



# **AC790PRO**

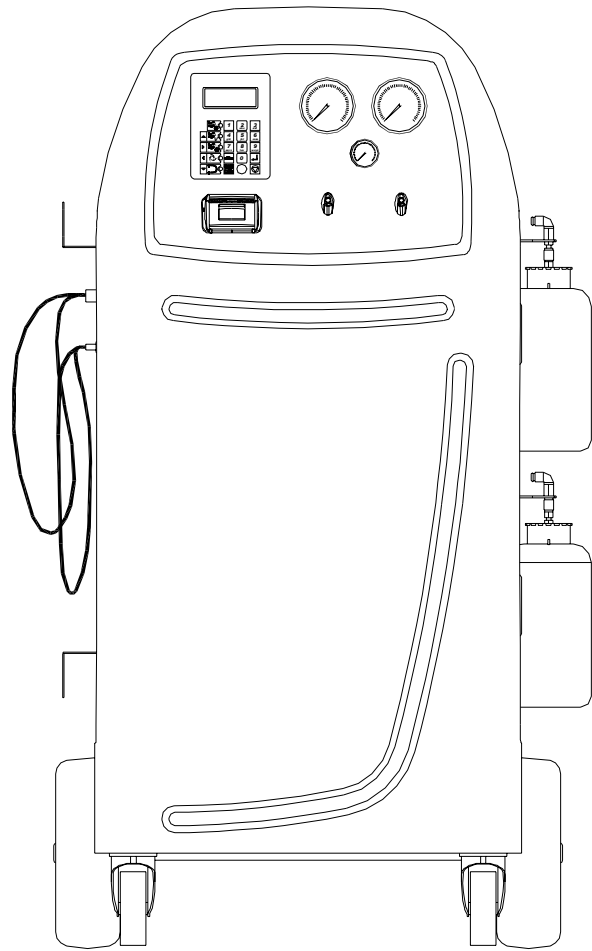
PART NO. 02404-0118

## **OPERATORS MANUAL**

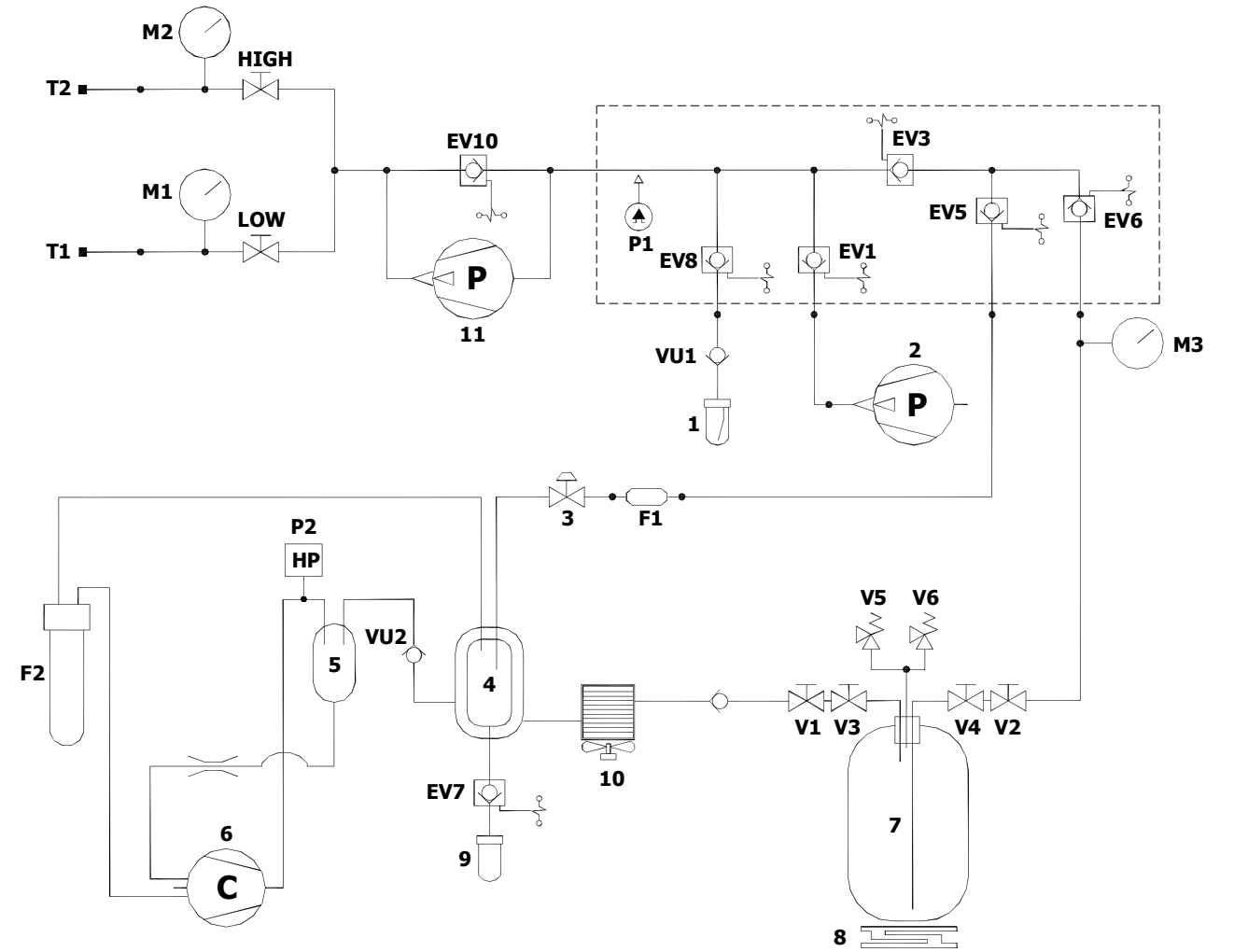
