WIGAM

Made in Italy

Piccola R744

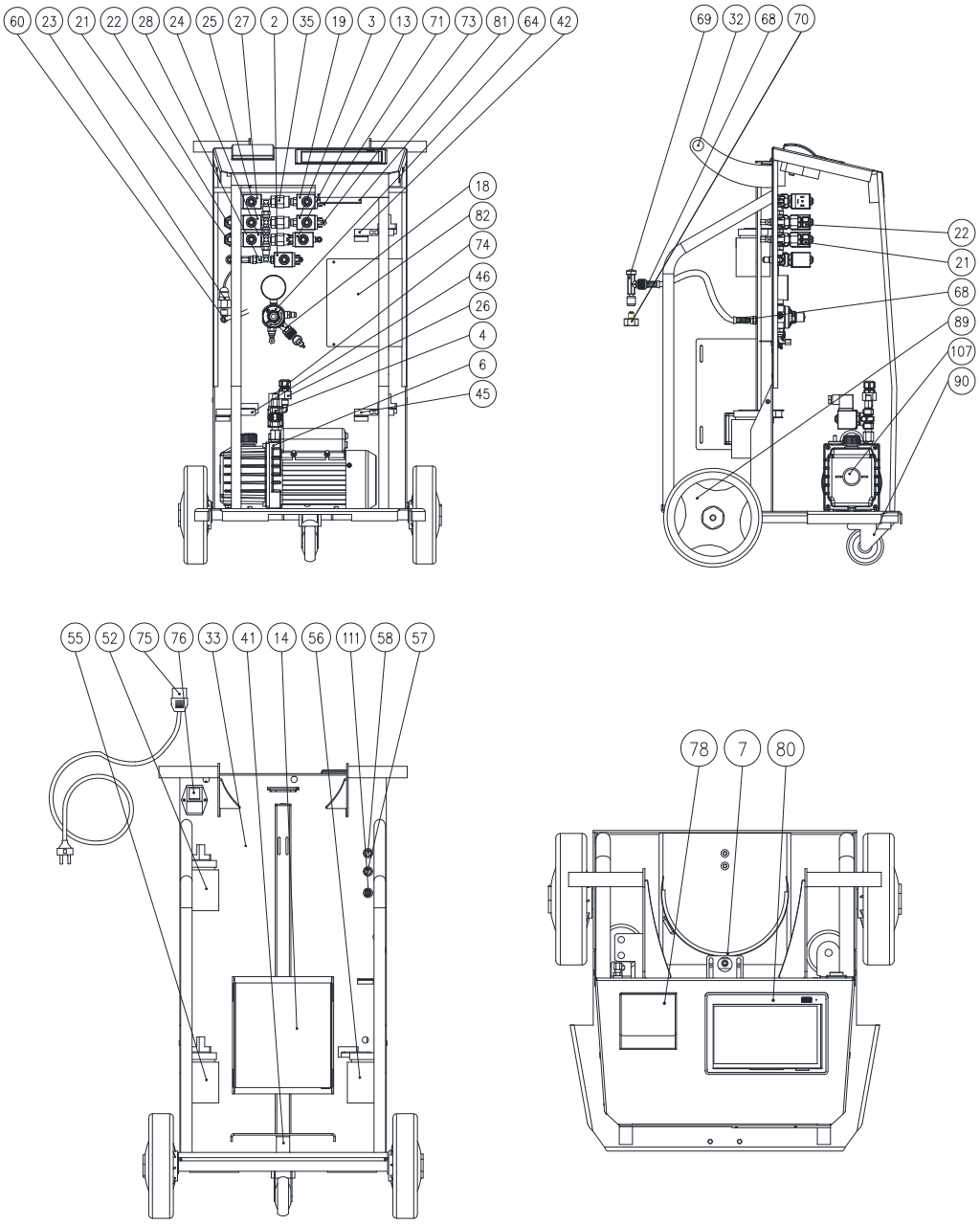
Automatic unit for Discharge, Vacuum and Charge for R744 A/C system

