions. When used correctly it presents no hazard for the operator, provided he observes the following general safety instructions and that the service station is regularly serviced (incorrect maintenance/use compromise the equipment's safety). Before operating the service station for the first time, read these instructions carefully. If any part of the instructions is unclear, contact your reseller or MAHLE.
This service station may be used by only one equipment operator, familiar with A/C and refrigeration systems and the hazards associated with refrigerants and high pressure equipment.

**WORKPLACE:** The station can work with both R134a and R1234yf (the two refrigerants cannot be stored within the station at the same time).
**Refrigerant R1234yf is defined as flammable refrigerant.**
Nonetheless, although refrigerant R134a is not defined as flammable, mixtures of air or oxygen with R134a may become flammable under very particular conditions.
**The equipment must be operated outdoor or in a well-ventilated location (at least 1 air change per hour). The workshop has to be equipped with ventilation systems able to ensure air change in every environment area or carry out periodical ventilation by opening the areas.**
**Use the equipment away from heat sources or hot surfaces.** The equipment

must not be used in explosion risk environments (potentially explosive atmospheres). Before using it, put the equipment on a levelled plane and secure position, blocking it with suitable wheel stops.
Do not expose the tool to direct sunrays, heat sources, rain and jets of water. Do not smoke near the equipment and during operations (keep at a distance of at least 1 m).
The work area must be monitored by the operator while the equipment is operating.
**ATTENTION:** R134a and/or R1234yf refrigerant fumes/gases are heavier than air and can gather on the floor or inside cavities/holes and cause choke by reducing the oxygen available for breathing.
At high temperatures, the refrigerant breaks down releasing toxic and aggressive substances, harmful for the operator and the environment. Avoid inhaling the system coolants and oils. Exposure can irritate eyes and the respiratory tract.

**ELECTRICAL CONNECTION:** Connect the power cord solely to a mains supply which conforms to the ratings on the machine's nameplate (mounted on its side). Make sure the mains socket is grounded.
Maximum impedance allowed in the point of connection to the mains shall comply with standard EN 61000-3-11. Starting currents can cause short voltage drops, which may affect other equipments under unfavourable conditions. If impedance in the point of connection to the mains is not compliant, this may lead to interference so please consult the electrical power network operator before connecting the equipment.
Never use the service station with a defective power cord or a different one from that supplied with the machine. If damaged, immediately have it replaced with an original spare part or equivalent by a MAHLE centre. Before opening the service station, extract completely the supply cable from the plug, or you can get an electric shock.
Do not tamper with or bypass the safety equipment and settings.
Do not leave the machine powered up when not in use; shut off the power supply before leaving the equipment unused for a long time. Do not forget that the tool (pressure tool) must always be protected.

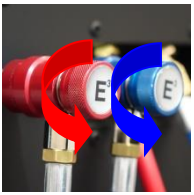
**REFRIGERANTS AND LUBRICANTS - PERSONAL SAFETY EQUIPMENT AND PRECAUTIONS:** The refrigerants and the pressure cylinders have to be handled with care, otherwise there will be possible health risks.
The operator must wear safety glasses, gloves and protective clothing suitable to the work. Contact with the refrigerant can cause blindness (eyes) and other physical damages (freezing) to the operator. Avoid contact with the skin; the refrigerant's low boiling point (approx. –26 °C for R134a and approx. -30 °C for R1234yf) can cause freezing burns.
Further information about safety can be obtained from the safety sheets of lubricant and refrigerant producers.
Do not inhale refrigerant or oil vapour. Keep away from the vent valves and ventilation coupling, especially when non-condensable gas is being vented.
Never direct the quick couplings (taps) towards your face or other persons or animals.

**OTHER PROHIBITIONS AND USE LIMITATIONS: Only use pure R134a or R1234yf refrigerants, refrain from using on vehicles containing other types of refrigerants or mixtures of the two refrigerants or other refrigerants.** Mixture with other types of refrigerant produces serious damage to the conditioning and cooling systems. **Mixed refrigerants have to be disposed of according to the current regulations.** Never use ACX equipment with systems containing compressed air; mixtures of R134a or R1234yf with air or oxygen may be potentially flammable.
Do not modify calibration of safety devices. Do not remove seals of safety valves and of control systems. Do not use external tanks or other storage containers that are not type-approved or without safety valves.
Make sure the equipment's aeration and ventilation ports are not obstructed or covered while the equipment is operating.
The AC service stations have been designed for use within a certain range of temperature and humidity rate, as indicated on the machine nameplate.
Before connecting the hoses to a vehicle and before activating refrigerant recovery, make sure the following conditions are met:

- ambient temperature and engine compartment/AC system temperature are lower than the maximum operating temperature indicated on the machine nameplate,
- the pressure of the turned off AC system is less than 12 bar,
- the vehicle's engine and AC system are off.

**HOSE CONNECTIONS:** Hoses may contain pressurised refrigerant. Before changing the service couplers, check the respective pressures in the hoses (pressure gauge).
Before connection to a car A/C system, to an external tank/cylinder, check that the quick couplers are closed (unscrewed HP and LP valves).
Scrupulously follow the instructions on the equipment's display.

**QUICK COUPLERS CLOSING/OPENING:**



**Opening (connect to the vehicle): clockwise**

**Closing (detach from the vehicle): counter clockwise**

**MAINTENANCE/GENERAL CLEANING:**
The equipment has to be serviced at the intervals indicated by the equipment itself.
The service station maintenance has to be performed according to the procedures described in this manual and to the current safety regulations.
Use only MAHLE original parts.
When the equipment requires the drier filter and the vacuum pump oil to be changed, you have to be careful in the replacement.
A/C service station maintenance can be carried out exclusively by a trained operator or by a service man of a MAHLE certified seller.
Do not use chemical agents for the service station cleaning as they could attack the material or the surface.

**STOP FOR LONG PERIOD:** Store the equipment in a safe place, disconnected from the mains, away from excessive temperatures, humidity and the risk of damaging impact.
Contact the Technical Service to run a safety shutdown of the equipment, and if scrapping the unit, to drain and recycle the R134a or R1234yf refrigerant as required by local legislation.
To resume operation, repeat the installation (there is no need to register the unit anew on the website) and run the commissioning trials and regular operational checks as required by local legislation.

## 3.2 Important information on service equipment safety

When using the equipment, the following operations are not allowed as they might cause, under certain circumstances, danger for persons and cause permanent damage to the equipment itself.


- Do not remove or make unreadable labels, signs and/or dangers signs placed on the equipment and in the area nearby.