# AC790PRO



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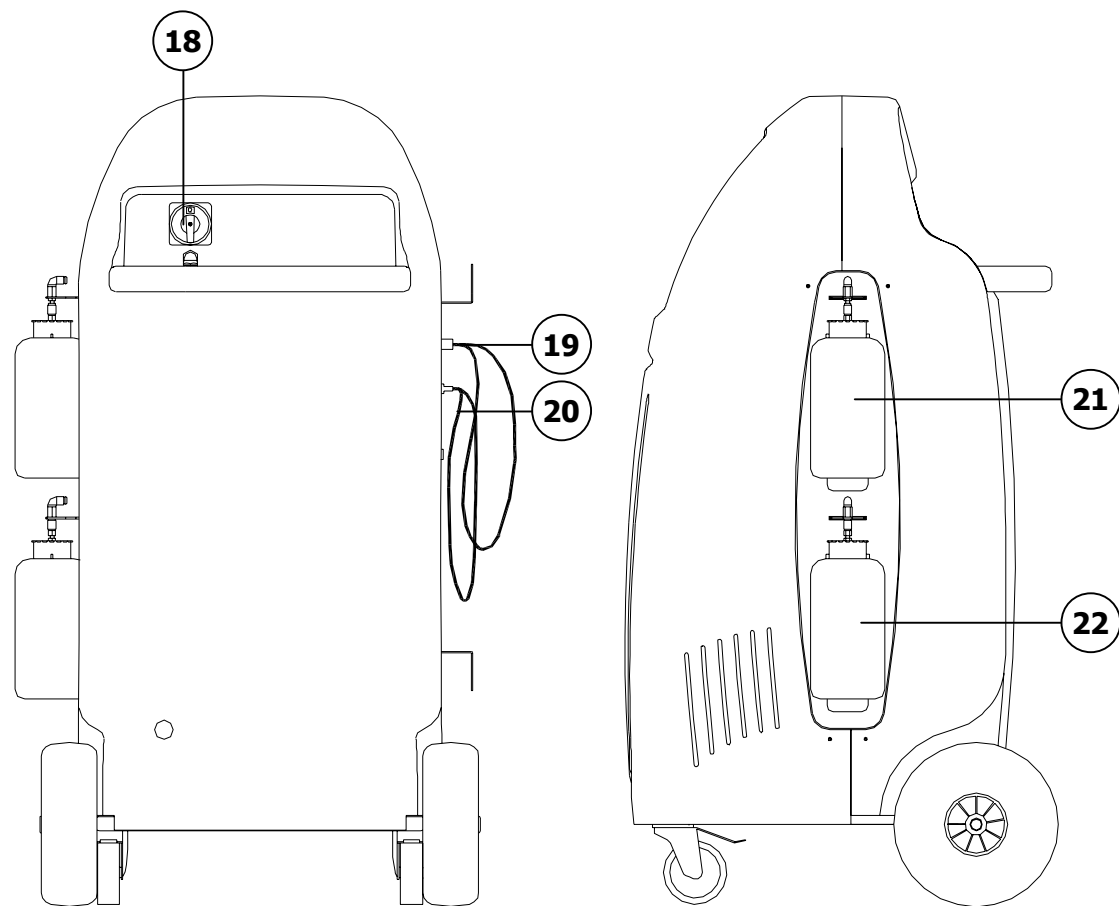
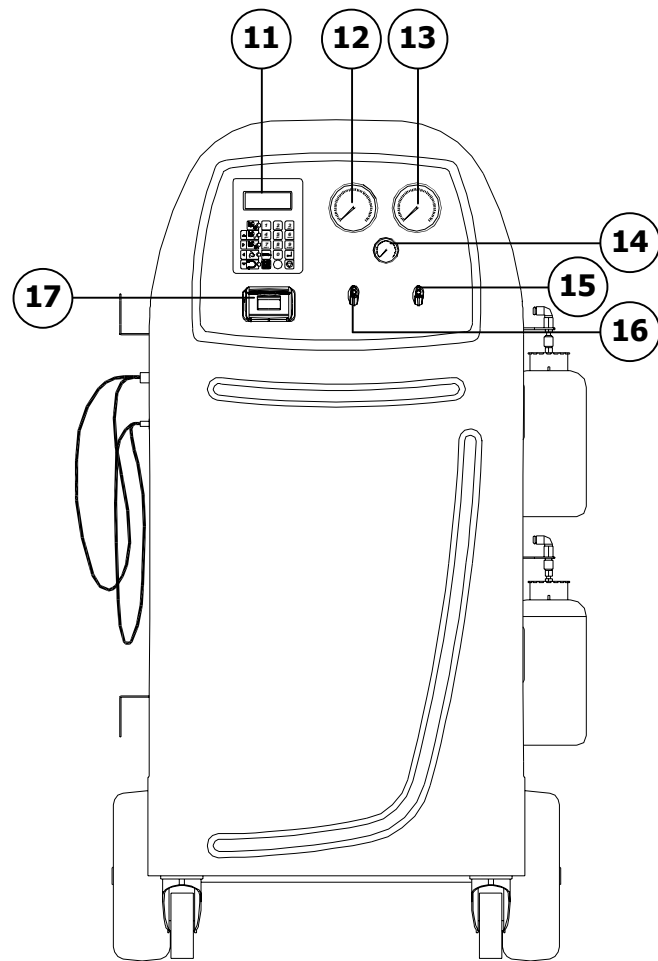


