



GAIA



Carefully read this use and maintenance manual before using the unit.



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CTR Group s.p.a. thanks you for buying a product of its range and recommends that you read this manual. It contains all the information necessary for proper use of the unit you have purchased. Please carefully read the warnings it contains and read the whole manual. Keep the manual in a safe place so that it cannot be damaged. The contents of this manual may be changed without prior notice, or any other obligations, in order to add modifications and improvements to the units already delivered. No part of this manual may be reproduced or translated without the prior written consent of the owner. CTR Group s.p.a. is responsible for any manufacturing defect that may arise during the entire warranty period and undertakes to correct any defect in the shortest possible time.

#### **WARRANTY**

The warranty is valid for 12 months from the date of purchase, according to the general regulations in force. The warranty entitles the owner to the replacement of defective parts only. The warranty is forfeited in the event that the equipment is improperly used or tampered with by persons not authorised or if non-conform components or techniques are used on it.

**Declaration of conformity**  
**Directive 98/37/EEC**  
**Machine Directive**  
**Directive 2004/108/EEC 2004/108**  
**Low Voltage Directive**  
**Directive 2006/95/EEC 2006/95**  
**Electromagnetic Compatibility Directive**  
**PED European Regulations 97/23/EC**

We, CTR Group s.p.a. Via T. ed E. Manzini 9, 43100 Parma (Italy), reprinted by its Legal Representative, declare on our sole responsibility that the product Management System for air-conditioning and cooling systems model Gaia complies with what provided in the directive 98/37, 2006/95/CE and 2004/108/CE and that the pressure circuit of the machine Gaia complies with the directive 97/23 and with the following amendments and riders, and it is marked with category I.

We would like to make clear that the admitted highest limits for a correct working of the unit Gaia are:

working max. pressure      16 bar  
working max. temperature    +50°C  
working min. temperature    +5°C

The conformity valuation used for this machine in the one indicated in form A1 and the control has been carried out by certified organization called ICEPI S.p.A. (ID no. 0066) through document no. ICEPI08PEDA1020.

We also make clear that:



- the year of manufacture is indicated on the label (with CE marking) applied on the unit;
- the technical construction file is duly kept at our company, as laid down by the directive;
- the serial number of the unit ( if present, since not obligatory) is punched on the unit.

Parma

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Società soggetta a direzione e coordinamento di FINBER s.p.a.

.....  
Legal representative of CTR Group s.p.a.  
Dott. Andrea Bernini

The label with CE marking (as shown in the figure) applied on the unit proves that it was duly inspected. The unit bears the data explicitly laid down by the Directive; it may however be subject to changes in appearance for commercial reasons.





			<b>0066</b>
CTR Group s.p.a. Via T. ed E. Manzini n° 9 43100 Parma			
		Made in Italy	
Model	Voltage		
Serial number	Absorption (A)	Power absorbed (W)	
Pressione Max.	Temperatura Min.	Temperatura Max.	
<b>Refrigerant R134a</b>	Year of manufacture	Risk category in accordance with law no. 97/23/CE <b>I</b>	

This label is only an example. The complete data label is applied on the machine.

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## **SYMBOLS**

Below is a brief legend explaining the symbols used.

	<b>DANGER:</b> draws your attention to situations or problems that may cause injury or a risk of death.
	<b>WARNING:</b> draws your attention to situations or problems connected with the efficiency of the unit, which do not pose a risk to the safety of persons.
	<b>PROHIBITION:</b> do not perform the operations indicated as they may compromise the efficiency of the unit.
	<b>IMPORTANT:</b> draws your attention to important information of a general nature, which does not compromise personal safety or proper functioning of the unit.



## **1. Introduction**

The unit described in this use and maintenance manual is a semiautomatic multifunctional system with digital setting for automotive air conditioning systems and performs the following operations: gas recovery, used oil discharge, vacuum phase, leak test, new oil refilling, gas recharge. All these operations are controlled by a microprocessor and electronic precision scales.

- Electronic control: controls the entire process by means of a microprocessor.
- Electronic gas weighing scale: can weigh a maximum of 20 kg of refrigerant with a resolution of 5 g and interrupt the RECOVERY and CHARGE functions if programming or reaching uncontrollable quantities during the operation.
- 12 cc refrigerant gas recovery compressor.
- Two anti-acid recovery filters and a new-concept dehydrator with reduced environmental impact, low cost and fast to replace.
- Input gas distiller with automatic flow regulator for the separated refrigerant and oil coming from the A/C system with oil discharge.
- Oil separator positioned directly behind the compressor with automatic return during the recovery cycle.
- 12-litre cylinder for refrigerant gas recovery, equipped with an electronically controlled resistor, safety valve and safety pressure switch.
- Vacuum pump with high vacuum degree.
- Digital control panel.
- High-contrast multi-language display for environments with poor or excessive lighting.
- 80 mm analogue pressure gauges (Class 1.0) with pulse-free movement for A/C system diagnosis.
- Drainage valve for oil coming from the A/C system.
- Two 2.5 m highly reliable flexible hoses with quick-coupling valves and manual opening (screw fitting) for R134-a.
- Two 250 cc embossed graduated feeders for new oil, used oil and UV tracer.