User's manual

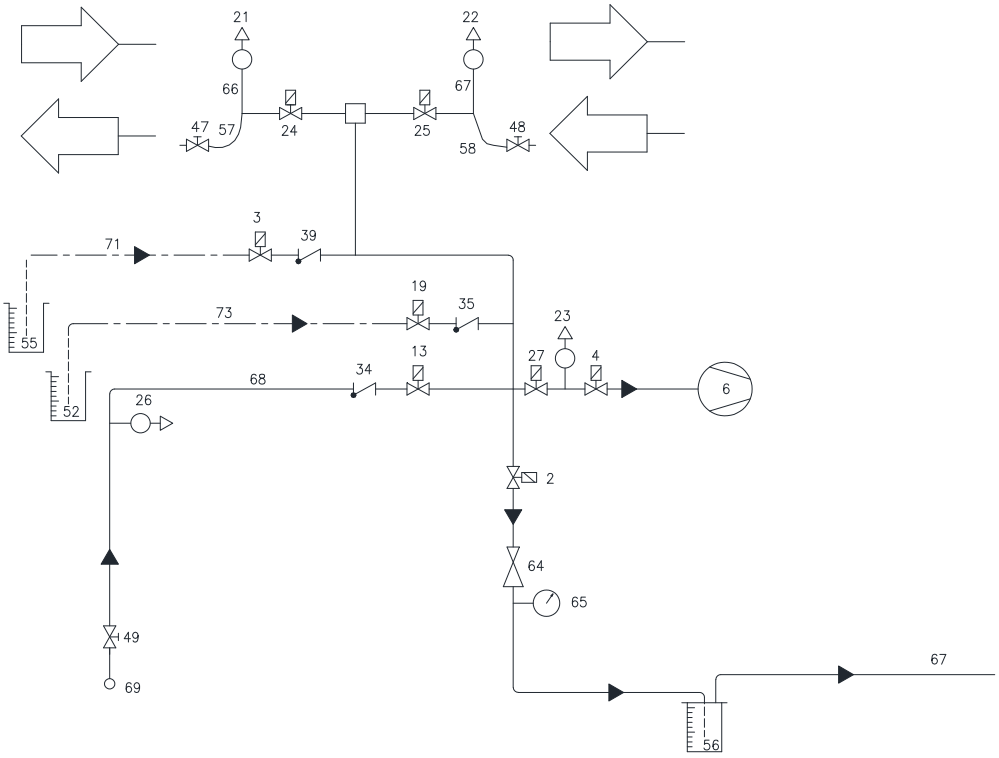
SUMMARY

Layout : WIGAM S.p.A.
Printed in Italy
Ed. 05/2022

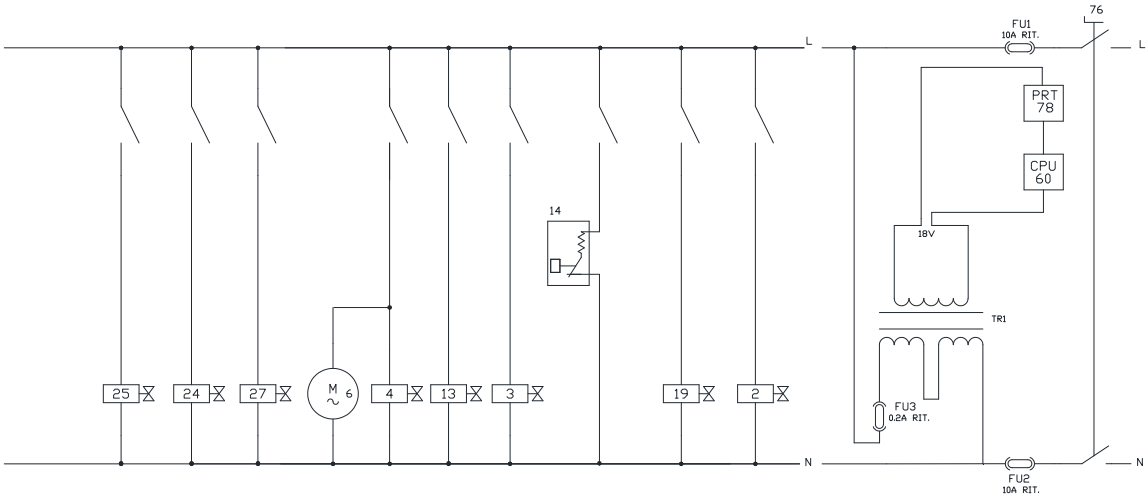
Layout drawing



Hydraulic diagram



Electric diagram



Legend

2	Solenoid valve - recovery line	**48**	HIGH quick coupler
3	Solenoid valve - uv charge	**52**	Oil charging bottle
4	Solenoid valve - vacuum line	**55**	UV charging bottle
6	Vacuum pump	**56**	Oil discharge bottle
7	Pin to limit shocks to the refrigerant bottle	**57**	LOW flexible hose
13	Solenoid valve -refrigerant charging line	**58**	HIGH flexible hose
14	Heater belt with thermostat on the bottle	**60**	Refrigerant charge hose (Solenoid valve – Pressure sensor)
18	Safety valve	**64**	Discharge pressure regulator
19	Solenoid valve - oil charging line	**68**	Refrigerant charge flexible hose
21	LOW pressure sensor	**69**	Lock valve to connect refrigerant external bottle
22	HIGH pressure sensor	**70**	Adapter with internal core for refrigerant bottle
23	Bottle pressure sensor	**71**	UV injection capillary tube
24	Solenoid valve - LOW	**73**	Oil injection capillary tube
25	Solenoid valve - HIGH	**74**	Vacuum pump hose
26	Vacuum sensor	**75**	Power cable
27	Solenoid valve – vacuum 2	**76**	Main power switch
28	Complete valve assembly	**78**	Printer
32	Handle knob	**80**	Electronic control board (with 7” touch screen)
33	Frame	**81**	12V power supply for electronic control board
34	Check valve – refrigerant charge	**82**	Auxiliary power board
35	Check valve - oil charging line	**85**	Plastic cover
39	Check valve - uv charge	**89**	Rear wheel
41	Load cell - 100 kg (refrigerant)	**90**	Front wheel with brake
42	Load cell - 5 kg (oil charge)	**106**	Vacuum pump oil filler plug
45	Load cell - 5 kg (UV charge)	**107**	Vacuum pump sight glass
46	Load cell - 5 kg (oil discharge)	**108**	Vacuum pump oil drain plug
47	LOW quick coupler	**111**	Auxiliary connection for nitrogen test

Safety precautions

- **Before using this recovery unit, make sure that the connections to the A/C air-conditioning system have been made correctly.**
  Before using the equipment, make sure that the drain hose (ref. 67) has been positioned outdoors and outside the work area.
- R744 refrigerant is classified as an asphyxiant; pay the utmost attention during making operations.
- This equipment is designed for trained personnel only, who must know the refrigeration fundamentals, cooling systems, refrigerants and possible damage that pressurized equipment may cause.
- Use only with refrigerant R744. The unit must not work with any other type of refrigerant.
- Carefully read the instructions contained in this manual; strict observance of the procedures described is fundamental to the operator's safety, the perfect state of the unit and constant performances as declared.
- **The unit must always work under the operator's direct supervision**
- Do not operate the unit with different refrigerant than the one it has been designed for.
- Before performing any operation, make sure that the hoses used for connections have been previously evacuated and that they do not contain non-condensable gases.
- Avoid skin contact; the low boiling temperature of the refrigerant (about -30°C) can cause freezing.
- Avoid breathing refrigerant vapours.
- It is recommended to wear suitable protections like safety glasses and gloves; contact with refrigerant may cause blindness and other personal injuries.
- Do not operate near open flames and hot surfaces; the high temperatures decompose the refrigerant releasing toxic and caustic substances which are hazardous for the operator and the environment.
- Always make sure that the unit is connected to a suitably protected mains supply provided with an efficient earth connection.
- Before performing maintenance operations or when the unit will not be used for a long period of time, turn the unit off by turning the main switch to 0 and disconnect the power supply cord; absolutely follow the sequence of operations.
- Operate the unit only in locations with suitable ventilation and a high number of air changes.
- Before disconnecting the unit, make sure that the cycle has been completed and that all valves are closed in order to avoid release of refrigerant to the atmosphere.
- Never fill any tank with liquid refrigerant to more than 75% of its maximum capacity.
- During operations avoid release of refrigerant to the environment; this precaution is required by international environmental standards and is essential to avoid difficult leak detection in a refrigerant polluted environment.
- Protect the unit from dripping.
- Do not modify the calibration of safety valves and control systems.
- If you recover refrigerant from a cooling system equipped with a water evaporator and/or condenser, it is necessary to drain water from the evaporator and/or condenser or to keep the circulation pump running during the entire recovery operation in order to avoid frosting.
- Do not leave the unit connected to the power supply when not used.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance
- In case of damage to the power cord, please replace it immediately with an original spare supplied by Wigam.

User's manual in other languages are available on WIGAM web site: www.wigam.com

1. Introduction to recovery unit PICCOLA R744

PICCOLA R744 unit permits quick and efficient the discharge of refrigerant from the A/C system, evacuation, check for tightness, additive and lubricant injection, the subsequent charge with refrigerant and measurement of the operating pressures.
Thanks to the wide 7" screen, the unit is very versatile and is able to help the operator with information useful to perform the various operations.

1.1 TECHNICAL SPECIFICATIONS

Model	PICCOLA R744
Refrigerant	R744
Bottle availability	5-7-14 lt
Maximum discharging rate	~60 g/min
Power supply	230/1/50
Power input	550 W
Storage temperature	-10 ÷ +50°C
Working temperature	0 ÷ 40 °C
Degree of protection	IP20
Noise level	< 70dB (A)
Minimum residual density in the bottle	250 g/lt

1.2 UNIT'S COMPONENTS

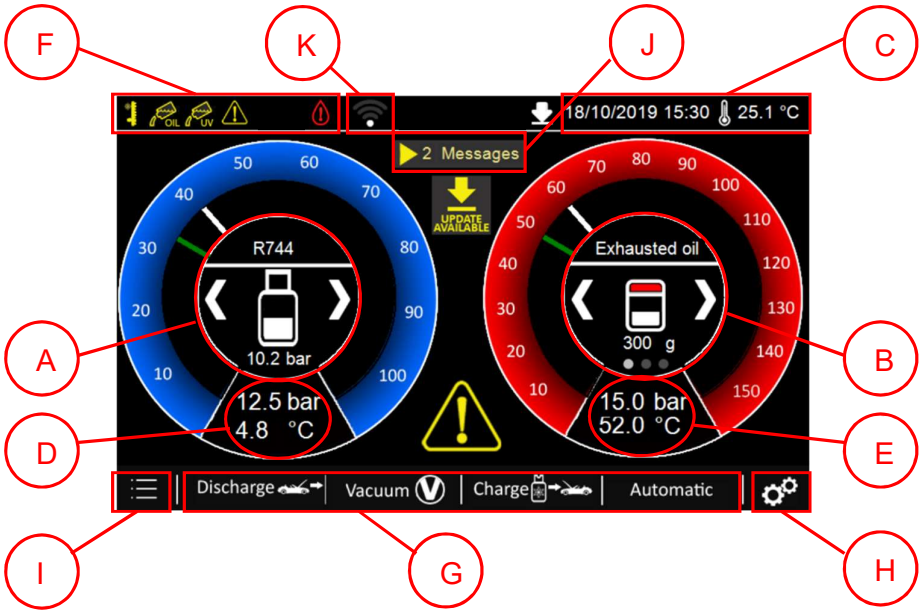
Component	***Features***
Vacuum pump	Rotary vane type, 100 l/min
Flexible hoses	L= 3.0 meters with quick couplers
Refrigerant bottle	With vapour connection (not included)
Container of discharged oil	Capacity of 200 grams of oil, on load cell
Container of oil to charge	Capacity of 200 grams of oil, on load cell
Container of UV to charge	Capacity of 200 grams of UV, on load cell
Control module	7" Touch screen
Printer	Thermal
LOW and HIGH valves	Automatic
Refrigerant heater belt	Automatic and completely managed by software