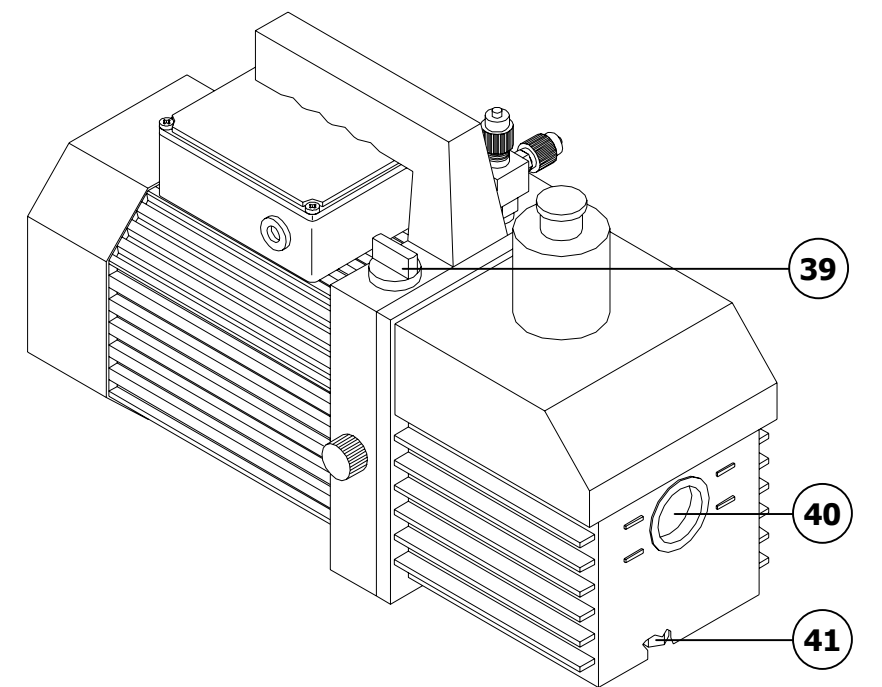
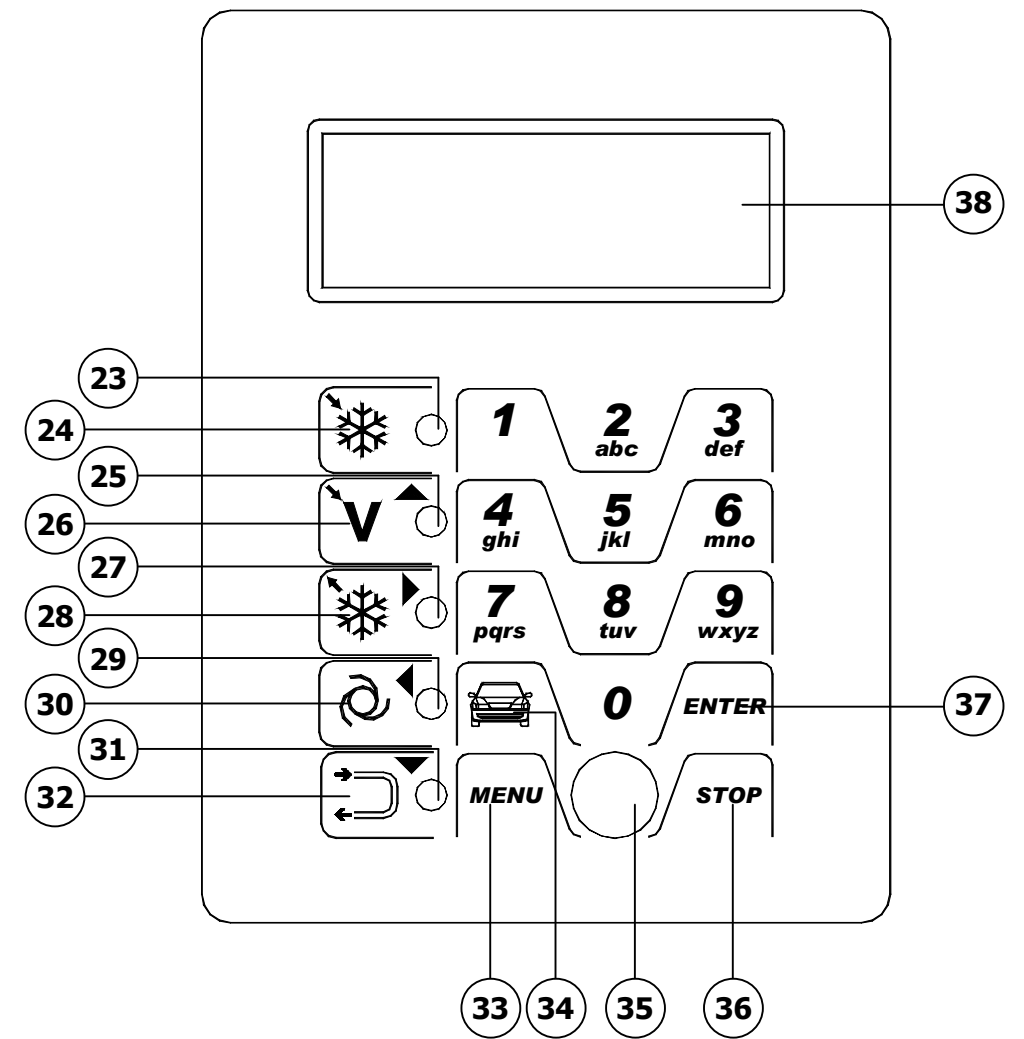
**9006405**