## **LIST OF FUNCTIONS**

- **Recovery:** allows the unit to recover both the refrigerant and part of the oil mixed in it, automatically separating and storing them. The polluted oil is recovered in an external graduated container. The refrigerant, after regeneration through the filters, is stored in a dedicated cylinder. The system automatically quantifies by means of the scale.
- **Vacuum:** the A/C system can be brought to the maximum possible vacuum in the programmed time and kept in this condition. This way, the moisture present can be completely evacuated and the vacuum seal checked for possible leaks.
- **Recharge to vehicle:** the regenerated refrigerant can be recycled (after adding virgin oil) according to the methods provided for by the operator.
- **Recharge cylinder:** this function is used to fill the internal cylinder controlled by an electronic process.
- **Recovery & vacuum cycle:** allows the all the operations that make up the recovery and vacuum cycles to be automatically performed in sequence.

	Do not use the unit for purposes different from those for which it was designed. In the event of scrapping, comply with the regulations in force in the country where this operation is carried out (bear in mind that the unit contains refrigerant fluids; contact specialised companies for scrapping/demolition).
	The unit must be used with the type of refrigerant indicated on the CE label. Do not use it with refrigerants other than the indicated type.

## 2. Technical features

Description	Unit of Measure	Gaia
Maximum power absorbed	W	900
Net weight	Kg	64
Overall dimensions (HxWxD)	cm	95x46x56
Weight with full charge	kg	74
Vacuum pump flow rate	l/min	80
Final vacuum	mbar	0.06
System recovery capacity	g/min	400
Refrigerant cylinder capacity	l	12
Power supply voltage	V	220/240
Power supply frequency	Hz	50
Maximum current absorbed	A	4
Coupling diameter on vehicle (Low Pressure - LP)	mm	11
Coupling diameter on vehicle (High Pressure - HP)	mm	16
Maximum operating temperature	°C	50
Minimum operating temperature	°C	5
Maximum pneumatic circuit pressure	bar	16

For the connection voltage value, follow the instructions found on the label on the unit.

The acoustic pressure value measured is less than 70dBA and therefore the operator does not need to take any particular protection measures even if continually using the unit (ISO 3746). Nonetheless, the employer is responsible for assessing the level of noise the workers are exposed to in accordance with the regulations in force regarding hygiene and safety in the workplace.

### 3. Safety warnings



It is recommended to read through this use and maintenance manual before starting to use the unit and to become knowledgeable with the controls.



In case of need, contact only our Technical Service Department (in particular for component repair and replacement).



Do not perform any repair operations. If repair operations are performed by unexperienced staff, the safety levels of the unit may be altered.



Do not place anything on the unit; the unit is neither a support surface nor a means of transport.



Never arrange the connection pipes (A/C system) and feed pipes in such a position that they may interfere or can be damaged.



For refrigerant recovery do not use containers (pressurised) unsuited to the purpose, both in terms of material and pressure level.



Always comply with the regulations in force regarding hygiene and safety in the workplace. Always follow the instructions given on the safety sheet. Never leave the unit unattended in the workplace, even if it is set to automatic mode.

#### 3.1 Working environment



The unit should only be used by adults and responsible persons. Do not allow children to activate the control device.



Do not approach the unit with open flames or anything else that may cause overheating (with consequent risk of fire) of the refilling circuit. Do not use the unit in places where there is a risk of explosion or fire.



Do not smoke in the place where the unit operates.



Operate the unit in well lit places.



Always work in a well-ventilated environment. Operate and store the unit in a dry place protected from atmospheric agents (generally not in rough environmental conditions).

This manual contains essential safety rules for proper use of the unit: Wear safety goggles and gloves. Do not expose to rain and direct sunlight. Read the owner's manual of the vehicle to identify the type of refrigerant used before using the unit.



## 3.2 Preliminary checks



If the unit is turned off because of a power failure, wait about 10 seconds before restarting it, so that the electronic part can reset correctly.

The electrical/electronic parts must be collected separately and disposed of in accordance with applicable legislation.

## 3.3 USE



Pay particular attention to possible ejection of refrigerant, since:

- contact with the eyes may cause serious injury
- contact with the skin (given the extremely low boiling temperature) may cause burns.

If refrigerant is ejected into your eyes or onto your skin, rinse with abundant water and immediately seek for medical assistance.

The unit has been designed for use specifically with R134-a refrigerant. **The type of refrigerant (R134-a) to be used is specified on the specific label.**



After turning on the unit, wait at least five minutes before performing any operation. If the processing cycle is interrupted for any reason whatsoever (e.g. power failure) the operation must be resumed from scratch.