1.3 CONTROL MODULE

The unit has a wide 7" colour touch screen. The display shows the following information:

- Refrigerant quantity (kg/lb) inside the bottle (A)
- Pressure of internal refrigerant bottle (A)
- New oil quantity (g/oz) inside the bottle (it could be set for thermic, hybrid or electric car) (B)
- UV quantity (g/oz) inside the bottle (B)
- Exhaust oil quantity (g/oz) inside the bottle (B)

- Ambient temperature (°C/°F) (C)
- Hour and date (C)
- LOW pressure (bar/psi) and the corresponding saturation temperature (°C/°F) (D)
- HIGH pressure (bar/psi) and the corresponding saturation temperature (°C/°F) (E)
- Alarm warnings and machines signals (F)
- Start functions (Discharge, Vacuum, Charge and Automatic) (G)
- Service (H)
- Menu (I)
- Access to messages and reports (J)
- Status of WIFI signal (K) (if installed)



2. Preparing unit PICCOLA R744 for use

⚠ ***WARNING!*** The synoptic sticker does not exempt the operator from carefully reading this user's manual and from scrupulously respecting the procedures explained.

2.1 CHECKING THE VACUUM PUMP OIL LEVEL

Before checking the oil level, the unit must be placed on a level surface and its power supply must be **turned off**.
The user must check that the vacuum pump oil level covers half of the sight glass (see drawing below).

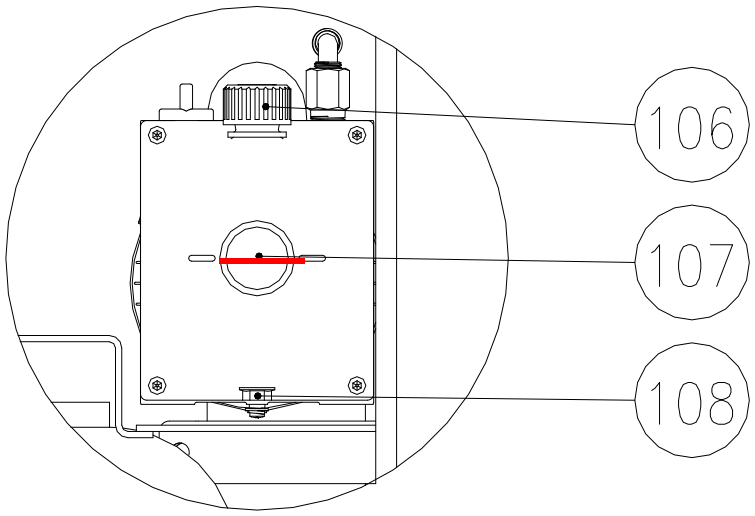
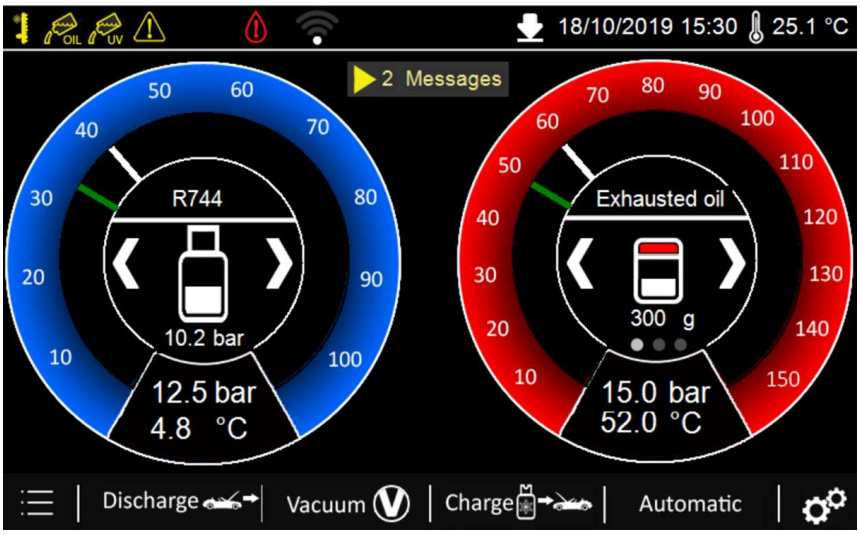


Figure 1

2.2 TURNING PICCOLA R744 ON FOR THE FIRST TIME

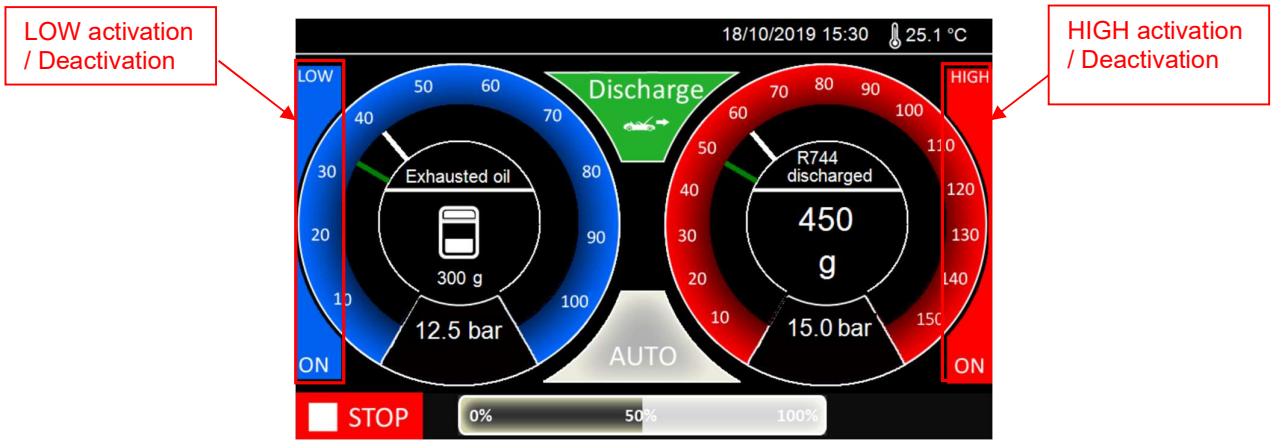
a) Connect the unit to the power supply
b) Place the **76** switch on position 1.
c) The unit will automatically ask to select the interface language.
d) Now, the unit will for the refrigerant you want to use.
e) Then, the zeroing of all the scales will start. The process is completely automatic and will take about 30 seconds.
f) At the end of the zeroing of the scales, the unit will suggest the operator to perform the periodical check of the equipment. It is recommended to do it, carefully following the information on the display.
g) At the end of the process, the unit will show the standby screen.



2.3 USE OF LOW AND HIGH AUTOMATIC VALVES

The unit is equipped with fully automatic LOW and HIGH connection valves.
After the operator has made the connection of the equipment to the A / C system, it automatically establishes the type of connection.

This information will be shown on the display, as shown in the example figure.



On the side of each pressure gauge there is information about the activation of the LOW and HIGH solenoid valve. This selection is established automatically by the equipment according to the pressure value that is detected at the time of connection to the A / C system.
The operator can still change the opening of the LOW and HIGH valves, by pressing directly on the display on each working side on the pressure gauge, thus changing the status from ON to OFF or vice versa. You can press anywhere in the highlighted area.

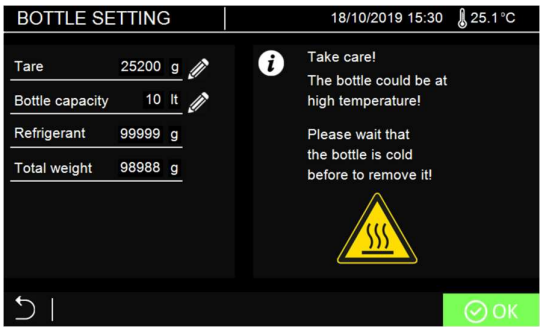
It is possible to change the selection of the connection valves to the A / C system during any phase of the equipment work.