**Manuale operativo - Operating instructions - Manuel d'utilisation  
Bedienungsanleitung- Manual operativo- Manual de operação**

Rel. 2 02/09







Dear garage owner,

Thank you for having chosen one of our instruments for your workshop. We are certain that it will give the utmost satisfaction and be a notable help on the job.

Please become fully familiar with the instructions in this user's manual. It should be kept ready to hand for consultation whenever required.

AC790PRO is an electronic unit for recovery, recycle, vacuum and charge of A/C systems using R134a as refrigerant.

A simple but reliable connection system guarantees a safe work during all of the operations: refrigerant recovery and recycle; vacuum and leak test; additive and lubricant injection; circuit recharge and working pressure test.

The refrigerant flow is controlled and managed by an electronic scale so as to prevent any tank overflow or the flow of a refrigerant quantity exceeding that allowed.

The quantity to be charged in the A/C system is set by the operator by the function keyboard or by consulting the internal database.

A patented separator still allows to separate the refrigerant from the lubricant.

- It is forbidden to even partially this handbook in any way unless prior written authorisation has been obtained from the manufacturer.
- The data and characteristics indicated in this handbook are not binding. The manufacturer reserves the right to make all those modifications as are considered necessary without being obliged to give advance warning or make replacements.
- All the names of brands and products and the trade marks are the property of the respective owners.

## INDEX

<b>CAPTIONS</b>	<b>43</b>
<b>GENERAL INFORMATION FOR THE USER</b>	<b>44</b>
Disposing of equipment	44
Disposing of batteries	44
<b>1.0 - FOR A SAFE USE AC790PRO</b>	<b>45</b>
1.1 - For a safe use	45
1.2 - Safety devices	46
1.3 - The work environment	47
1.4 - Tank test	47
<b>2.0 - INTRODUCTION TO THE UNIT</b>	<b>48</b>
<b>3.0 - DESCRIPTION OF THE UNIT</b>	<b>49</b>
3.1 - The Keyboard	49
<b>4.0 - INSTALLATION OF THE UNIT</b>	<b>50</b>
4.1 - Unpacking and checking components	50
4.2 - Machine handling and storage	50
4.3 - Preparation for use	50
4.4 - Loaded and recovered coolant storage	54
4.4.1 - <i>Report management enabling</i>	54
4.4.2 - <i>Report printing</i>	54
4.4.3 - <i>Report management with ACUSB (optional)</i>	54
4.5 - Bottle filling	55
4.6 - Tank display	56
<b>5.0 - USE OF THE UNIT</b>	<b>56</b>
5.1 - Vehicle data entry	56
5.2 - Personalized Database	57
5.3 - Refrigerant recovery	58
5.4 - Evacuating the A/C system	59
5.5 - Oil injection and A/C system charge	60
5.6 - Automatic function	62
5.7 - Recycling function	64
5.8 - Flushing (optional)	64
<b>6.0 - DISPLAYED MESSAGES</b>	<b>65</b>
6.1 - Service messages	65
6.2 - Error messages	65