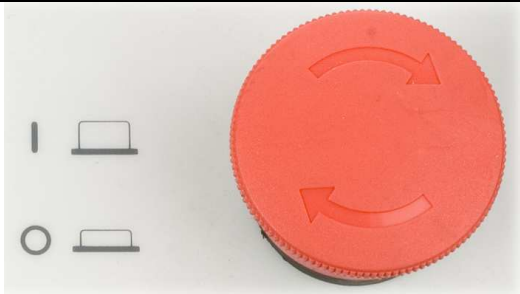



**The external container used for refilling must be homologated for pressures of at least 35 bar and be equipped with a safety valve (the valve must conform to the regulations for pressurised containers).**



The refrigerant storage container must NEVER be filled to over 80% its total capacity to prevent drops in efficiency. Check filling of the oil containers during operation and make sure that they are not overfilled in order to prevent sudden drops in efficiency. Do not use these containers with different types of substances.

Live parts.

	
MAIN/EMERGENCY SWITCH	PLUG



The unit is to be used by one operator only. Any other persons must keep a safety distance both during operation and during adjustment and maintenance.



Always connect the high and low pressure ducts (red and blue) with the parts provided and do not use them for purposes different from those specified.



During operation, check the level in the oil tanks to prevent them from overflowing.



Never detach the HP and LP pipes if not specifically indicated in this manual. Do not activate the manual valves during normal operation if not specifically indicated in the instructions.



## 3.4 Maintenance



Do not use, under any circumstances, flammable liquids or detergents to clean the unit.



Always wait a few minutes after turning off to allow the system to go into rest condition (temperature and pressure).



During maintenance operations, do not dispose of any residues in the environment, but comply with the regulations in force.



NEVER remove the cylinder unless specifically indicated.

Do not perform any repair or maintenance operations when the unit is running or connected to the mains.



Perform exclusively the maintenance and repair operations indicated in this manual. Operations performed by unexperienced persons will affect the overall safety level of the unit and expose the operator to serious risks.

## 3.5 Electrical power supply

The power supply of the unit must be connected according to the instructions of CTR Group s.p.a., the company however, is not responsible for the connection. The safety of the unit is effective only when it is properly connected to an electric energy source that has all the protections as required by the current applicable legislation (differential safety switch and earthing).

- The connection to the mains must be made using the plug provided with the unit, and a reduction used if necessary, checking beforehand that the line voltage corresponds to that indicated on the label on the rear of the unit.
- In the event of damage, contact only our Technical Service Dept.



If the power plug needs to be replaced, contact our Technical Service Dept. and do not replace it unless written permission has been given by our competent department. Failure to follow this instruction, will relieve CTR Group s.p.a. of any responsibility for personal injuries or property damages caused by the power supply.



If using extensions, check that the cross-section of the cable is appropriate for its length and that it is positioned in such a way that it cannot be damaged in any way (avoid walkable and wet areas).



**Check that the point of connection to the electric energy source has all the protections as required by the applicable legislation (earthing and differential switch).**



## 4. Handling and Transport



Before moving the unit, check that it is stable (check that the support surface is horizontal).  
Before moving the unit, it is advisable to remove the parts installed after delivery in order to prevent damage.



During this phase, it is recommended to:

- Correctly position all the accessories provided to prevent them from falling or being damaged during transport
- Move slowly and carefully to prevent possible instability
- Keep an adequate distance.

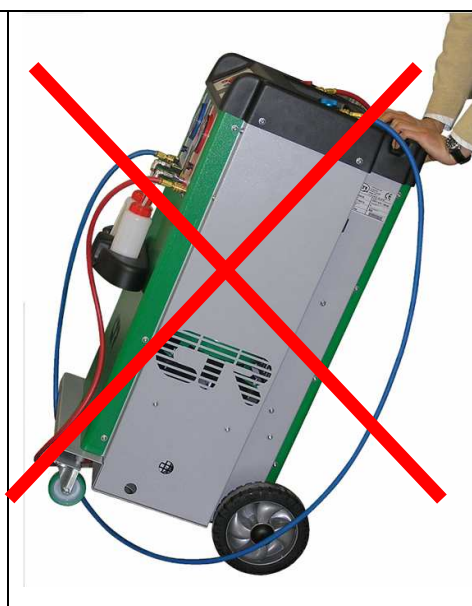


Be particularly careful when handling the unit in the workplace. In particular, avoid dips, steps or similar. If you are not careful during transport, the adjustments made may not be correctly calibrated.



To transport the unit, use the wheels on the base and push the unit by hand.

**Move only on flat surfaces .**



To handle the unit, all the wheels must touch the ground to prevent sideways lifting.



To lift the unit, use a lift truck of adequate capacity for the weight of the unit (indicated in the technical specifications) using the pallet as support base.