- Do not disable the unit's safety equipment.

- The electrical system to which the service equipment is connected must be configured as provided by local legislation.

- Only operators or qualified staff instructed or certified for the equipment maintenance can open the equipment. The equipment contains parts which can cause electrocution: shut off power to the equipment before servicing/repairing it.

## 3.3 Safety devices

The A/C service station is equipped with the following safety devices:

**SAFETY PRESSURE SWITCH**: It stops the compressor in case of excessive pressure.

**SAFETY VALVE:** The safety valve opens when the pressure inside the system reaches a level higher than the fixed limits.

**MAIN SWITCH:** Switches the equipment off by interrupting the power supply. It is advisable to pull the power cord plug out of the mains socket in any case before starting maintenance work.

**ANY TAMPERING WITH THE ABOVE-MENTIONED SAFETY DEVICES IS PROHIBITED.**

**Failure to observe any of the above safety instructions voids the equipment's warranty.**

# 4 Layout of the manual

## 4.1 Use of the manual

**This manual is an integral part of the equipment and must be kept in the equipment's immediate vicinity by the purchaser**

- This manual shall accompany the equipment in case this is passed on to a new user.
- The content of this manual has been drawn up in compliance with the guide lines of the UNI standard 10893:2000.
- Diffusion, modification or use of this manual for own aims is forbidden.
- The manual uses symbols which call the reader's attention to specific points to facilitate its use.
- It includes all technical, operating, shutdown, maintenance, spare parts and safety information.
- In case of doubts on the correct interpretation of the instructions, please contact our technical service to obtain the required clarifications.

Operations which are potentially hazardous for the operator are highlighted with this symbol.
Such operations can cause serious injury.

Operations requiring special attention are highlighted with this symbol.
Such operations shall be carried out correctly to avoid causing damage to objects or to the surrounding environment. This symbol also highlights information to which special attention must be paid.

Operations which require careful reading of the manual's instructions are highlighted with this symbol.

## 4.2 Symbols

This paragraph describes the safety symbols which may be posted on the service equipment.

### 4.2.1 Safety

| | |
|---|---|
|  | ALTERNATING CURRENT |
|  | SAFETY GROUNDING |
|  | CONSULT THE INSTRUCTIONS MANUAL |
|  | ATTENTION! ELECTROCUTION HAZARD |
|  | CAUTION !: DO NOT REMOVE THE COVER (maintenance technicians only) |
|  | USE PROTECTIVE GLOVES<br>WEAR PROTECTIVE GOGGLES |
|  | USE ANTI-SMASH SAFETY SHOES |

## 4.3 Glossary

To make the reading of this manual easier, we have prepared the list of the most important technical terms used in the manual.

**Refrigerant:** Refrigerant fluid used in advanced motor vehicle A/C systems.
The following refrigerant fluids may be used:

- **R-1234yf** CH2CFCF3 2,3,3,3-Tetrafluoropropene.
- **R-134a** C2H2F4 - 1,1,1,2-Tetrafluoroethane

**A/C system:** air conditioning system.

**Equipment:** A/C service station for recovering, recycling, draining and charging the A/C system.

**External tank:** Refrigerant bottle used to

fill the internal tank.

**Internal cylinder:** cylinder for refrigerant storage.

**Phase:** Performance of a single function.

**Cycle:** Sequence of steps.

**Recovery:** Extraction of refrigerant from the vehicle.

**Recycling**: Cleaning of refrigerant, includes: separating out oils, removal of non-condensable gas and single/multiple pass through filters to reduce humidity, acidity and particulate content of the fluid.

**Disposal**: disposal of refrigerant for storage followed by destruction/scrapping by an authorised waste management centre.

**Vacuum cycle:** Draining out of a motor vehicle A/C system and separation out of condensed matter and humidity, using only the vacuum pump.

**Oil charge:** Charge of oil into an A/C system to ensure the correct charge as specified by the vehicle's manufacturer.

**Charge:** filling of refrigerant into the A/C system in the amount specified by the manufacturer**.**

**System flushing:** Cleaning phase for the removal of possible polluting substances from the A/C system or parts of it.

**Non condensable gas:** Refrigerant stored in gaseous phase, including air and nitrogen.

## 4.4 Guidelines for the handling of refrigerant

### 4.4.1 Precautions for refrigerant storage

The refrigerant removed from the A/C system must be handled with care to prevent or minimise the risk of mixing with other refrigerants.
**This machine is suitable for treating R134a or R1234yf refrigerants, individually (not simultaneously).**
The external cylinders used to store the refrigerants must be clearly marked to prevent mixing different refrigerants.
Cylinders shall be free from oil or other contaminants and clearly marked so as to identify the refrigerant contained.

**ATTENTION:** when handling, using and storing **R-134a** or **R-1234yf** refrigerant and dealing with emergency situations, **MAKE SURE** to refer to the product's safety sheet.
**GET THE SAFETY SHEET FROM YOUR REFRIGERANT SUPPLIER AND FOLLOW ITS INSTRUCTIONS.**
**REFRIGERANT R1234YF IS DEFINED AS FLAMMABLE REFRIGERANT.**

### 4.4.2 Conditions of refrigerant and system

The condition of the refrigerant is critical to the operation of the vehicle's A/C system. Running repairs properly following failure or damage safeguards the quality of the refrigerant itself (particulates, acids and water).

### 4.4.3 Recycling capacity

The service equipment's filtering systems must be replaced regularly (see

maintenance messages) to ensure effective recycling.

# 5 Product description

## 5.1 Application

A/C service station is suitable for vehicle with A/C systems using R134a or R1234yf. The following functions can be implemented:

- Refrigerant recovery and recharging.
- Vacuum generation.
- Flushing.