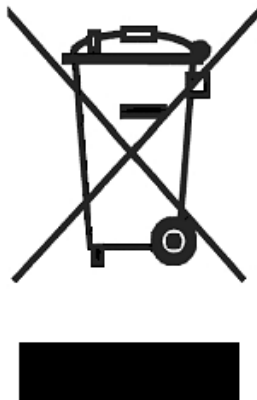
<b>7.0 -</b>	<b>MAINTENANCE</b>	<b>66</b>
7.1 -	Vacuum pump oil change	66
7.2 -	Reset oil counter vacuum pump	66
7.3 -	Filter dryer change	67
7.4 -	Reset counter filter dryer	68
7.5 -	Refrigerant scale calibration	69
<b>8.0 -</b>	<b>STOPPAGE FOR LONG PERIODS</b>	<b>70</b>
<b>9.0 -</b>	<b>DEMOLITION/DISPOSAL</b>	<b>70</b>
9.1 -	Disposal of the equipment	70
9.2 -	Disposal of the recycled materials	70
<b>10.0 -</b>	<b>TECHNICAL SPECIFICATIONS</b>	<b>71</b>
<b>11.0 -</b>	<b>SPARE PARTS</b>	<b>71</b>
<b>12.0 -</b>	<b>GLOSSARY OF TERMS</b>	<b>72</b>

## CAPTIONS

<b>M1</b>	Low pressure gauge
<b>M2</b>	High pressure gauge
<b>M3</b>	Inside tank pressure meter
<b>T1</b>	Low pressure service hose
<b>T2</b>	High pressure service hose
<b>LOW</b>	Manifold set low pressure valve
<b>HIGH</b>	Manifold set high pressure valve
<b>V1</b>	Tank vapour side hose valve
<b>V2</b>	Tank liquid side hose valve
<b>V3</b>	Tank vapour side valve
<b>V4</b>	Tank liquid side valve
<b>V5</b>	Safety valve
<b>V6</b>	Non condensable drain valve
<b>VU1</b>	Oil protection unidirectional valve
<b>VU2</b>	Separator-still check valve
<b>F1</b>	Recovery line mechanic filter
<b>F2</b>	Dehydrating filter
<b>EV1</b>	Vacuum line solenoid valve
<b>EV3</b>	Circuit separation solenoid valve
<b>EV5</b>	Recovery/Recycle solenoid valve
<b>EV6</b>	Charge solenoid valve
<b>EV7</b>	Oil purge solenoid valve
<b>EV8</b>	Oil addition solenoid valve
<b>EV10</b>	By-pass solenoid valve
<b>1</b>	Oil replenishing bottle
<b>2</b>	Vacuum pump
<b>3</b>	Pressure adjuster
<b>4</b>	Separator-still for recovered oil
<b>5</b>	Separator-still for compressor oil
<b>6</b>	Compressor
<b>7</b>	Storage tank
<b>8</b>	Electronic scale
<b>9</b>	Oil purge bottle
<b>10</b>	Heat exchanger
<b>11</b>	Refrigerant-transfer pump
<b>P1</b>	Pressure transducer
<b>P2</b>	High pressure switch

## GENERAL INFORMATION FOR THE USER

### Disposing of equipment



- Do not dispose of this equipment as miscellaneous solid municipal waste but arrange to have collected separately.
- The re-use or correct recycling of the electronic equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
- In accordance with European Directive WEEE 2002/96/EC, special collection points are available to which to deliver waste electrical and electronic equipment.
- The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
- Unauthorised disposal of waste electrical and electronic equipment is punishable by law with appropriate penalties.

### Disposing of batteries



- Batteries must be recycled or disposed of properly. Do not throw batteries away as part of normal refuse disposal.
- Do not throw batteries into open flame!

## 1.0 - FOR A SAFE USE AC790PRO

The advanced technology adopted in the design and production of the AC790PRO make this equipment extremely simple and reliable in the performance of all procedures. Therefore, the user is not exposed to any risk if the general safety rules reported below are followed with proper use and maintenance of the equipment.

### NOTA BENE:

This unit can be exclusively used by professionally trained operators who have to know the principles of refrigeration, refrigerating systems and gases and the possible damages which might be caused by pressurized equipment.

Every user has to read carefully this manual for a correct and safe use of the equipment.

### 1.1 - For a safe use

- It is necessary to wear suitable protections such as goggles and gloves, the contact with the refrigerant can cause blindness as well as other injuries to the operator. Please make reference to the symbols below:



Carefully read the instructions.



Do not use open air in case of rain or high humidity.



Use gloves.



Use protection goggles.

- Avoid the contact with the skin, the low boiling temperature (about -30 °C) may provoke freezing.
- Do not inhale refrigerating gases fumes.
- Before connecting the AC790PRO unit to an A/C system or to an external tank, make sure all the valves are closed.