## 5. General operating rules

### 5.1 Main panel

Described below is the control panel of the unit:

#### Description

1	Main/emergency switch	8	LP (low pressure) valve
2	Control panel	9	HP (high pressure) valve
3	ON/OFF-ESC button	10	Used oil discharge tank
4	OK/Enter button	11	Oil filler tank
5	Forward/back/plus/minus buttons	12	High pressure connection
6	High pressure gauge (30 bar)	13	Low pressure connection
7	Low pressure gauge (15 bar)		



## 5.2 Operating phases

Described below are all the steps that the operator must follow to obtain an optimal result in absolute safety conditions, distinguishing between manual and semi-automatic operation. To check proper functioning of the unit, there is an intelligent device which signals any faults and warns the operator by means of error messages. An acoustic warning at the beginning of an operation indicates that the set function has started in the correct condition, and a second acoustic warning indicates when the operation has been completed.

Before performing the operations described below, to improve system efficiency (both in terms of energy and time) start the vehicle engine and let the cooling system run for a few minutes so that the A/C system can reach full power, i.e. normal operating conditions.



If you have any doubts or other questions on use of the unit, please do not hesitate to contact our Technical Service Dept. or an authorised Dealer.



During the refilling operations, there will be a certain quantity of refrigerant in the connection pipes. To drain the pipes, follow the instructions given in the chapter Pipe draining procedure (5.7).



At the end of the various phases there will be different residues in the containers. Adhere to the regulations in force to dispose of them.



The recovery, vacuum and charging operations must be carried out with the vehicle and the system off (with the power to the compressor cut).

## 5.3 Use

We advise you to carefully read through this manual for proper use of the unit.

### Activation/deactivation:

- Connect the cable to the mains as described in the chapter "Electric power supply".
- Enable the red mushroom button positioned on the control panel by turning it slightly to the right.
- Hold the red ESC button pressed down for 2 seconds to turn the unit on and off. To cut the power to the unit, press the mushroom button and cut the power to the disconnection switch (electrical socket of the unit).

### Indications on the display:

At power on the sensor pressure (bar) read behind the HP and LP valves and the amount of refrigerant gas in the cylinder is shown in the first line of the display. The main menu functions are shown in the second line in the following order: recovery, vacuum, system filling, recovery & vacuum, cylinder charge and service.

Use the "+" and "-" buttons to move in the menu.

**0.0 bar 0.000 kg**  
**Refrig Recovery**

### Oil In/Oil Dis valves :

The oil discharge valve "Dis" must always remain open in any operating cycle.

The oil filler valve "In" allows charging the system with fresh oil. Activate it after the vacuum phase and before the refrigerant charge phase.

## 5.4 "RECOVERY" operation

This function allows drawing all the refrigerant from the system and making it reusable by means of a complete filtering and distillation process.

- Connect the high and low pressure pipes to the A/C system
- Open the HP and LP valves, or if there is only one service point, open the corresponding valve.
- Select RECOVERY with the "+ ↑" and "- ↓" buttons.

Press OK to start the recovery cycle of the refrigerant in the circuit. During this operation, the first line on the display shows the pressure and weight values of the gas in the cylinder, and the second line the gas recovered (Recov:) and messages and times relating to the operation in progress. There is a pause in the recovery phase when the pressure reaches -0.10 bar. (value controlled by the pressure sensor) indicated with the message "Wait..." followed by the remaining time.

- This period lasts about 4 min, including old oil discharge, in order to allow any refrigerant that has remained blocked in the low pressure and temperature A/C system to change into the gaseous state to be recovered. This phase is signalled by an increase in the pressure indicated on the display (pressure read by the sensor). After the pause, if the pressure has increased, repeat the function a maximum of three times, while when there is no pressure end the cycle.
- Press the ESC button for 2 seconds during the operation to exit the phase and return to the main menu.
- In the event of an emergency, press the red mushroom button on the control panel to completely turn off the unit; in this case, the function that was in progress will not be stored.
- When the cycle has been completed, the display shows the quantity of refrigerant recovered. To exit press the ESC button for 2 sec.
- All the refrigerant recovered in this operation increments a recovery counter to monitor the life of the filters; when a total of 150 kg has been reached, a message will appear on the display warning you that the filters need to be replaced. The counter increments by grams with resolution of 3g.

- *In the event of an error, the display shows the relative message and activates an acoustic signal. To exit press the ESC button*
- *The time available for the operation is 30 min.*



**- The old oil container must always be empty to prevent leaks.**

## 5.5 "VACUUM" operation

This function allows the moisture in the system to evaporate by means of a pump that generates a high degree of vacuum.