## 5.2 Scope of delivery

| Description |
|---|
| Service hose (high pressure) |
| Service hose (low pressure) |
| Quick-release coupling (high pressure) |
| Quick-release coupling (low pressure) |
| New PAG oil bottle |
| Used oil bottle |
| UV dye bottle |
| New POE oil bottle |
| Original instructions |
| Adapter for external bottle connection |
| Funnel |

## 5.3 Description of the unit


***Fig.1: Left-Front view***

*1 Rear Handle*
*2 Tool Tray*
*3 Status light*
*4 Low Pressure Gauge*
*5 High Pressure Gauge*
*6 Front Cover*
*7 Locking Caster*
*8 Rear Wheel*
*9 New & Used Oil Bottles*
*10 Printer (optional)*
*11 Touch screen*

**DO NOT USE THE UNIT UNLESS THE CHARGING HOSES (HP – LP) ARE CORRECTLY CONNECTED**

***Fig. 2: Rear view (detail)***

1 *Fan*
2 *Vents*
3 *Power cord connector and Power switch*
4 *HP&LP quick couplers and hoses*
5 *Nitrogen inlet*

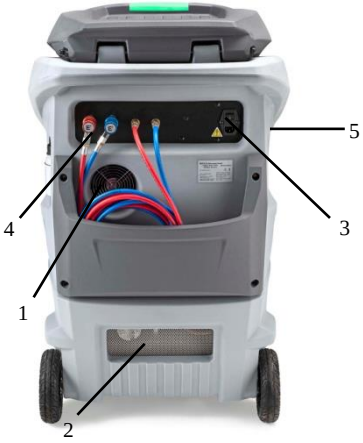




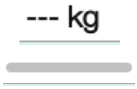
***Fig. 3: Right-front view (detail)***

1 *High-pressure gauge*
2 *Low-pressure gauge*
3 *Display with Touch screen and USB port*

The pressure gauges (Fig. 3, Pos. 1, 2) of the display and operating unit are used to monitor the pressure during the individual vehicle A/C service phases. The status of the various service phases during maintenance is displayed on the touch screen (Fig. 3, Pos. 3).
The menu selection and the necessary entries are made on the touch screen (Fig. 3, Pos. 3). MAHLE provides a USB stick for ACX station to activate an additional database (e.g. Agri&Work machinery). The USB stick can be inserted in the USB type A port on touch screen frame (Fig. 3, Pos. 3).

## 5.4 User interface

All settings, controls and service functions are available on the touch screen display. It also displays the service equipment's status, the progress of A/C system service and any alarms and warning/error messages.
The touch screen is the basic operator interface and can be operated with the fingers.
When a button is pressed, a beep sounds.
The following icons are available on the display:

| Icon | Description |
|---|---|
|  | Device connected via WiFi |
|   | The residual refrigerant weight (in kg and with visual bar) |
|   | to enable/disable the bar by vertically swiping your finger from top to bottom |
|  | Remote connection "RE SOLVE" active |
|  | Icon to send email via WiFi |
|  | Icon to print report via the unit printer if available |
|  | Icon to print via WiFi on a network printer |

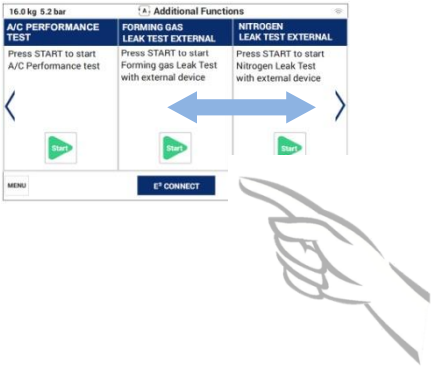
| | |
|---|---|
| 1 | document in the print queue |
| Start | Icon to start cycle |
| 0 g | Recovered refrigerant amount |
| 970 g | Amount of refrigerant to be injected |
| 0 g | Recovered oil amount |
| 10 g | Amount of oil to be injected |
| 10 g | Amount of UV dye injected |

| Icon | Description |
|---|---|
| 04'00" | Vacuum time |
| CHECK 04'00" | Vacuum test time |
| | Function or cycle disabled |
| | Function or cycle enabled |
| | Icon to update list |

| | |
|---|---|
| | Low light intensity |
| | High light intensity |

To select a function in the menu press the text name of the function, the selection occurs when the finger is released.
If there are functions that need more space on the screen page, for example: the additional functions or maintenance list, to display the different entries, it is necessary to horizontally swipe on the display, or in case of setup it is possible to display the different entries by moving the scroll bar on the display with the finger.
Lift the finger when you are on the desired position.

***Horizontal swipe gesture on touch screen***




If you need to enter free text or identify a set of data, a keypad automatically appears (for example, for entering workshop data or at the end of the service cycle).

**Status Light** (Fig. 1, Pos. 3)
The station with the status light on the top communicates based on the following modes:

- **Flashing green**: procedure in progress.
- **Steady green**: procedure completed successfully.
- **Steady red**: operator presence required.

### 5.4.1 Main menu

The Main menu of the graphical user interface allows to select the following functions:

- Vehicle selection
- OneClick
- Cycles
- Additional Functions
- Maintenance
- Setup
- Secured Service (not available for user; reserved only for customer service personnel)

Each function will be described in the next chapters.

## 5.5 E³ CONNECT quick couplers

E³ CONNECT is the INTELLIGENT COUPLER, that with the suitable automated procedure in the software enables to:

- reduce the non condensable gas formation inside the cylinder ;
- avoid refrigerant dispersion in the air during disconnection (puff effect);
- check possible SCHRADER valve leaks before disconnection.

# 6 Technical features

| Cylinders for R134a or R1234yf fluids | |
|---|---|
| Gas type for ACX 350 | R134a Convertible to R1234yf (with optional kit) |
| Gas type for ACX 450 | R1234yf |
| R134a or R1234yf cylinder capacity | 20 l |
| Maximum operating pressure (PS) | 20 bar |
| PED category (Dir.2014/68/EU) | III |
| Weight of refrigerant content | Scale |
| **Safety valve** | |
| Type | AIRTEK - VS14NPT20HN BRPED4 20bar R 1/4 NPT |
| Calibration pressure | 20 bar |
| PED category (Dir.2014/68/EU) | IV |
| **Containers for oil and detection dye** | |
| Recovered PAG oil container | 250 ml |
| New PAG oil container | 250 ml |
| UV Dye container | 250 ml |
| **Pneumatic circuit** | |
| Vacuum pump flow rate | 100 l/min single stage |
| Vacuum level | 0.02 mbar |
| Vacuum pump oil life | 60h – extensible to max 1000 h with $E^3$ PUMP procedure |
| Refrigerant recovery compressor cubic capacity | 14 cc |
| Drier filter | Every 150Kg of refrigerant recovered |
| Non condensable gas discharge | Automatic, with solenoid valve |
| HP and LP taps | Automatic |
| **Safety pressure switch** | |
| Type | 13/18bar 1/4SAE |
| Trip pressure | 18 bar |
| PED category (Dir.2014/68/EU) | IV |
| **Pneumatic fittings** | |
| Net length of external HP and LP hoses | 4.5 m |
| HP and LP pressure gauges | Analog 80 mm, pulse-free, 1.0 class |
| Display | Touch screen 7” TFT colours |
| Keypad | Touch screen |
| Software updating | Via Wi-Fi |
| Printer | via Nexusprint software or via thermal printer (optional) |
| **Functions and features** | |
| Recovered oil measurement | Automatic weighing, 1 g res., 5 g acc. |
| New oil automatic charge | With automatic scale, 1 g res., 5g acc. |
| UV dye automatic charge | Timed |
| Electric compressor function | With integrated flushing function |
| Flushing | Flushing available with external accessory (option) |
| Database | Complete electronic (cars and industrial vehicles only) |