2.4 SETTING THE DATA OF THE BOTTLE

The unit is delivered without a refrigerant bottle. It is therefore necessary to follow the following procedure for installing the R744 cylinder, then setting the information relating to the type of cylinder used.

⚠ ***WARNING!*** During the operations of removal and installation of the cylinder, the surface of the same or of the heating element may be at a high temperature. Perform this operation with the use of personal protective equipment for the hands and pay the utmost attention to avoid coming into contact with hot surfaces.

a) After carrying out the scale zeroing procedure, press the **Menu** key from the standby screen.
b) Select the item “Tank data setting”.
c) Prepare a R744 cylinder **without risen pipe**, with the capacity indicated in the specification (5-7-14 liters).
d) Place the bottle on the scale.
e) Fasten the 3 fixing straps of the cylinder and the heating band tightly.
f) Connect the reduction fitting (ref. **70**) supplied with the equipment to the cylinder.
g) Tighten with a suitable wrench and check for leaks.
h) Connect the refrigerant charge piping (ref. **68**) through the installation of the Lock-Valve valve fitting (ref. **69**).
i) Firmly connect the Lock-valve valve fitting, and after checking the absence of leaks, proceed to open the lock-valve handwheel.
j) Now, having finished the hydraulic connection, proceed slowly to open the cylinder valve.



k) Proceed now to set the bottle data:

1. **Tare** (take the tare value directly from the bottle data).
2. **Bottle capacity** (take the value from the bottle data)

l) After setting both cylinder data, press the OK key to confirm.

m) Back in the standby screen, inside the blue pressure gauge, you can see the refrigerant value inside the cylinder and the relative pressure measured by the internal sensor.

⚠ ***IMPORTANT!*** When the equipment is on, make sure that the valve on the cylinder and the lock valve handwheel are both in the open position.

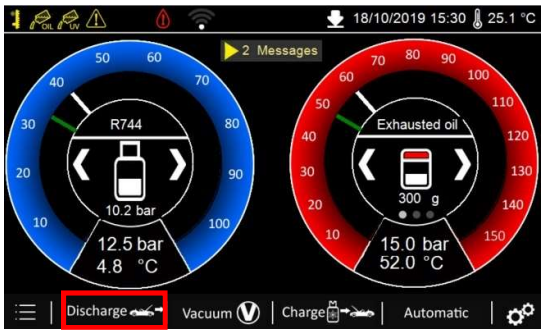
⚠ ***IMPORTANT!*** When the equipment is at rest and off, make sure that the valve on the cylinder is kept in the closed position.

3. Using the unit PICCOLA R744 (Primary functions)

⚠ ***WARNING!*** *Before carrying out the unloading process, make sure that the exhaust pipe (ref. 67) has been positioned outdoors and outside the work area.*

3.1 REFRIGERANT DISCHARGE Discharge

a) Turn on the engine with closed hood
b) Turn the air-conditioner on and have it run for some minutes
c) Open the hood and set the air-conditioner fan to maximum speed
d) Have the vehicle engine run slowly (800 - 1200 revolutions/min) for a few minutes
e) Turn the vehicle engine off and have the air-conditioner fan run at maximum speed and start the recovery operations
f) Turn the **76** switch to position 1.
g) Press the **"Discharge"** button.



h) Select **"Discharge A/C system"** and then set also **"Discharge test"** .
We recommend to active every time the discharge test, in order to optimize the discharge cycle and to remove the bigger quantity of refrigerant from the A/C system.

i) If necessary, the user can introduce also information about the customer; please click on the relative edit icon.
j) It is also possible to introduce information about the operator who is working with the unit; please click on the relative edit icon.
k) Connect the hoses to the A/C system, which needs a maintenance. Open the hand-wheels on the couplers.
l) Press **START** button to start the function.

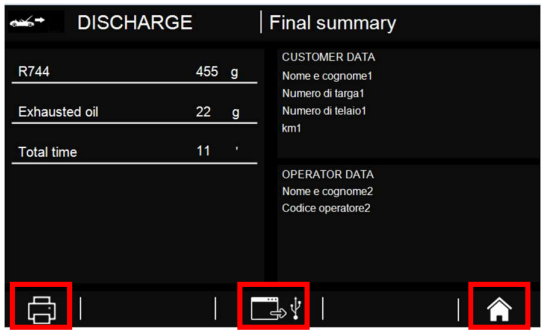
m) During the refrigerant discharge process, the display will show the discharged refrigerant quantity and also the exhaust oil quantity.

n) In case of emergency, it is possible to leave the function by pressing the **STOP** button. The display will show the resume screen, with all the information of the cycle until the stop.

o) During the cycle, the unit performs the automatic oil discharge.

p) At the end of discharge process, automatically the discharge test will start, if the user has selected it. During the test, the unit will check if the system has a rise of pressure, in order to restart the discharge process to optimize the quantity.

q) At the end of the process, the unit will inform the operator by an acoustic signal, and the display will show all the information about the performed cycle.



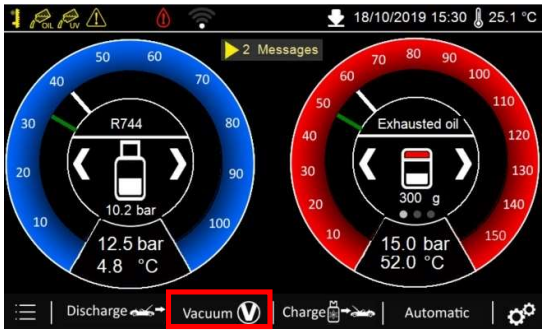
r) In the final screen it is possible to print a report on printer or a report on USB stick.

s) Press on “Home” button to come back in main menu.

⚠ ***WARNING!*** *Do not pollute environment with oil; it is a special waste and must be disposed of according to the regulations in force.*

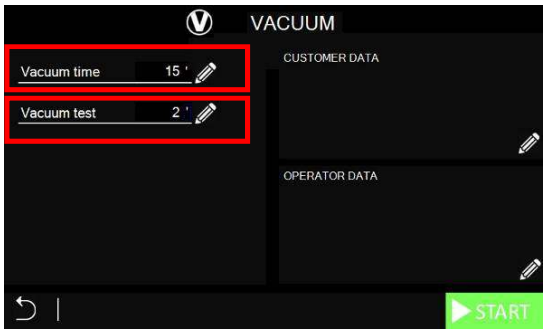
3.2 VACUUM AND VACUUM TEST Vacuum

a) Press the "**Vacuum"** button.



b) Set the vacuum time by clicking on the relative edit icon. To perform an efficient service on A/C System, we recommend making a vacuum during 30'.

c) The unit suggest 2 minutes for Vacuum test. In case the user need to modify this value, please click on the relative edit icon.



d) Connect the hoses to the A/C system, which needs a maintenance. Open the hand-wheels on the couplers.

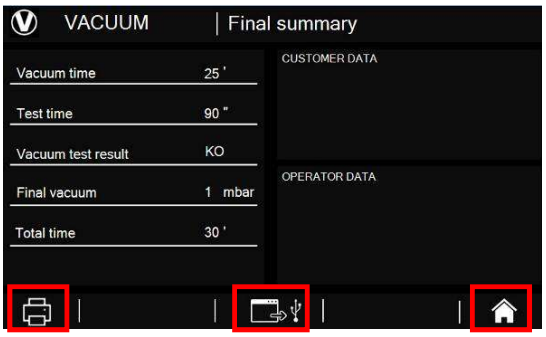
e) Press **START** button to start the function.

f) At the end of vacuum process, automatically the vacuum test will start. This test need to check if any leakage is present in A/C circuit.

g) In case of emergency, it is possible to leave the function by pressing the **STOP** button. The display will show the resume screen, with all the information of the cycle until the stop.

h) During the execution of the vacuum cycle, the user can press the **SKIP** button, in order to stop the vacuum pump and to start directly with the vacuum test.

i) At the end of vacuum test, in case that the unit check for any leakage, it will inform the operator by acoustic signal. The display will show all the information about the performed cycle.



j) In the final screen it is possible to print a report on printer or a report on USB stick.
k) Press on “Home” button to come back in main menu.