- Connect the high and low pressure pipes to the A/C system
- Open the HP and LP valves, or if there is only one service point, open the corresponding valve.
- Select VACUUM with the "+ ↑" and "- ↓" buttons.
- Press OK to start the cycle. The display shows the vacuum retention time, currently set to 30 min. Press the "+ ↑" and "- ↓" buttons to change the value, which may vary from 15 sec. to 90 min. You can also change the vacuum time value as desired in the "Customisation" option in the SERVICE menu.
- Press OK to continue with this function. During this operation, the display shows all the current phases with values and text messages.
- Press the ESC button for 2 seconds during the operation to return to the main menu.
- In the event of an emergency, press the red mushroom button on the control panel to completely turn off the unit; in this case, the function that was in progress will not be stored.
- When the set time has run out, a leak test is run for 5 min., indicated by the progress bar. If a leak is detected (-0.75bar), the error message is shown on the display followed by an acoustic signal. Press ESC to exit.
- When the cycle has been completed, press the ESC button to exit.
- The vacuum pump operating time increments a vacuum hour counter to monitor when oil change is due. When 100 hours of operation have been reached, you will be warned to change the oil. The counter increments in seconds.

- *In the event of an error, the display shows the relative message and activates an acoustic signal. To exit press the ESC button.*


## 5.6 "CHARGE TO VEHICLE" operation

This function allows charging the A/C circuit with refrigerant in the correct quantities measured by the electronic precision scale.

- Connect the high and low pressure pipes to the A/C system
- It is advisable to open only the HP valve
- If there is no HP valve, use the LP valve and when the operation has been completed, wait three minutes before starting the A/C system.

### 5.6.1 Oil filling

- **The oil must be charged using the dedicated "Oil In" valve (the oil will be aspirated by the vacuum that is formed at the end of the vacuum cycle) before charging the system with gas.**

	<p>Absolutely do not mix different types of lubricants. Always check the types of oil to be used in the different A/C systems (according to the type of compressor used), which can be found on the technical specification sheets.</p>
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- Select "CHARGE TO VEHICLE" with the "+ ↑" and "- ↓" buttons. Press OK to start the cycle.
- The display shows the default quantity of refrigerant set to 600 g, modifiable with the "+ ↑" and "- ↓" buttons with variations of 5 g. You can also change the charge value as desired in the "Customisation" option in the SERVICE menu.
- Press OK to start the cycle.
- Once the values have been set and conditions permitting, the system executes the cycle, showing all the current phases on the display with values and text messages.
- *In the event of an error, the display shows the relative message and activates an acoustic signal. To exit press the ESC button.*
- Press the ESC button for 2 seconds during the operation to exit and return to the main menu.
- in the event of an emergency, press the red mushroom button on the control panel to completely turn off the unit; in this case, the function that was in progress will not be stored.
- When the cycle has been completed, press the ESC button to exit.
- The unit controls the quantity charged so that it does not go below the minimum level of 1 kg, thus allowing you to fill the system with any quantity higher than 1 kg (e.g. the display indicates 1300 g, so you can charge 300 g).

## 5.7 Pipe drainage procedura

1. When the procedure has been completed, keep the high and low pressure pipes connected, close the HP and LP valves, start the vehicle engine and wait a few minutes for the A/C system to reach full power.
2. If there is only one service point, close the HP or LP valve used and disconnect the pipe from the vehicle.
3. If there are two service points, disconnect the high pressure pipe (HP) from the vehicle and open the HP and LP valves to allow the gas contained in the pipes to return through the low pressure in the vehicle. Wait until the high and low pressures drop to a value of about 2 bar, then also disconnect the low pressure pipe (LP).
4. Stop the engine.



This phase must be executed with the engine on, the other phases strictly with the engine off.

## 5.8 Refrigerant topping-up

If there is refrigerant in the A/C system, the only way to fill the system with more gas is to perform a TOP-UP operation. To execute this phase, connect the unit to the A/C system, start the vehicle engine and wait a few minutes for the A/C system to reach its operating power and stabilize.

- Connect the low pressure pipe.
- Start the engine and the A/C system
- Partially open the low pressure valve (LP)
- Select the "CHARGE" operation and press OK to start the cycle.
- Set the desired quantity and press the OK button.
- When charging has been completed, close the LP valve, stop the A/C system and the engine.



This is the only phase that must be performed with the engine on. The other phases strictly with the engine off.

## 5.9 Recovery & Vacuum" operation

- This procedure allows the following operations to be performed in sequence:

- refrigerant recovery, recovered oil discharge, vacuum phase and vacuum control; the times for the various checks are the same as for each single manual procedure.

- Connect the high and low pressure pipes to the A/C system
- Open the HP and LP valves, or if there is only one service point, open the corresponding valve.
- Select "Recovery & Vacuum" with the "+ ↑" and "- ↓" buttons. Press OK to start the cycle.
- The display shows the set vacuum time of 30 min. modifiable with the "+ ↑" and "- ↓" buttons.
- Press the OK button to start the cycle.
- During this operation, the display shows all the current phases with values and text messages.
- Press the ESC button for 2 seconds during the operation to exit the cycle.
- in the event of an emergency, press the red mushroom button on the control panel to completely turn off the unit; in this case, the function that was in progress will not be stored.
- When the cycle has been completed, the display shows the quantity of refrigerant recovered in the recovery cycle. To exit press the ESC button.