- Ensure that the phase has been completed and that all valves are closed before disconnecting the unit AC790PRO. This will prevent release of the refrigerant into the atmosphere.
- Do not change the safety valve or control system settings.
- Do not use external tanks or other storage tanks that have not been type-approved or that lack safety valves.
- Never leave the unit live if an immediate use is not scheduled, stop the electrical supply before a long period of unit inactivity or before internal maintenance interventions.
- Be careful while servicing the unit since connecting hoses may contain pressurized refrigerant.
- Do not use the unit in explosive environments.

Extraordinary maintenance interventions have to be performed by authorized staff only.

- Pressure of leaks of the HCF-134a service equipment or of the air conditioning systems of the vehicle must not be tested by using compressed air. Some air/HCF-134a mixtures can burn at high pressures. These mixtures can be dangerous and may cause fires or explosions and subsequent injuries or damages.

Further information on the operators' health and safety can be obtained from the refrigerant producers.

## **1.2 - Safety devices**

The AC790PRO is equipped with the following safety devices:

- **Overpressure valves.**
- Besides the overpressure valve a **maximum pressure switch** has been fitted which stops the compressor in case of excessive pressure.



### **CAUTION:**

**Any type of tampering with the safety devices mentioned above is hereby prohibited.**

### 1.3 - The work environment

- The unit has to work in a sufficiently ventilated environment.



**CAUTION:**

**Work far from free flames and hot surfaces; at high temperatures the refrigerant decomposes freeing toxic and aggressive substances which are noxious for the user and the environment.**

- For a correct functioning the unit has to work on an even surface; during short handling do not shake it.
- Do not subject the AC790PRO unit to vibration.



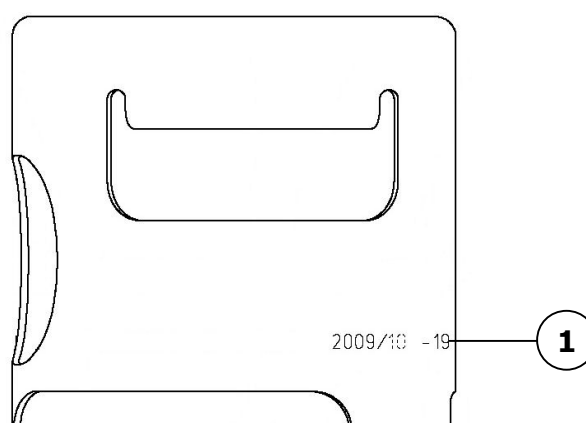
**CAUTION:**

**While operating do not disperse the refrigerant in the environment. Such a precaution, besides being required by the international rules for the environment protection, is necessary to prevent the possible presence of refrigerant in the working environment from making it difficult to detect possible leaks.**

- Work in environments with sufficient lighting.
- Avoid inhalation of the refrigerants and oils in the A/C systems. Exposure may cause irritation to eyes and the respiratory tract. To remove R134a from the A/C system, use only the special recycling-units for R134a. If the refrigerant is accidentally released into the atmosphere, ventilate the work area before resuming service.
- Do not use the unit under direct sunrays; sun exposure can cause excessive temperatures and malfunctioning. Working temperatures indicated refer to the unit being not directly exposed to the sun.

### 1.4 - Tank test

The tank has to be re-tested or substituted every 10 years. Check the re-testing date (1) written on the neck of the tank.



## **2.0 - INTRODUCTION TO THE UNIT**

The AC790PRO unit fits all of the air-conditioners functioning with R134a refrigerant located on cars, bus, trucks and industrial vehicles.

The AC790PRO unit microprocessor allows the managing of all functions by means of an electronic scale, a LCD to display the weight or minute values and the help messages of the various procedures which can be set, a control board with alphanumeric keyboard.

By connecting the AC790PRO unit to an A/C system the refrigerating gas can be recovered and recycled to enter the system itself again after a correct vacuum.

The amount of lubricant taken from the A/C system during the recovery can be measured and, afterwards, reintegrated in the system.

The unit is equipped with a two-stage pump for high vacuum and a manifold set to continuously monitor the operations in process.

Tightness test on the A/C units is carried out through the manometers the unit is equipped with.

The unit is equipped with special connectors to avoid cross-mixing with systems using R12.



### **CAUTION:**

**Do not try to adapt this unit for air conditioning systems using R12.**

### **3.0 - DESCRIPTION OF THE UNIT**

- 11.** Keyboard.
- 12.** Low pression gauge.
- 13.** High pression gauge.
- 14.** Inside tank pressure meter.
- 15.** High pression valve.
- 16.** Low pression valve.
- 17.** Printer (optional).
- 18.** Main power switch.
- 19.** High side connection hose.
- 20.** Low side connection hose.
- 21.** Oil injector glass.
- 22.** Oil drain glass.