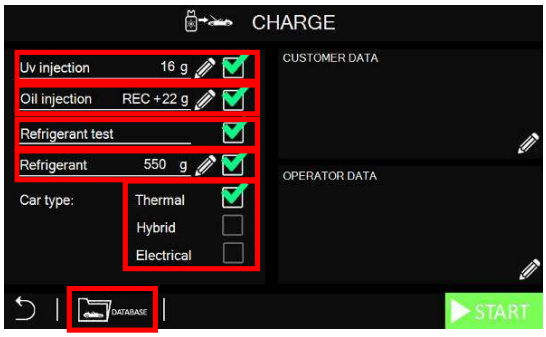
3.3 OIL – UV – REFRIGERANT CHARGE 

The unit PICCOLA R744 has been designed to work with thermal, hybrid and electric vehicles. To work in absolutely safety, every time that the unit works with a different type of vehicle,the unit starts with an automatic flushing of the internal circuit, to avoid cross contamination of oils.

3.3.1 EXECUTION OF CHARGING PROCESS

⚠ ***WARNING!*** *It is necessary to perform the charging process with A/C system already evacuated. In case that this operation was not successfully completed, the unit will inform the user by an alarm signal.*

a) Press the “**Charge”** button



b) Select the **UV injection** checkbox to charge additives inside the A/C system. Please click on the relative edit icon to modify the quantity to charge.
c) Select the **Oil injection** checkbox to charge oil inside the A/C system. Please click on the relative edit icon to modify the quantity to charge. It is possible to charge the quantity of oil, which the unit has discharged during the recovery process [REC], and to add an additional quantity.

Suggested quantities for refilling the A/C system with oil

According to the type of A/C system component you have replaced, you need to fill in the lubricant quantity indicated below, even if no oil has been extracted during recovery.

Evaporator:	50cc
Condenser:	30cc
Filter:	10cc
Pipes:	10cc

In any case, the operator must follow the instructions of the A/C system manufacturer.

d) Select the "**Refrigerant Test**" checkbox to use the first part of charged refrigerant (about 70 grams) to perform another test (after vacuum test successfully) before to start with the real charging process.

e) Select the "**Refrigerant**" checkbox to charge refrigerant inside the A/C system. Please click on the relative edit icon to modify the quantity to charge.

f) Finally select the type of vehicle: Thermal, Hybrid, and Electric. This information is very important because each type of car needs of its specific type of lubricant oil. It is necessary take care to have not cross contamination between the different oils passing from a vehicle to another. If necessary, the equipment's display will inform the operator that it is necessary to change oil type to introduce in the bottle; for this purpose, the unit will automatic start the flushing of the internal circuit.

⚠ **IMPORTANT:** If the unit inform the operator about the automatic procedure of flushing of the internal circuit, it must be realized before the connection of PICCOLA R744 unit to the car!

g) The operator can also select all the information, directly form the Car's database. Reading this information about the selected car, the unit will directly set the correct quantity of refrigerant to charge in the A/C system.

h) Connect the hoses to the A/C system on which you have to make the maintenance. Open the hand-wheels on the quick couplers.

i) Press the **START** button to start the function.

j) The unit will proceed with the first phase of injection of oil and additives in sequence.

k) Then the unit will perform automatically an extra pressure test of the A/C system with the refrigerant. A known quantity of refrigerant is charged into the system and the unit checks if there is a drop of pressure or not.

l) In case of emergency, it is possible to leave the function by pressing the **STOP** button. The display will show the resume screen, with all the information of the cycle until the stop.

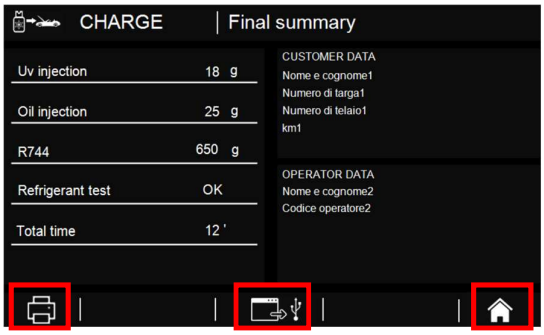
⚠ ***IMPORTANT!*** The pressure test with the refrigerant is an extra test the unit performs after the operator has already checked for possible leaks by means of the previous tests with nitrogen and/or Azoidro and after that with the tightness check in vacuum.

m) If the pressure test with refrigerant has ended successfully, you can proceed with the refrigerant charge. The charge is ended in a modulated way in order to optimize the quantity of refrigerant charged into the system.

⚠ ***WARNING!*** A succession of "clicks" inside the unit are normal in this phase

n) When the function is completed, a beep will let the operator know that the cycle is over.

o) The unit will inform the operator to disconnect the A / C system to recover the residual gas present in the hoses. The display will show all the information of the process.

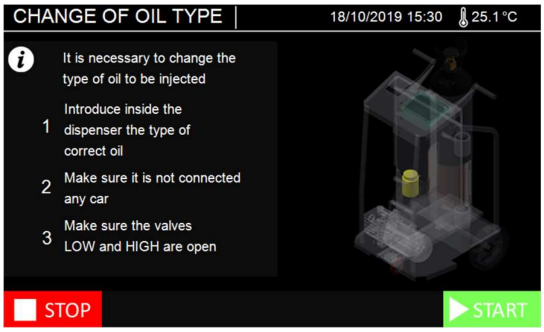


p) In the final screen it is possible to print a report on printer or a report on USB stick.
q) Press on “Home” button to come back in main menu.

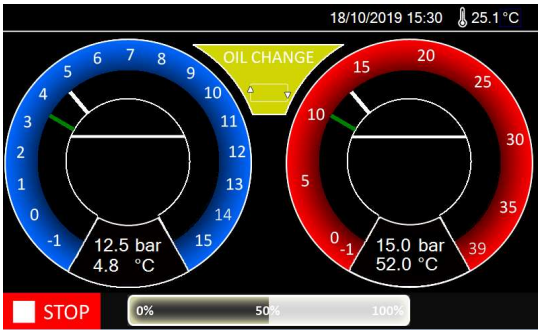
3.3.2 FLUSHING OF THE INTERNAL CIRCUIT FOR OIL TYPE CHANGE

The PICCOLA R744 is studied to work with 3 different typologies of vehicles:
- Thermal
- Hybrid
- Electric

If it is necessary, PICCOLA R744 unit will inform the operator that it is necessary to substitute the oil type, so to flush the circuit.



Please go on follwing the information on the display.



⚠ ***WARNING!*** If the oil dosimeter is not replaced, the procedure is completely inefficient. So provide to replace the oil dosimeter when the unit asks it during the procedure.

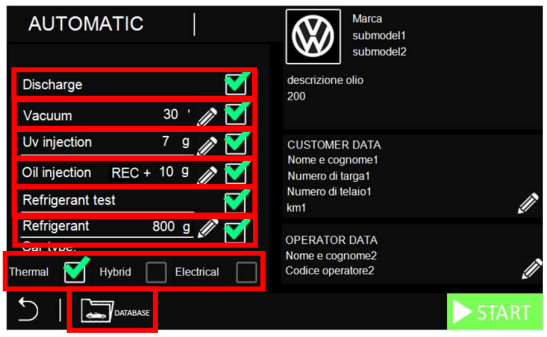
⚠ ***WARNING!*** If the quantity of oil is not enough for the flushing procedure (about 60 grams) the unit will inform the operator by means of an alarm.

The unit will perform the procedure automatically; after that, it will be possible to proceed with charging the system.