- In the event of an error, the display shows the relative message and activates an acoustic signal. To exit press the ESC button.

## 5.10 "CHARGE TO CYLINDER" operation

This function is used to fill the internal cylinder with refrigerant. Filling is set to 7 kg on a total of 10 in order to always have a good recharge range and sufficient quantity to perform the recovery operations.

Use the red high pressure pipe (HP); remove the quick-coupling at its end; connect the pipe to an external cylinder containing refrigerant. **If the external cylinder is not equipped with an internal plunger, it must be held upside down so that the gas can always flow out in the liquid state.**

- Open the cylinder and the HP valve.
- Select "FILL CYLINDER" with the "+ ↑" and "- ↓" buttons. Press OK to start the cycle.
- The display shows the calculated estimate of the quantity of refrigerant required to completely fill the cylinder with an approximation of 200 g. You can also change the maximum filling value as desired in the "Customisation" option in the SERVICE menu.
- Press OK to continue with this function. During this operation, the display shows all the current phases with values and text messages. The unit adapts its recovery capacity in relation to the pressure coming from the external cylinder. Before reaching the estimated value, the operator is warned with an acoustic signal to close the external cylinder and press OK, so that the calculated value can be reached without any refrigerant residues in the unit.



- Press the ESC button for 2 seconds during the operation to return to the main menu.
  - in the event of an emergency, press the red mushroom button on the control panel to completely turn off the unit; in this case, the function that was in progress will not be stored.
  - When the cycle has been completed, press the ESC button for 2 sec. to exit
  - During this cycle, the filter counter does not increment.
- In the event of an error, the display shows the relative message and activates an acoustic signal. To exit press the ESC button. This operation does not increment the filter counter.

## 6. "SERVICE" menu



The basic settings allow the unit to start operating immediately, in all the operating phases.

- This menu contains all the functions necessary for optimal use and customisation of the unit.
- Select the SERVICE option from the main menu with the "+ ↑" and "- ↓" buttons and press OK. The options in this menu are:
- **"View parameters"**. When accessing this option, the current values of the unit sensors are displayed: gas in the cylinder, pressure of the sensor positioned after the HP and LP valves, cylinder temperature sensor. Press the OK button to view the ADC values of the converter. Press ESC to exit.
  - **"Recovery counter"**. This option shows the kg of refrigerant gas recovered from motor vehicles. This is shown by the partial counter, that automatically resets after changing the filters, and the total counter, that follows the life of the unit and cannot be reset.
  - **"Pressure self-reset"**. This option is for technical staff authorised by CTR Group s.p.a.. This option allows you to calibrate the pressure sensor. The message "Atmospheric pressure - open the valves" is shown on the display; remove the HP and LP pipes, open the HP and LP valves and press OK to confirm. When the operation has been completed, the message "Successfully completed" will be displayed. Press ESC to exit.
  - **"Vacuum time"**. This option displays the hours of operation of the vacuum pump, divided into the partial counter that monitors when oil change is due and the total counter that monitors the life of the unit. Press OK to access resetting, press OK to reset the partial counter and then ESC to exit (see routine maintenance).
  - **"Compressor time"**. This option displays the hours of operation of the recovery compressor. Press OK to access resetting, press OK to reset the partial counter and then ESC to exit.
  - **"Customisation"**. This option allows you to select the various default settings: quantity of gas suggested for charging, vacuum time and cylinder filling.
  - **"Replace filters"**. Use this function when the cartridge filters need to be replaced (see routine maintenance).
  - **"Select language"**. This option allows you to select one of the available languages. Use the "+ ↑" and "- ↓" buttons to move the cursor ">" to the desired language and press OK to confirm.

## 7. Refrigerant transfer from the unit to an external container

To drain the cylinder, perform the following operations:

- Turn on the unit, connect the HP pipe to a cylinder or another external container to collect the refrigerant and open the valves on the connection line.
- Select "System filling", set the quantity of gas you want to transfer and press "OK".
- When the transfer phase has been completed, close the valves and recover the residual pressure in the pipe.



## 8. Routine maintenance

### 8.1 Refrigerant filter replacement:



Contact your local Dealer to perform this operation.

The innovative refrigerant cartridge filters have also allowed a technological evolution in the maintenance process. This unit is equipped with an electronic system capable of automatically performing all the phases necessary for filter replacement in complete safety for the operator.