#### **3.1 - The Keyboard**

- 23.** RECOVERY function Led.
- 24.** RECOVERY function key.
- 25.** VACUUM function Led.
- 26.** VACUUM function key and cursor shifting upwards.
- 27.** CHARGE function Led.
- 28.** CHARGE function key and cursor shifting to the right.
- 29.** AUTOMATIC function Led.
- 30.** AUTOMATIC function key and cursor shifting to the left.
- 31.** FLUSHING function Led.
- 32.** FLUSHING function key and cursor shifting downwards.
- 33.** MENU key (menu, cancellation, by-pass and pause).
- 34.** VEHICLE DATA and DATABASE function key.
- 35.** Port for software updates.
- 36.** STOP key.
- 37.** ENTER key.
- 38.** Display.



## **4.0 - INSTALLATION OF THE UNIT**

Please find below operations to perform to start the unit.

### **4.1 - Unpacking and checking components**

- Remove the machine packaging.
- Check to ensure that all of the accessory components are present:
  - ✓ Operating instructions.
  - ✓ 2 cylinder connectors.
  - ✓ Bottle safety valve conformity certificate.

### **4.2 - Machine handling and storage**

Remove the unit from the base pallet of the packaging.

The unit is moved on the four wheels. The two front wheels have brakes.

On rough terrain, the AC790PRO can be moved by tilting it and balancing the weight on the two rear wheels.

In spite of the fact that the heaviest components have been assembled on the base in order to lower the centre of gravity, it has not been possible to eliminate the **risk of overturning** completely.

### **4.3 - Preparation for use**

Before starting to use the AC790PRO unit, it is possible to personalize it.

These settings are not compulsory on the standard models.

To personalize the A/C unit comply with the following procedure:

- Turn on the unit and wait until the STAND-BY page is displayed (date and time).
- Simultaneously press the **3** and **FLUSHING** keys (**32**) for some seconds.
- The display shows **0000**.
- Enter the code **2222**.
- A menu is displayed containing the operations that may be carried out.
- Press the cursor shifting key upwards (**26**) or downwards (**32**) to scroll the menu.
- Select the wished function and press **ENTER** to enter.
- Press **STOP** to go back to the STAND-BY page.

## LANGUAGE CHANGE

- Select the **LANGUAGE CHANGE** function and press **ENTER**.
- The list of languages available in memory is displayed.
- Press the cursor shifting key upwards (**26**) or downwards (**32**) to scroll the menu and press **ENTER** (**37**) to set the selected language.
- Then the main menu is displayed again.

## UNITS OF MEASURE

- Select the **UNITS OF MEASURE** function and press **ENTER**.
- The list of units of measure being available in memory is displayed.
- Press either the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to scroll the menu and press **ENTER** (**37**) to set the selected unit of measure.
- Then the main menu is displayed again.

## DATE AND TIME

- Select the **DATE AND TIME** function and press **ENTER**.
- The current date and time are displayed and the cursor positions on the date.
- Enter the date and press **ENTER** to confirm.
- The cursor positions on the time.
- Enter the time and press **ENTER** to confirm.
- Then the main menu is displayed again.

## PIPES LENGTH

It is possible to supply, on demand, longer service pipes (optional); if this is the case it is necessary to set the machine so that during the charge it counterbalances the variation of coolant remaining in the pipes. The standard pipes that are supplied standard are 5 m long.

- Select the **PIPES LENGTH** function and press **ENTER**.
- The standard length of the optional pipes is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to scroll the menu and press **ENTER** to set the selected length.
- Then the main menu is displayed again.

## **GARAGE DATA**

It is possible to enter the data of your own garage that turn out to be particularly useful for the units that have installed the printer (optional).

To enter the workshop data there are 8 lines of 20 characters each.

The data entering is carried out through the keyboard, in a way similar to that used for mobile phones:

- Select the **GARAGE DATA** function and press **ENTER**.
- Press the numerical keys to select the letters and the characters.
- Press the cursor shifting keys to shift among the lines.
- Press the **MENU** key (**33**) to erase the character that precedes the cursor.
- Press **ENTER** to memorize the garage data entry.
- Then the main menu is displayed again.

## **CONTRAST**

- Select the **CONTRAST** function and press **ENTER**.
- A numerical index of the contrast degree is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to modify the contrast and press **ENTER** to confirm.
- Then the main menu is displayed again.

## **FLUSHING**

It is possible to install on the A/C unit the optional kit for the flushing of components. If the unit is equipped with this kit, it is necessary to insert it in the internal parameters so that it enables the function.

- Select the **FLUSHING** function and press **ENTER**.
- The display displays the messages **ENABLED** and **DISABLED**.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **ENABLED** or **DISABLED** and press **ENTER** to confirm.
- Then the main menu is displayed again.

## **OIL SCALES**

Not active on this version.

## ENTRY OF THE SERIAL NUMBER

- Select the **SERIAL NUMBER** function and press **ENTER**.
- Enter the station serial number (engraved on the technical data plate applied to the station rear panel) by the numerical keys and then press **ENTER**.
- Then the main menu is displayed again.