| | |
|---|---|
| AC Performance Test | Manual and automatic |
| Recovered oil measurement | Automatic weighing, 1 g res., 5 g acc. |
| Sound level | < 70 dB (A) |
| Battery type for internal Real time clock | Lithium CR-2032 3V 180mAh 3g. |
| **Overall dimensions** | |
| WxDxH | 700 x 750 x 1100 mm |
| Loadless weight | about 85 kg |
| **Power supply** | |
| Frequency | 50 Hz |
| Voltage | 230 V ~ |
| Power | 800 W |
| Protection | Thermal |
| Installation category | II |
| **Environmental conditions** | |
| Operating temperature | 10-50°C |
| Humidity | 10-90% R.H. (non condensing) |
| Ambient pressure | 75 kPa until 106 kPa |

# 7 Installation

## 7.1 Equipment installation

### 7.1.1 Unpacking

Warning – Risk of personal injury! Incorrect handling could cause equipment to overturn.

| |
|---|
| **RISK OF OVERTURNING** |

***The manufacturer disclaims all responsibility for damage to objects and/or persons resulting from the equipment being wrongly removed from the pallet, or from the operation being made by unsuitable personnel, with improper means/protections and without complying with the existing laws on manual handling of loads and with the operations described in this manual.***

| | |
|---|---|
| Remove the metal staples for wood and open the carton box | Remove the cap and carton box |
|  |  |
| Cut the plastic straps that connect unit to the pallet | |
|  |  |

➤Remove the packaging of the unit.
➤Remove the equipment from the pallet (operators are required)
➤Keep the pallet, carton and scratch protection film for use when returning the

unit. The unit rolls on wheels; the two front wheels can be locked.

A/C service station is supplied with the internal refrigerant tank empty. This prevents problems in shipping the unit.

**REFRIGERANT SCALE SCREW RELEASE**

The unit is transported, with the scale blocked by a locking screw to avoid damaging the load cell. The scale locking screw is placed on the equipment bottom side (see the box shown above) and is formed by a bolt. For commissioning, unscrew the screw.

# 8 Commissioning

## 8.1 Connections

The unit has to be positioned on a horizontal surface to ensure the correct operation.
The unit has to be connected to the electric mains following instructions on the identification plate of the unit applied next to the main switch, mainly as to applicable voltage and power.

⚠ The A/C service stations are designed for 230VAC, 50Hz. Follow the information on the rating plate.

### 8.1.1 Positioning and connection

| | |
|---|---|
| ℹ | **HANDLING:** During handling, the minimum devices required for correct handling shall be ensured, as provided for by accident prevention provisions. |
| ⚠ | **POSITIONING:** Place the unit in a stable place. The location must be well ventilated, with a good rate of change of air. The unit must be located at least 10 cm from any potential obstacles to its internal ventilation. Keep the unit away from rain and excessive humidity as they can irreparably damage it. In addition, the equipment must never be directly exposed to the sunrays or to excessive dust. |
| ⚠ | **INSTALLATION:** the unit must be installed by a specialized technician in scrupulous observance of in accordance with electrical engineering principles. The use of the equipment in explosive atmosphere is forbidden. |
| ⚠ | **CONNECTIONS:** since the unit is |

| | |
|---|---|
| | connected to the main power supply, it must be properly grounded with its power plug GND pin. Failure to ground the unit can damage it and constitutes a risk of fatal injury to the operator. Position the unit so that the power plug is easy for the operator to access. |

***Fig. 4: Rear view (detail)***

*1 Power cord connector and Power switch*

*2 HP&LP vehicle connector/couplers and hoses*


| | |
|---|---|
| ⚠ | **ATTENTION:** Leave the quick coupling taps closed when the unit is not in use and at the end of vehicle service operations. |

## 8.2 Software update

It is possible to check for software updates via Wi-Fi and download them inside the

- Main Menu
  - Setup
    - Updates Check 

## 8.3 Initial verification

Execute the following actions in sequence by following the display guided procedure and the illustrations on the screen of the equipment:

- Gas weight verification
- Oil weight verification
- First vessel filling

It is possible to interrupt the initial verification, the station will propose at next powering to continue.
The equipment cannot operate until all the steps of the initial verification have been completed.

| | | |
|---|---|---|
| ⚠ | **CAREFULLY ABIDE BY THE FOLLOWING INSTRUCTIONS TO AVOID DANGER TO PERSONS, THE DISCHARGE OF REFRIGERANT IN THE ATMOSPHERE** |  |

Let us consider as first filling the one carried out during the initial check with internal tank of the equipment free of refrigerant and containing air.
Set the quantity of refrigerant to fill (at least 3 kg) and follow the guided procedure shown on the display.
Check that the equipment hoses are not connected and positioned in the hose winder. Start the procedure that initially implies the creation of vacuum in the internal tank. This phase will take 15 minutes and will act on the whole equipment.
Only when the message appears asking to connect the charge tank, connect the LP quick coupler (colour blue) of the unit

to an external refrigerant tank using the supplied adaptor.
When the message occurs open the coupler by turning the knob clockwise. Open the valve on the external tank.
Just right before reaching the planned quantity of refrigerant, the unit will stop and ask the user to close the external refrigerant tank. Then, the device will continue the recovery from the hoses and ends when these are empty. Hence, it is necessary to open the LP quick-coupler and disconnect it from the external tank.
Thanks to the E³ CONNECT function, the refrigerant - usually kept between the cylinder fitting and the hose quick-coupler until the end of the process - will not be released in the environment.
There may be two types of source tanks: with plunger and without plunger.
Tanks **with plunger** shall remain upright to be able to transfer liquid refrigerant; for this type of tanks connect to the L (liquid) coupler.
Tanks **without plunger** have only one valve, so they must be turned upside down to transfer the liquid refrigerant.

The **LP** gauge indicates the pressure inside the external tank.
After some minutes the unit will automatically end the function.
At the end the weight of the charged refrigerant will be displayed.