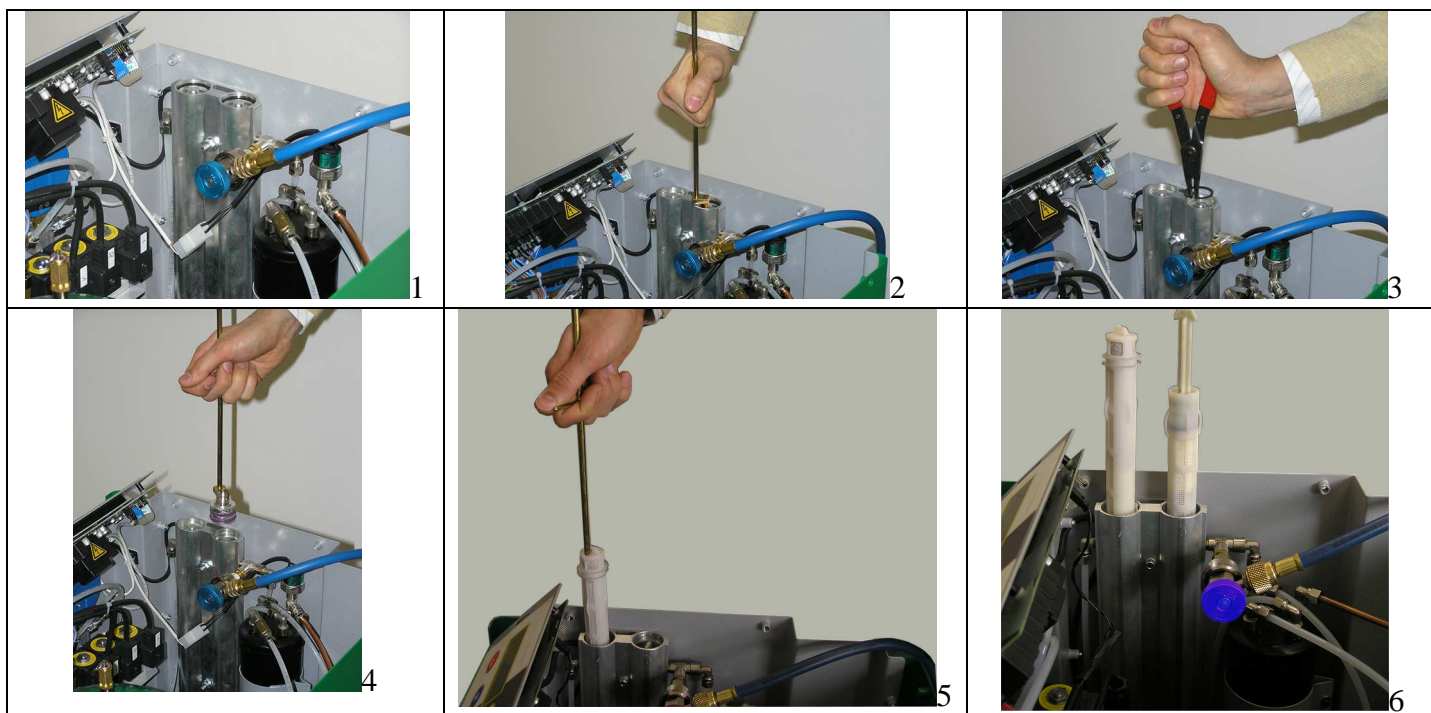
When the filter counter has reached a calculated value of refrigerant recovered from vehicles, a message prompting the operator to replace the filters is displayed for a few seconds upon activation. Before continuing, order the new filters from the CTR Group s.p.a. sales network.



- Always replace both the filters each time the "Replace filters" message is displayed.
- Use only dedicated original spare parts. There are no compatible filters on the market.
- The "Replace filters" message warns you when the filters need to be replaced, but does not in any way lock unit operation. If you ignore the "Replace filters" message and continue using the unit, you may irreparably compromise proper functioning of the unit and forfeit the warranty because of improper use.
- Check that the old oil container is empty.



- Connect the unit to the mains only when specifically indicated in this paragraph. Risk of electrocution.



- Disconnect the unit from the mains.
- Undo the screws of the black plastic head and remove it.
- Connect the LP pipe to the quick-connector of the filter container, open the LP valve and screw on the quick-coupling (**see photo 1**)
- Close the HP valve.
- Connect the unit to the mains and turn it on.

- Select the "SERVICE" option from the main menu.
- Go to "Filter replacement" and check that the OIL Dis valve is open.
- Press the OK button. The electronic system activates a procedure to release the pressure from the filters and when complete the message "Now replace the filters" is shown on the display.
- Disconnect the unit from the mains.
- Insert the appropriate remover and press firmly downwards (**see photo 2**).
- Remove the snap rings (Seeger rings)(**see photo 3**).
- Remove the filter caps with the dedicated extractor provided (**see photo 4**). Check the condition of the O-rings and replace them if necessary.
- Remove the cartridges with the extractor using the other end (**see photo 5**).
- Fit the new cartridges, respecting the fitting direction (**see Fig. 6**).
- Follow the procedure in reverse order to close the cartridges.
- Only after refitting the filter caps, connect the unit to the mains, turn it on, go back to SERVICE > "Filter replacement" > OK > "Now replace the filters" > OK (press OK until the vacuum pump starts).