3.4 AUTOMATIC CYCLE Automatic

⚠ ***WARNING!*** Before carrying out the unloading process, make sure that the exhaust pipe (ref. 67) has been positioned outdoors and outside the work area.

a) Press the "**Automatic**" button



b) The unit will perform the automatic discharge process, if refrigerant is present in the A/C system. It is not possible to deselect this function. If no refrigerant is present inside the A/C system, the unit will start directly the Vacuum process.

c) Select the "**Vacuum**" checkbox to perform the vacuum and vacuum test of the system. Please click on the relative edit icon to modify the vacuum time. In the automatic cycle, the time of vacuum test is already set to the value of 3 minutes.

d) Select the "**UV injection**" checkbox to charge additives inside the A/C system. Please click on the relative edit icon to modify the quantity to charge.

e) Select the **Oil injection** checkbox to charge oil inside the A/C system. Please click on the relative edit icon to modify the quantity to charge. It is possible to charge the quantity of oil, which the unit has discharged during the recovery process [REC], and to add an additional quantity.

<u>Suggested quantities for refilling the A/C system with oil</u>

According to the type of A/C system component you have replaced, you need to fill in the lubricant quantity indicated below, even if no oil has been extracted during recovery.

Evaporator:	50cc
Condenser:	30cc
Filter:	10cc
Pipes:	10cc

In any case, the operator must follow the instructions of the A/C system manufacturer.

f) Select the "**Refrigerant Test**" checkbox to use the first part of charged refrigerant (about 70 grams) to perform another test (after vacuum test successfully) before to start with the real charging process.

g) Select the "**Refrigerant**" checkbox to charge refrigerant inside the A/C system. Please click on the relative edit icon to modify the quantity to charge.

h) Finally select the type of vehicle: Thermal, Hybrid, and Electric. This information is very important because each type of car needs of its specific type of lubricant oil. It is necessary take care to have not cross contamination between the different oils passing from a vehicle to another. If necessary, the equipment's display will inform the operator that it is necessary to change oil type to introduce in the bottle; for this purpose, the unit will automatic start the flushing of the internal circuit.

⚠ **IMPORTANT:** If the unit inform the operator about the automatic procedure of flushing of the internal circuit, it must be realized before the connection of PICCOLA R744 unit to the car!

i) The operator can also select all the information, directly form the Car's database. Reading this information about the selected car, the unit will directly set the correct quantity of refrigerant to charge in the A/C system.

j) Connect the hoses to the A/C system, which needs a maintenance. Open the hand-wheels on the couplers.

k) Press **START** button to start the function.

l) The equipment will start the discharge cycle as first phase, then it will perform vacuum and vacuum test, and it proceed with the operations of oil and additive injection (depending on the setting made).

m) In case of emergency, it is possible to leave the function by pressing the **STOP** button. The display will show the resume screen, with all the information of the cycle until the stop.

n) Then the unit will perform automatically an extra pressure test of the A/C system with the refrigerant. A known quantity of refrigerant is charged into the system and the unit checks if there is a drop of pressure or not.

⚠ ***IMPORTANT!*** The pressure test with the refrigerant is an extra test the unit performs after the operator has already checked for possible leaks by means of the previous tests with nitrogen and/or Azoidro and after that with the tightness check in vacuum.

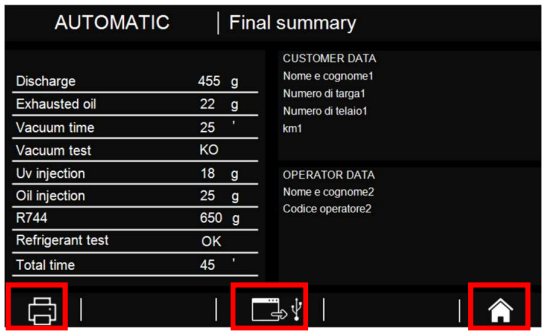
o) If the pressure test with refrigerant has ended successfully, you can proceed with the refrigerant charge. The charge is ended in a modulated way in order to optimize the quantity of refrigerant charged into the system.

⚠ ***WARNING!*** A succession of "clicks" inside the unit are normal in this phase

p) When the function is completed, a beep will let the operator know that the cycle is over.

q) The unit will inform the operator to disconnect the A / C system to recover the residual gas present in the hoses. The display will show all the information of the process.

r) The display will show all the information of the process.



s) In the final screen it is possible to print a report on printer or a report on USB stick.
t) Press on “Home” button to come back in main menu.

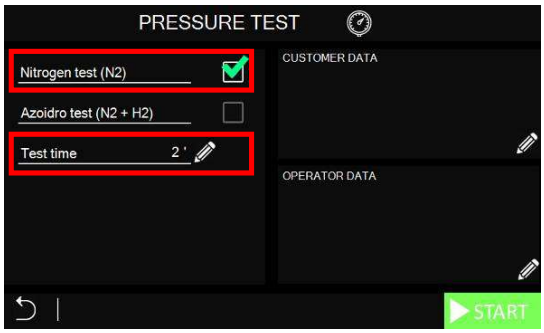
4. Using the unit PICCOLA R744 (Auxiliary functions)

4.1 Pressure test with nitrogen or Azoidro mixture

The unit gives the opportunity to the user to perform a pressure test of the A/C system by means of nitrogen or by means of the Azoidro mixture (95% N2 – 5% H2). The test is very important to be sure that the system is perfectly tight, before charging refrigerant.

4.1.1 Pressure test with nitrogen

a) Press the “**Menu**” button
b) Select “**Manual test N2/N2-H2**”



c) Select “**Nitrogen test (N2)**” and set the test time clicking on the relative edit icon.
d) Press “**START**” to start the function.
The display show to the user the pressurization phase.
e) By means of a suitable nitrogen kit, connect to the service connection ref. **111** on the unit. Pressurize the A/C system to the pressure set.

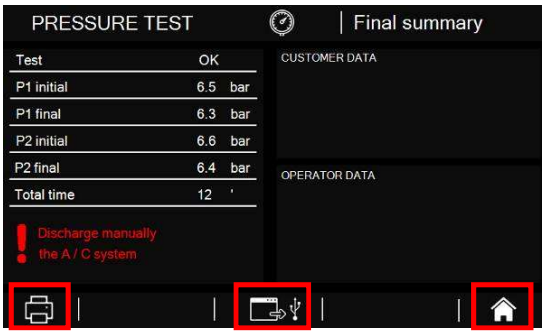
⚠ ***WARNING!*** *Pay close attention to the phase of the system pressurization with external equipment. Use exclusively WIGAM products*

⚠ ***WARNING!*** *Check carefully the value of the maximum pressure! The maximum admissible pressure is 200 bar (20.0 MPa).*

f) When the pressurization phase is over, disconnect the external pressurization system and wait for the pressure value to become stable, before performing the test.

⚠ ***IMPORTANT!*** *The nitrogen that comes out of the bottle undergoes a thermic shock that causes a drop of pressure in the seconds following its introduction into the system. Before starting the test, wait a couple of minutes so that the nitrogen stabilizes to the ambient temperature.*

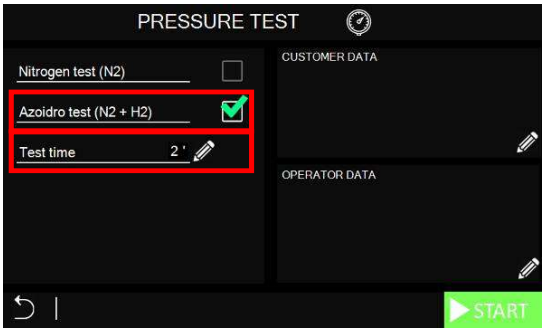
g) Press the "**TEST START**" button, to start the test of the system.
h) A time countdown and the value of the pressure read by the unit's low and high sensors will appear on the display.
i) Once the test is over, the unit inform the operator with visual and acoustic signal. Before continuing, it is necessary to discharge manually the residual nitrogen from the system. To make this operation, we suggest to unscrew one of the two connections with which the quick couplers are connected to the system (ex. **47** or **48**)



j) In the final screen it is possible to print a report on printer or a report on USB stick.
k) Press on "Home" button to come back in main menu.