## 8.4 New oil bottle filling

To fill the new oil bottle (Fig.1 Pos. 9) it has to be extracted from its housing by means of the quick coupler on the top of the bottle; slightly press downward the coupler ring nut to extract it.


Fill the bottle by paying special attention to the “Active Oil Protection” system.

- During the oil suction phase, before entering the bottle air is made dry as it passes through a path of special “desiccant” material.
- The air inside the bottle is therefore completely “dry”

After filling, close the bottle and place it back in its seat.

## 8.5 UV dye bottle filling

The UV Dye is a substance made up of a yellow-green coloured fluorescent pigment, which means that, when lit by an ultraviolet lamp, it becomes fluorescent and thus visible.
The UV dye can therefore be used to detect leaks of a small entity inside the auto vehicle A/C system.
To fill the UV dye bottle (Fig.1 Pos. 9) it has to be extracted from its housing by means of the quick coupler on the top of the bottle; slightly press downward the coupler ring nut to extract it.

Fill the bottle by paying special attention to the “Active Oil Protection” system.

- During the oil suction phase, before entering the bottle air is made dry as it passes through a path of special “desiccant” material.
- The air inside the bottle is therefore completely “dry”

After filling, close the bottle and place it back in its seat.

# 9 Setup

From the SETUP menu it is possible to select parameters and activations before starting cycle:

Wi-Fi

- by selecting this entry, the user may check and select the Wi-Fi networks available and connect the station via Wi-Fi.

PRINT

- by selecting this entry, the user can select the print options, such as:
  - Start print queue;
  - Delete print queue;
  - How to print (instructions);
  - Print test.

  To print are available two printing modes are available: using the printer of the station if available or, for all models, via Wi-Fi using the printer software named NexusPrint to be installed on PC with Windows 7 or later.

UPDATE

- by selecting this entry, the user may check if software updates are available and download them. Updates Check starts with this icon 

BRIGHTNESS

- by selecting this entry, the user can modify the brightness of touch screen display and Status Led.

MAINTENANCE COUNTERS

- by selecting this entry, the user may check the status of station counters and consumables counters.

ACCOUNT

- by selecting this entry, the user can fill in the garage data to be printed at the bottom of the cycle report.

LANGUAGE

- by selecting this entry, any language present in the database may be set. In case you choose a language with unintelligible characters: switch off the equipment, press and hold the touch screen while switching on the equipment, you will be directed to the language setting menu.

RESOLVE

- by selecting this entry, the user can connect the station to the server via Wi-Fi to allow remote control service session by the dealer. The system will give an ID number and a PIN code to give to dealer.

SYSTEM INFORMATION

- selecting this entry, the user can check the station data.

DATE AND TIME

- selecting this entry, the user can change and save the date and time.

LICENSES

- by selecting this entry, the user can check the licenses enabled on the station.

SETTINGS

- selecting this entry, the user can enable specific functions (e.g. Refrigerant analysis).

| | |
|---|---|
| i | *MAHLE reserves the right to add new parameters to make the equipment increasingly versatile and adaptable to market's needs.* |

# 10 A/C system charge

## 10.1 Preliminary operations

The recovery and charge operations have be carried out after the car /AC system has run for some time; however, an excessively hot A/C system has to be avoided since the next charge phase could be adversely affected by high pressures.
The vehicle must not be prepared in a special way; connecting hoses have to be attached by identifying their position.
Vehicle details necessary for the performance of the charge/recovery/ vacuum cycle are the amount of refrigerant and the type and quantity of oil. These data are often found on the engine compartment plate or on the technical manuals.
As to oil quantity technical manuals of cars, systems as well as available details in general indicate the total quantity of oil in the system.
Indeed the amount of oil to be charged is that extracted during the refrigerant recovery phase which is very small. In the car A/C system you have to add only the oil amount necessary to restore the amount set by the car manufacturer

**FEATURES**
Your new A/C service station is equipped with new E³ CONNECT quick couplers. These new couplers offer the following functions:

1. Avoid dispersion of the refrigerant, allowing the recovery by the tool (thus protecting the environment and saving refrigerant).
2. Automatic leak test of the car A/C system valve at the end of the service.

After connecting the quick couplers to the (high pressure) HP and (low pressure) LP connectors of the vehicle, screw the

valves only when required by the messages on the unit display.

## 10.2 Non-condensable gas discharge

The station is equipped with the AIR PURGE SYSTEM function, which allows automatically detecting and purging non-condensable gas (mainly air) accumulated within the tank.
If the station detects non-condensable gas in the tank, it will automatically run the non-condensable gas discharge procedure.
Running this procedure is very important to ensure the ideal working parameters for the station operation. The presence of non-condensable gas in the tank will increase the pressure inside the tank and, therefore, will slow down and reduce the efficiency of charge cycle on the vehicle.
The procedure will take a few minutes, and its duration may vary according to the amount of non-condensable gas within the tank.


| | |
|---|---|
| ⚠ | **WARNING:** Leave the quick coupling taps closed when the unit is not in use and at the end of vehicle service operations. |
| | **WARNING:** For the Air Purge System procedure to be executed manually, the station must have been off for at least one hour. |

# 11 Cycles

The access to Automatic cycle can be achieved by selecting the following menu Vehicle selection, OneClick or Cycles.

## 11.1 Vehicle selection

MAHLE offers customers purchasing A/C service station the possibility of enhancing potentials of the station through the database.
This database contains all data related to the A/C system of most vehicles. Hence, it will be possible to speed up the charge operations of the system with the aid of the data provided by the database.

- Maker
- Model
- Version / engine capacity
- Year
- System

Inside the Cycles window, it is possible to enable or disable specific cycles, such as:

- Recovery
- Vacuum and
- Injection

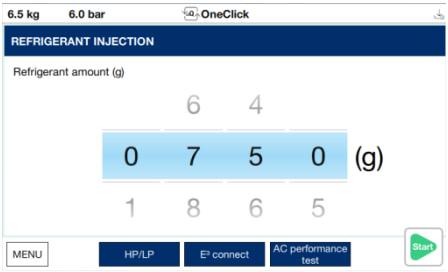
and to modify the parameters if necessary. It is possible to select the A/C system type and enable the A/C performance test (if the background colour is in grey color the function is disabled).

## 11.2 OneClick

Inside this cycle it is possible to set the amount of refrigerant to be injected on the vehicle and then run the following cycles with default parameters:

- Recovery

- Vacuum and
- Injection




## 11.3 Cycles

Inside the Cycles window, it is possible to enable or disable the specific cycles, such as

- Recovery
- Vacuum and
- Injection

and to modify the parameters if necessary. It is possible to select the A/C system type and enable the A/C performance test (if the background colour is in grey color the function is disabled).