The unit executes dehumidification for 20 min., a leak test for 5 min. and finally resets the partial counter (recovery counter) and the service message. If there are any problems, an error message is displayed and the operation blocked. The time required for the entire operation is about 30min.

## 8.2 Vacuum pump replacement:

The life of the vacuum pump is monitored by the electronic system in order to always ensure optimal efficiency and a long life in normal operating conditions. When the service message "Change vacuum pump oil" is displayed, proceed as follows:

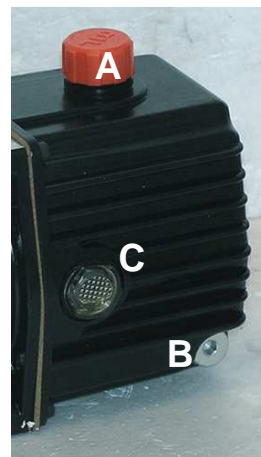
When topping up or changing the oil in the vacuum pump, use specific oil for vacuum pumps.



To top up (see figure), unscrew the bleeding (A) cap and pour in oil until it reaches mid-level of the sightglass (C); when done, screw the bleeding cap back on.

To change the oil:

- Run the pump for 10 minutes
- disconnect the unit from the power supply
- Remove the drain plug positioned in the lower part of the pump (B); wait until all the oil has drained out Refit the drain plug
- Unscrew the bleeding cap and pour in new oil until it reaches mid-level of the sightglass. Screw the bleeding cap back on.



To clear the "Change vacuum pump oil" message select SERVICE, go to "Vacuum time", press OK to display the time, press OK to display the message "OK - Clear - ESC - Exit", then press OK to clear the message and ESC to exit.

## 9. Oil containers

The unit is supplied with two containers to charge the system with oil and UV tracer. Should it be necessary during operation to use different oils, use different containers, one for each type of oil.



Absolutely do not mix different types of lubricants. Always check the types of oil to be used in the different A/C systems (according to the type of compressor used), which can be found on the technical specification sheets.

## 9.1 Service pipes






The unit is provided with 2.5 m long pipes for connection to the A/C system.  
Should these pipes not be long enough for operating or functional requirements, 3-6 m long pipes are available at our sales point.

## 9.2 Spare parts

All the spare parts for GAIA are sold by CTR Group s.p.a. and can be ordered at our sales points.

## 9.3 Adhesive labels

Explained below is the meaning of the adhesive labels used:

<b>OIL In</b>	Indicates the container for fresh oil charge.
<b>OIL Dis</b>	Indicates the container for old oil discharge.
	Indicates that there are high-voltage parts with the risk of electrocution
	Wear safety goggles. Contact with the eyes may cause serious injury.
	Operate and store the unit in a dry place protected against atmospheric agents.
	Read the owner's manual of the vehicle to identify the type of refrigerant used before using the unit.
	Wear protective gloves. Contact with the skin (given the extremely low boiling temperature) may cause burns.

## 10. Troubleshooting



To perform repair, maintenance or adjustment operations not described in the above chapters, contact skilled staff only. Failure to follow this instruction will relieve CTR Group s.p.a. of any responsibility for unit malfunctioning.



The table indicates the persons that need to perform the operation. Strictly follow the instructions given.

After solving the problem following the instructions, the phases you were executing can be repeated from scratch.

Problem	Causes	Remedies	Operation
The machine does not work	1) Repeated turning on and off 2) External unit fuses blown 3) Internal unit fuses blown	1) Turn off the machine and wait at least 10 sec. before turning it on again 2) Replace 3) Replace	1) Operator 2) Operator 3) Technical staff
The unit does not recover	1) Fuse blown 2) Recovery compressor damaged	1) Check the integrity of the recovery compressor/solenoid valve fuse on the circuit board 2) Replace the compressor	1) Technical staff 2) Technical staff
The vacuum pump does not work	1) Gas in the circuit 2) No power to the pump 3) Vacuum pump damaged	1) Perform a recovery phase 2) Check the electric power supply and the fuses 3) Replace the pump	1) Operator 2) Technical staff 3) Technical staff
The vacuum timer does not start but the pump works and the pressure gauges indicate -1 bar	1) Pressure sensor out of calibration 2) The pump is not running	1) Calibrate the pressure sensor (see Service menu). 2) Check the integrity of the vacuum pump fuse on the circuit board.	1) Operator 2) Technical staff
A leak is always indicated after the leak test	1) Pressure sensor out of calibration 2) Sediment in the vacuum solenoid valve	1) Calibrate the pressure sensor (see Service menu). 2) Remove the sediment	1) Operator 2) Technical staff
The unit does not charge the refrigerant	1) The charge solenoid valve does not open 2) The one-way valve is locked	1) Check the integrity of the solenoid valve fuse 2) Replace the valve	1) Technical staff 2) Technical staff