4.1.2 PRESSURE TEST WITH AZOIDRO MIXTURE

a) Press the "**Menu**" button
b) Select "**Manual test N2/N2-H2**"



c) Select "**Azoidro test (N2+H2)**", and set the test time clicking on the relative edit icon.
d) Press "**START**" to start the function.
e) The display show to the user the pressurization phase. We suggest to set the value of the pressure close to **5 bar (0.5 MPa).**
l) By means of a suitable nitrogen kit, connect to the service connection ref. **111** on the LP hose. Pressurize the A/C system to the pressure set.

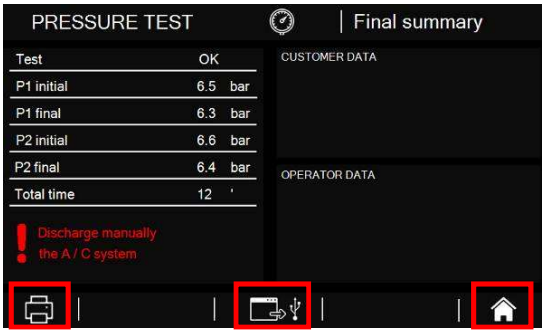
⚠ ***WARNING!*** *Pay close attention to the phase of the system pressurization with external equipment. Use exclusively WIGAM products*

⚠ ***WARNING!*** *Check carefully the value of the maximum pressure! The maximum admissible pressure is 200 bar (20.0 MPa).*

m) When the pressurization phase is over, disconnect the external pressurization system and wait for the pressure value to become stable, before performing the test.

⚠ ***IMPORTANT!*** *The nitrogen that comes out of the bottle undergoes a thermic shock that causes a drop of pressure in the seconds following its introduction into the system. Before starting the test, wait a couple of minutes so that the nitrogen stabilizes to the ambient temperature.*

f) Press the "**TEST START**" button to start the test with Azoidro of the system.
g) A time countdown and the value of the pressure read by the unit's low and high sensors will appear on the display; at the same time, the display will show the message "Check A/C system with leak detector".
h) It is necessary to check all the A/C system with leak detector studied for Azoidro mixture **(we suggest the use of ELD-A or VOYAGER leak detectors)**. The unit realize in the same time also the pressure test.
i) Once the test is over, the unit inform the operator with visual and acoustic signal. Before continuing, it is necessary to discharge manually the residual the mixture from the system. To make this operation, we suggest to unscrew one of the two connections with which the quick couplers are connected to the system (ex. **47** or **48**)



a) In the final screen it is possible to print a report on printer or a report on USB stick.
b) Press on "Home" button to come back in main menu.

4.2 FLUSHING

⚠ ***IMPORTANT*** *It is necessary the A/C system was completely empty before to start the flushing function. If refrigerant is inside the A/C system, PICCOLA R744 will inform the user through an alarm on the display.*

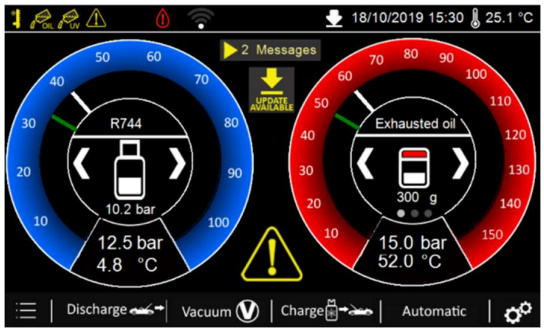
a) Press the "**Menu**" button.
b) Select "**Flushing**"

c) Set the number of cycles clicking on the relative edit icon (3 cycles are suggested).
d) Set the vacuum time clicking on the relative edit icon (4' are suggested).
e) Connect the hoses to the A/C system, which needs a maintenance. Open the hand-wheels on the couplers.
f) Press **START** button to start the function.
g) During the execution of the phase, the display will inform the user about each operation.
h) In case of emergency, it is possible to leave the function by pressing the **STOP** button. The display will show the resume screen, with all the information of the cycle until the stop.
i) At the end of the process, the unit will inform the operator by an acoustic signal, and the display will show all the information about the performed cycle.

j) In the final screen it is possible to print a report on printer or a report on USB stick.
k) Press on "Home" button to come back in main menu

4.3 CHECKING THE A/C SYSTEM OPERATING PRESSURES

Before servicing the vehicle or after, to check the quality of the service performed, it is possible to check the A/C system operating pressures.
Per fare tale operazione è necessario che l'unità sia posizionata nella schermata di standby.



a) Connect the **57** hose to the A/C system low pressure side.
b) Connect the **58** hose to the A/C system high pressure side.
c) Start the compressor of A/C system.
d) Read on the blue gauge of low pressure on display the pressure and the relative evaporation temperature.
e) Read on the red gauge of high pressure on display the pressure and the relative condensation temperature.
f) Compare the read values with the information of the producer of the A/C system.

5. Menu auxiliary functions

Press the **"Menu"** button on standby screen, to select the auxiliary functions of the unit.

Flushing	Execution of flushing function of A/C system. **Please see paragraph 4.2**.
Setting data of the bottle	Setting of data of refrigerant bottle
Manual test N2/N2-H2	Execution of manual functions of pressurization with nitrogen and AZOIDRO mixture. **Please see paragraph 4.1**.
Hoses length setting	It is possible to modify the length of flexible hoses
Display brightness	Regulation of brightness of display.
Serial number	Serial number of the unit and date of first installation.
Data export	Export of the last 20 services of the unit.
Choice of oil container type	Possibility to set the equipment to be used with standard containers for oil (standard supply) or hermetic containers (available as accessories).
Daily working program	Uploading jobs to be performed from the Portal4Service portal

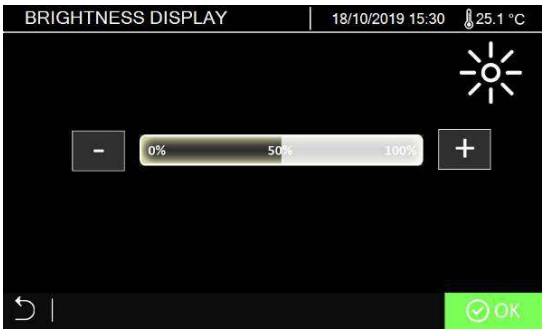
5.1 HOSE LENGTH SETTING AND PRE-CHARGE

The default setting of PICCOLA R744 unit is to work with pre-charge of flexible hoses; during the charging process, the unit does not add any refrigerant to compensate the length of the hoses.

If the operator requests it, he can set the correct length of the hoses.

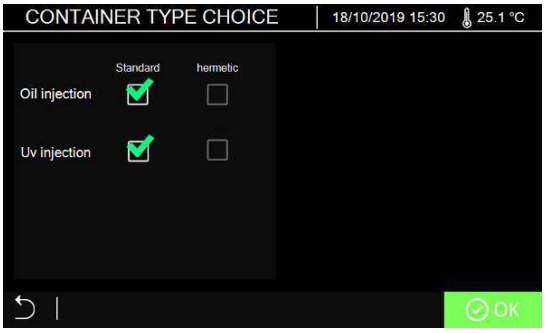
5.2 DISPLAY BRIGHTNESS

The operator can press "**+**" and "**–**" buttons, to regulate the brightness of the display.



5.3 CHOICE OF OIL CONTAINER TYPE

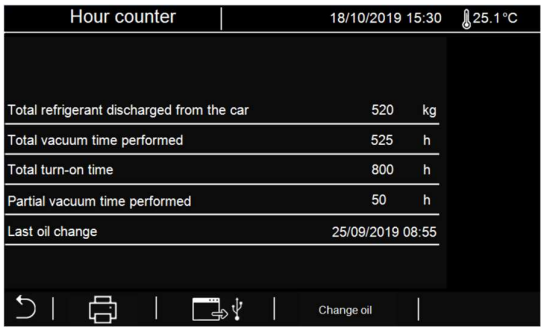
Possibility to set the equipment to be used with standard containers for oil (standard supply) or hermetic containers (available as accessories).