## 11.4 Cycle data setting

After selecting the type of A/C system the main page is shown with the following preset values

- Recovery (default automatic, or semi-automatic)

- Semi-automatic recovery;
  - *if the function is enabled and the final recovery amount is less than 70% of the injection required amount, the software at the end of recovery will ask if the user wants to continue or stop the cycle.*
- Vacuum phase (recommended values but editable – they do not depend by the car selected)
- Vacuum time duration
- Vacuum test time duration
- Oil Charge mode and quantity of oil that will be charged into the system
  - OIL: <value> g. It charges the quantity of oil that has been set.
  - REC. + <value> g. It charges the quantity of recovered oil plus the quantity of oil that has been set
  - NO OIL. No oil is charged during the charge cycle
- Oil type: It sets the oil type being used. PAG (ISO46/100/150) or POE, it does depends by the selected vehicle.
- It is possible to select the charge of the UV dye (a single shot of about 8 g.)
- amount of refrigerant that will be charged into the system and the amount of refrigerant available in the inner tank of the station.
- Charge type: It allows selecting from which hose the service is carried out, according to the type of system.
  - Charge from HP hose (red)
  - Charge from LP hose (blue)
  - Charge from HP hose (red) and LP hose (blue)
  - Charge from HP hose (red) on the system low pressure side. Specific for some Renault models.

At the end of the setup, press the “START” button to start the automatic cycle.

### 11.4.1 Electric Compressor Function

Before connecting the A/C service station hoses to the A/C system of the vehicle, select the oil type.
If the selected oil type is POE for Electric compressor, a special function named “Electric Compressor Function” will be executed to clean the hoses from any previous oil residue.

When required by the software, connect LP and HP quick coupler to their support connectors as in the picture below and change PAG oil bottle with the POE oil bottle.

Then, press START to proceed and follow the instructions shown on the screen.

# 12 Additional Functions

## 12.1 Refrigerant Analysis

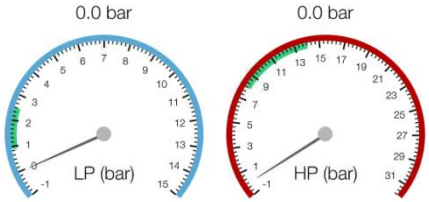
By selecting this entry (only if the refrigerant analyser optional is available and enabled inside setting menu), the user can start the analysis of refrigerant present inside the vehicle AC system.

## 12.2 AC performance test

To check the vehicle A/C system status – for instance in case there is no flow of cold air from flaps – pressure values can be checked.
Connect the **HP - LP** couplers or the single coupler to the vehicle system. Under the sequence guided by the software perform the following preliminary operations on the vehicle:

1. Turn on the A/C system
2. Set temperature at minimum level.
3. Set fan speed at maximum level; close all the flaps except the central one and set air distribution to central position.
4. Keep engine at accelerated idle at constant speed for at least 2 minutes.
5. Check the pressure values within about 3 - 5 minutes.

In the ADDITIONAL FUNCTIONS menu, select the AC PERFORMANCE TEST function.
Execute the AC PERFORMANCE TEST following the instruction.
And at the end make sure that both values on LP and HP gauges fall within the range of values shown in green on the display.




| | |
|---|---|
| ⚠ | **PRESSURE VALUES CHANGE CONSIDERABLY WHEN AMBIENT TEMPERATURE CHANGES. KEEP THIS IN MIND WHEN CHECKING PRESSURE VALUES** |

It is possible to interrupt the phase in progress at any time.

## 12.3 Flushing (with optional accessories)

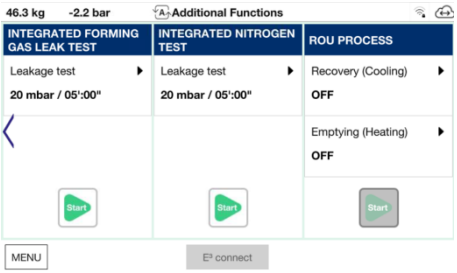
After performing many charge cycles, when a damaged compressor is identified, dirty compressor oil is visible or after replacing components or parts of the A/C circuit on a vehicle it is advisable to carry out a system flushing.
The system washing (Flushing) consists in purifying the vehicle cooling system through several R1234yf/R134a refrigerant flushes, by recovering it each time, so that the impurities can be filtered little by little through the additional filter.
Thanks to its specific design, A/C station automatically manages the flushing process so that the process becomes fully automatic.
Once the (optional) flushing kit has been installed, as described in the instructions included in the kit, and after selecting the specific function for the kit being used, start the phase.

After selecting the flushing function, default values (editable) are displayed:

- Vacuum time
- Number of cycles
- Refrigerant amount used for each cycle

In case of problems or errors during this phase, a message will be displayed, identifying the type of error.
It is possible to interrupt the phase in progress at any time.

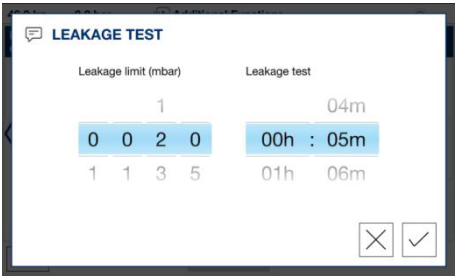
## 12.4 Forming gas leak test (optional)




The function needs to be activated (contact your dealer). It is integrated with a specific manifold integrated on A/C service station, it is necessary to connect the external gas bottle of “Forming gas” with pressure reducer (not inside scope of delivery of these models) to the Nitrogen inlet port/fitting identified on pictures below


After selecting the forming gas leak test function, default values (editable) are displayed

- Vacuum time
- Vacuum test time
- Leakage limit (mbar)
- Leakage test time




Once the external gas bottle of “Forming gas” has been installed, and pressure reducer regulated, test can be started.
*Note: check the reducer is set at a pressure ranging between 10 and 15 bar, start the test and follow the software instructions to carry out the test.*

| | |
|---|---|
| ⚠ | **Pressure ranging between 10 and 15 bar Maximum OVERPRESSURE CAN COMPROMISE THE SAFETY of persons, vehicles and A/C service station.** |

In case of problems or errors during this phase, a message will be displayed, identifying the type of error.
It is possible to interrupt the phase in progress at any time.