6. Service procedure

Choice of language	Possibility to select the language of the display and of the printer report
Scale reset	Function which reset all the electronic scales of the unit to zero (protected by password)
Change parameters	Modification of working parameters (only for qualified personnel, protected by password)
Default parameters	Recovery of working parameter to default (only for qualified personnel, protected by password)
Date and time setting	Modification of hour and date (protected by password 5688)
Firmware update	(only for qualified personnel, protected by password)
Hour Meter / Maintenance	Visualization of information of hours of use of the unit (protected by password)
Choice of measurement units	Modify of unit of measurement (Metric o English)
Change refrigerant	Modification of refrigerant type (only for qualified personnel, protected by password)
Temperature sensor calibration	Calibration of temperature sensor (only for qualified personnel, protected by password)
Calibration of pressure sensors	Calibration of 2 (LOW and HIGH) pressure sensors (only for qualified personnel, protected by password)
Scale calibration	Calibration of the 4 electronic scales (only for qualified personnel, protected by password)
Component test	(only for qualified personnel, protected by password)
Wifi	It allows you to set the information of the Wifi connection. Available only if installed as an option. (protected by password)
MQTT	It allows you to set the information of the MQTT server. Available only if installed as an option. (protected by password)

6.1. HOUR METER / MAINTENANCE



In this screen, it is possible to check all the hour meter of the unit, but also to start manually the operation of maintenance as vacuum pump oil substitution.
The requested password to access to the hour meter screen is 5011.
During the operation of maintenance, the unit reset the “partial” hour meter. The “total” hour meters are not resettable from the user.

7. Routine maintenance

7.1 MATERIAL FOR ROUTINE MAINTENANCE

n°1 bottle ester oil K1L for vacuum pump

7.2 PERIODIC OPERATION

a) **Check all swivel connections for tightening every 10 operations**
b) Check the vacuum pump oil level; the oil must be changed at least every 70 hours of operation (the unit inform when it is necessary to do this operation). The pump must be off when checking the oil level. Anyway, the unit will inform the operator when the oil must be changed

7.3 CHANGING VACUUM PUMP OIL

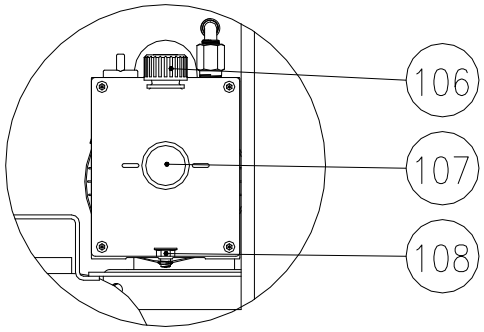
The unit inform the operator when it is necessary to substitute the vacuum pump oil.

The substitution of the vacuum pump oil is very important. The oil also needs to be changed whenever it becomes cloudy. Contaminated oil reduces vacuum pump performances and irreversibly damages its mechanical components.
All draining and refilling operations must be performed when the pump is turned off
To avoid reduction of the pump efficiency and to maintain its performances, use only SW68 oil for maintenance.

a) Turn the recovery unit off by turning the **76** switch to position 0 and disconnect the power cord; strictly observe the sequence of operations
b) Remove the panel over the vacuum pump (please see the picture on it) ref. **91**.
c) Unscrew the drain plug ref. **108** located at the bottom of the pump.

d) Completely drain the oil
e) Screw the drain plug ref. **108** on again
f) Unscrew the filler plug ref. **106** situated on top of the pump
g) Slowly refill the pump with oil until the level covers half of the sight glass **107** located on the side of the pump
h) Screw the oil plug **106** on again and re-install the previously removed plastic cover again
i) When the oil change procedure is completed, turn the unit on by turning the **76** switch to position 1
j) Follow the information of the display to reset the hour meter.

⚠ ***WARNING!*** *Do not pollute environment with oil; it is a special waste and must be disposed of according to the regulations in force.*



8. Troubleshooting

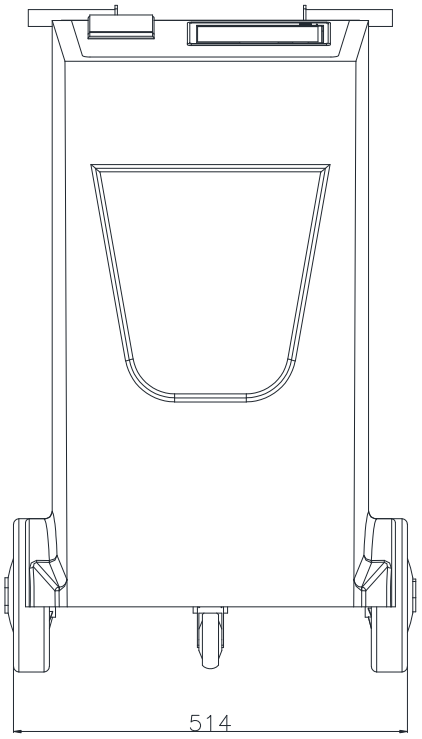
If there is a problem in the unit, this will be displayed with an alarm message.

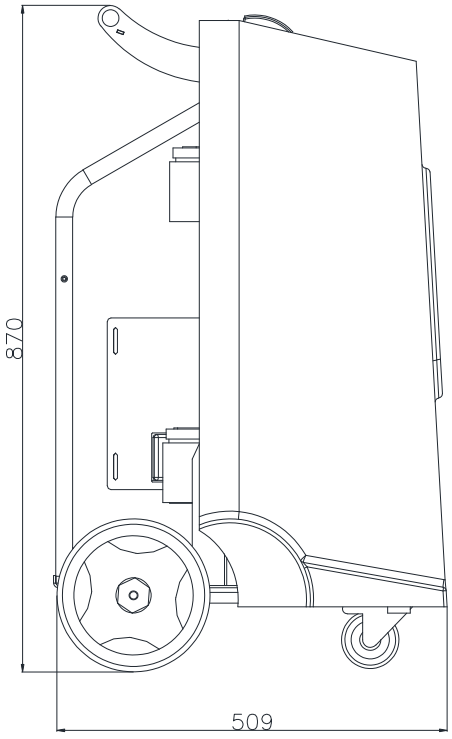
Error code	Type of error	Solution
5	No refrigerant in the A / C system	Check that the system has no leakage
8	Provide to empty it and continue the oil drain operation	Provide to empty it and continue the oil drain operation
9	The maximum number of recovery attempts has been reached	Check that there are areas of difficult recovery
11	Reach maximum time to finish the operation	If this message appears during vacuum or discharge phases, check the calibration of the pressure sensors.
12	Vacuum leak detected	Repeat the cycle and if necessary increase the vacuum time
13	A / C system not in vacuum	It is suggested to proceed with a vacuum operation
15	Pressure test with refrigerant failed	Verify if any leakage is present
18	A / C system not in vacuum	It is suggested to proceed with a vacuum operation
30	System leak detected with N2	Check for leaks, then perform a new pressure test

9. Accessories and spare parts

Code	*Description*
12002003	K1 L mineral oil for vacuum pump

10. Dimensions and weights





Net weight with empty cylinder 37 kg

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CE Declaration of Conformity

We, signers of this declaration, declare under our own exclusive responsibility, that unit, model:

PICCOLA R744

and all its versions

manufactured in our company and to be used for:

refrigerant gas recovery, recycling and charge

are planned according to the following directives prescriptions :

- **2006/42/CEE Machines directive**
- **2014/30/UE (Directive on electromagnetic compatibility)**
- **2014/35/UE Directive on low voltage**
- **IEC 34-11 (EN 60034) General standards on single phase electric, rotary machines**

Technical booklet drawn up by WIGAM SPA

Castel San Niccolò
16/05/2022

Gastone Vangelisti
(President)

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