## 12.5 Nitrogen test (optional)

The function needs to be activated (contact your dealer). It is integrated with a specific manifold integrated on A/C service station, it is necessary to connect the external gas bottle of “Nitrogen” with pressure reducer (not inside scope of delivery of these models) to the Nitrogen inlet port/fitting identified on pictures below


After selecting the nitrogen leak test function, default values (editable) are displayed:

- Vacuum time
- Vacuum test time
- Leakage limit (mbar)
- Leakage test time

Once the external gas bottle of “Nitrogen” has been installed, and pressure reducer regulated, the test can be started.
*Note: check the reducer is set at a pressure ranging between 10 and 15 bar, start the test and follow the software instructions to carry out the test.*

| | |
|---|---|
| ⚠ | **Pressure ranging between 10 and 15 bar Maximum** |

| | |
|---|---|
| | **OVERPRESSURE CAN COMPROMISE THE SAFETY of persons, vehicles and A/C service station.** |

In case of problems or errors during this phase, a message will be displayed, identifying the type of error.
It is possible to interrupt the phase in progress at any time.

## 12.6 ROU process (with optional accessories)

Once the (optional) kit R.O.U. (recovery only unit) has been installed, as described in the instructions included in the kit, and after selecting the specific function for the kit being used, start the phase.

After selecting this function, default values (editable) are displayed

- Recovery time
- Emptying time

In case of problems or errors during this phase, a message will be displayed, identifying the type of error.
It is possible to interrupt the phase in progress at any time.

# 13 Maintenance

## 13.1 Hoses emptying

To empty the charge hoses completely perform the hoses emptying phase.
Select the hoses emptying function from the menu. Wait the end of the procedure.

## 13.2 Air purge

In the main menu select MAINTENANCE and press “AIR PURGE”.
By selecting this function, it is possible to manually discharge the non condensable gases by means of the solenoid valve.

Automatically every 7 days, the station will show the possibility to automatically check (automatic function named AIR PURGE SYSTEM) for condensable gases.

## 13.3 Vessel filling

In the main menu select MAINTENANCE and press “VESSEL FILLING”.
Set the quantity of refrigerant to fill and follow the guided procedure shown on the display.
The set value is limited to avoid to fill too much the internal cylinder.
Only when the message appears asking to connect the charge tank, connect the LP quick coupler (colour blue) of the unit to an external refrigerant tank using the supplied adaptor.
When the message occurs open the coupler by turning the knob clockwise. Open the valve on the external tank.
Just right before reaching the planned quantity of refrigerant, the unit will stop and ask the user to close the external refrigerant tank. Then, the device will continue the recovery from the hoses and ends when these are empty. Hence, it is

necessary to open the LP quick-coupler and disconnect it from the external tank.

Thanks to the E³ CONNECT function, the refrigerant - usually kept between the cylinder fitting and the hose quick-coupler until the end of the process - will not be released in the environment.

There may be two types of source tanks: with plunger and without plunger.
Tanks **with plunger** shall remain upright to be able to transfer liquid refrigerant; for this type of tanks connect to the L (liquid) coupler.
Tanks **without plunger** have only one valve, so they must be turned upside down to transfer the liquid refrigerant.

The **LP** gauge indicates the pressure inside the external tank.
After some minutes the unit will automatically end the function.
At the end the weight of the charged refrigerant will be displayed.

## 13.4 Pressures zero

In the main menu select MAINTENANCE and press “PRESSURES ZERO”.
This function allows to determine and store the atmospheric pressure value.
We recommend running this procedure every time the A/C service station will be moved from a location to another with a different altitude.

## 13.5 Self leak test

In the main menu select MAINTENANCE and press “SELF LEAK TEST”.
A leak test is carried out on the internal components of A/C service station.
This phase includes:

- Hoses emptying
- Vacuum test

This test allows to check the tightness of the internal circuits of the equipment from the solenoid valve, allowing the fluid outflow from the internal cylinder, to the manifold, (metallic component housing the check solenoid valves) to the compressor infeed, including the dryer filter leak test.
In case of failed leak test, it is necessary to check the charge hoses conditions and the quick couplers leak, and make the possible repair and then repeat the test.

## 13.6 E³ PUMP

The A/C service station is equipped with a special function named E³ PUMP that enables to optimize the vacuum pump oil use by avoiding the replacement every 60 hours of operation.
E³ PUMP is a special function allowing to extend even to 1000 hours the life of the pump oil used in the station. E³ PUMP function performance is suggested at the end of 60-hour operation intervals of the vacuum pump and can be manually activated in the MAINTENANCE menu pressing E³ PUMP.
E³ PUMP procedure has to be started only after checking and, if necessary, topping up the pump oil level and lasts 1 hour: during this time the tool cannot be used.
During the procedure the oil is automatically purified from the gaseous polluting residues absorbed during the emptying operations of vehicles air conditioning systems.
At the end of the E³ PUMP procedure,

- in case of negative result or
- after 1000 hours of vacuum pump operation since the last oil

change, the E³ PUMP procedure cannot be activated anymore

It is necessary to replace the vacuum pump oil.

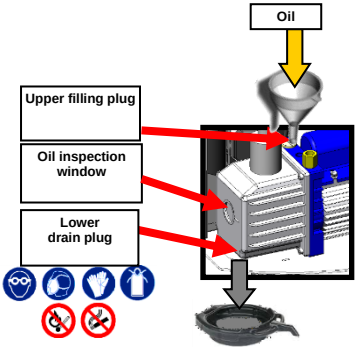
## 13.7 Pump oil change

Required tools:

- 1 flat screwdriver
- 1 Hex key (10 mm)

For replacement, comply with the instructions outlined below:

1. Disconnect the unit from the mains.
2. Remove the six screws that fix the front door of the unit and remove it.
3. Place a bowl underneath the machine, right under the pump oil drain hole. Open the upper plug and then the lower plug to drain the used oil contained within the vacuum pump.




4. Once the pump has been emptied, screw the lower plug again.
5. Fill the pump with new oil through the upper opening, using a funnel if needed. Bring new oil level halfway through the oil inspection window.
6. Once the pump has been filled, close the upper plug.

Once oil has been replaced, switch on the unit and from the MAINTENANCE menu select PUMP OIL CHANGE: press OK to reset the counter.

## 13.8 Dryer filter change

The dryer filter must be replaced after having dehydrated 150 kg of refrigerant fluid, since the filter capacity to keep the humidity present in the refrigerant will run out.

To replace the dryer filter, from the MAINTENANCE menu select DRYER FILTER REPLACEMENT: press “START” to set the counter to zero and to start the filter replacement procedure. Insert the code of the new filter. Now you can replace the filter.

Required tools:

- 1 flat screwdriver
- 1 cross screwdriver
- 1 regular or torque Hex key (14 mm)
- 1 Hex key (16 mm)

For replacement, comply with the instructions outlined below:

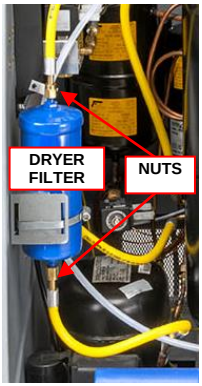
1. disconnect the HP and LP hoses from other systems/circuits or vehicles and close the quick couplers
2. wait the ends the hoses emptying.
3. confirm to have already worn the personal protective equipment (PPE) and follow the safety regulations in force.

**DANGER OF CONTACT WITH R134a/R1234yf REFRIGERANT and motor vehicle A/C system oil**

4. Before opening the doors of the equipment, switch off the equipment and **disconnect the power supply cord.**

**DANGEROUS VOLTAGE HAZARD**

5. Remove the six screws that fix the front door of the unit.
6. Unscrew the 2 connection nuts of the filter by means of the hex keys.
7. Remove the straps that wind up the filter




8. Install the new filter paying attention to the position of gaskets and to the direction of the arrow indicating the fluid flowing direction.
9. Screw the two connection nuts of the filter.
10. Close the front panel
11. Carry out the automatic leak test requested by the software when switched on again after the filter replacement.

## 13.9 Replacement of Active Oil Protection Cartridge

After one year or after injecting 2 kg of New Oil or UV dye, the station will show a reminder suggesting the replacement of the cartridge. To replace the Active Oil Protection Cartridge, from the MAINTENANCE menu select CARTRIDGE REPLACEMENT: press “START” to set the counter to zero and to start the cartridge replacement procedure of each bottle. Enter the code of the new cartridge. Now you can replace the cartridge.

## 13.10 Calibration check

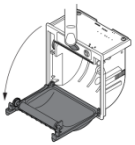
In the main menu select MAINTENANCE and press “CALIBRATION CHECK”.
This function allows to check the status of gas weight scale measure with a reference weight (from 100 g to 10000 g maximum) not included in the scope of delivery. When requested by the software, put the weight above the scale plate as in the picture below.

Reference weight
(not included in the scope of delivery)

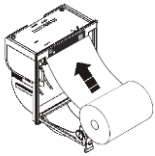
## 13.11 Maintenance of printer

To change the roll of paper follow instructions below:

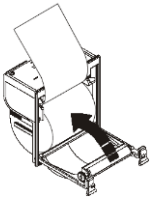
1. Open the lid of the printer as shown
   *(note: press the green led as in picture and only after that open the lid)*



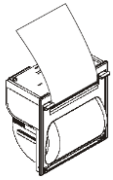
2. Position the roll of paper inside the housing in the rotation direction indicated in the picture;



3. Pull the paper out of the housing as indicated in the picture and close the lid ;



4. The printer is ready for printing.



## 13.12 Periodic checks

A/C service stations (pressure equipment set) must be checked over regularly as provided by local legislation.
According the local legislation contact the technical customer service or the competent body for at least the following checks.

- Make sure no corrosion or leakage are present in the tank and in the other cylinder and metallic part of the equipment; under normal conditions of use, the tank life is at least 20 years

(in the absence of wear and other types of damages).

- If the automatic safety valve trips, contact technical service to have the unit checked over, resolve any problems and replace the valve if necessary.

- Check presence of the device with references indicated above, wholeness of connection cables and connector, and the correct connection to the equipment printed circuit board. In case the pressure switch must intervene, please contact the technical customer service that will check the equipment and remove any defect.

- Periodically check that the external charging hoses, red (HP) and blue (LP), are in good order and undamaged. In case damages to the hoses are detected, stop using the station and contact the technical customer service for the related replacement.

- Verify that the lubricants (pump oil) and filters (dryer) have been replaced according to the scheduled periodicities for a proper functioning of the equipment.

### 13.13 Refrigerant type replacement (only for ACX 350)

Your A/C service station model ACX 350 is supplied with the standard fittings to operate with refrigerant R134a, but it can be easily adapted to be used with refrigerant gas R1234yf.
Contact an authorized Service Centre to ask for the adaptation kit.
The adaptation must be performed by a technician of an Authorised MAHLE Service Centre, who will install the specific components for use of R1234yf. He will also carry out all configurations and verifications required by the refrigerant type replacement procedure.

# 14 Disposal

## 14.1 A/C service unit disposal

At the end of its service life, this equipment must be disposed of as follows:

- Contact the service center to have the refrigerant in the unit recovered and recycled.
- Consign the unit to an authorized collection center according to local legislation.

## 14.2 Recycled materials disposal

Consign the refrigerant recovered from the unit to the refrigerant supplier for proper disposal or recycling. Lubricants extracted from vehicles' A/C systems must be consigned to an used oil collection center.

## 14.3 Packaging disposal

Electronic and electrical A/C service equipment must never be disposed of with domestic waste, but recycled appropriately.
The packaging must be disposed of in conformity with local legislation.
This contributes to protecting the environment.

# 15 Spare parts

Spare parts available to the user:

- **4.5 m red charging hose**

- **4.5 m blue charging hose**

- **Blue LP quick coupler and red HP quick coupler**

- **Dryer filter**

- **Active Oil Protection kit (2 pcs New Oil, 1 UV dye)**
- **Vacuum pump oil**

Consumables available to the user:

- **Vehicle A/C system oil**
- **UV dye**
- **Thermal paper rolls**

Further spare parts are available through the Service Centers authorized by MAHLE or by its reseller.

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| ⚠ | **USING NON ORIGINAL/UNAPPROVED SPARE PARTS OR ACCESSORIES CAN COMPROMISE THE SAFETY OF A/C SERVICE STATION.** |

| MAINTENANCE FORM<br>Refrigerant receiver load cell check | | | |
|---|---|---|---|
| **Date** | **Result of check (pass/fail)** | **Maintenance technician identification** | **Maintenance technician signature and stamp** |
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| MAINTENANCE FORM<br>Other checks/maintenance/repairs | | | | |
|---|---|---|---|---|
| **Job** | **Date** | **Result of check (pass/fail)** | **Maintenance technician identification** | **Maintenance technician signature and stamp** |
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| MAINTENANCE FORM |
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| Other checks/maintenance/repairs | | | | |
|---|---|---|---|---|
| **Job** | **Date** | **Result of check (pass/fail)** | **Maintenance technician identification** | **Maintenance technician signature and stamp** |
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