### NOTA BENE:

Only the last 5 digits of the number have to be entered since the first one is entered automatically by the program.

## 4.4 - Loaded and recovered coolant storage

If you want to storage and then print the data of the loaded and recovered coolant you have to enable the "Report Management" function. Once all data of the loaded and recovered coolant are enabled they are automatically stored.

### 4.4.1 - Report management enabling

To enable the report management proceed as follows:

- Simultaneously press the **3** and **FLUSHING** keys for some seconds.
- The displays shows **0000**.
- Set the value **5599**.
- The functions menu is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **REPORT MANAGEMENT** and press **ENTER** to confirm.
- Select **ENABLE** and press **ENTER**.

### 4.4.2 - Report printing



#### CAUTION:

**The station has a big memory that is able to contain more data than those you can print on a 12m long roll of paper.**

To print the stored data proceed as follows:

- Press the **MENU** key from the STAND-BY page.
- The functions menu is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **REPORT MANAGEMENT** and press **ENTER** to confirm.
- Select the **PRINT REPORT** function and press **ENTER**.
- The display shows the stored records quantity.
- Press the **ENTER** key to print. Afterwards any record can be deleted.

Before printing, be sure to have enough paper. It is recommended to print the stored records at least once a week in order to avoid a too long print which would also be difficult to consult.

Delete the already printed records so that they will not be accumulated with those stored afterwards (otherwise they would be printed again in a new print).

### 4.4.3 - Report management with ACUSB (optional)

The stored records can be downloaded to a PC by means of the ACUSB reader. To transfer data on the PC, please refer to the ACUSB reader's operating manual.

## 4.5 - Bottle filling

Before being able to use the unit, after personalizing it, it is necessary to inject some coolant in the inner bottle. Comply with the following procedure:

- Connect the service pipe to an external container full of coolant (use the supplied unions).

### NOTA BENE:

There are two types of source tanks: one **with a liquid outlet** and one **without**. Tanks **with liquid outlets** must remain in an upright position in order to transfer the liquid refrigerant. Use the **LIQUID** valve connection for this type of tank. Tanks **without liquid outlets** are usually equipped with only one valve and have to be overturned to transfer the liquid refrigerant.

- Open the valve on the external bottle and on the service pipe.
- Open the high and low pressure valves on the unit.
- Press the **MENU** key (**33**) from the STAND-BY page.
- The functions menu is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select the **BOTTLE FILLING** and press **ENTER** to confirm.
- The display shows the tank available capacity.
- Set the amount of coolant that you wish to inject (it is advisable to inject at least 10-12 kg).
- Press **ENTER** to start the operation.
- Some messages prompt the operator for the pipes connection, then the function starts.
- The unit automatically stops once reached the set value.
- Close the valve on the source tank.
- Press **ENTER** to complete the operation and empty the pipes and the still separator.

### NOTA BENE:

Usually the final amount of recovered coolant exceeds the set value by about 500-700 g, since also the still separator is emptied.

- The function stops automatically when pressure is over in the system.
- The STAND-BY page is displayed.
- Close the valves on the unit.

## **4.6 - Tank display**

From the STAND-BY page it is possible to display the weight of the coolant in the tank.

- Press **ENTER** to display the weight.
- Press **STOP** to go back to the STAND-BY page.

## **5.0 - USE OF THE UNIT**

Find below the description of the unit functions.

### **5.1 - Vehicle data entry**

This function enables the units that are equipped with printer, to display the data of the vehicle in the final printout.

- Press the **VEHICLE DATA** key (**34**).
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **VEHICLE DATA** and press **ENTER** (**37**) to confirm.
- Enter the vehicle data with the alphanumeric keyboard.
- Press the **MENU** key (**33**) to erase the character that precedes the cursor.
- Press **ENTER** to confirm the entered datum and shift to the next line.
- Repeat the data entry and confirmation operation for all the items; in the end the main menu will be displayed again.

## 5.2 - Personalized Database

It is possible to create a personalized database where you can enter the data of the new vehicles that are not present in the database standard.

- Press the **DATABASE** key (**34**).
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **PERSONALIZED DATABASE** and press **ENTER** to confirm.
- Enter the required data through the alphanumeric keyboard.

### NOTA BENE:

Four lines of 20 characters each are available for the description of the vehicle. We suggest entering Make, Model, etc. since descriptions are entered in alphabetical order. The following lines are available: one 20 character line for the coolant amount, one 20 character line for the type of oil and one 20 character line for the amount of oil.

- Press the **MENU** key to erase the character that precedes the cursor.
- Press the cursor shifting keys to shift the cursor on the display.
- Press **ENTER** to confirm the entered datum and shift to the next line.

### NOTA BENE:

If necessary, it is possible to avoid entering all of the required data; if this is the case, press **ENTER** to shift to the next line and the field relating to that specific datum will not be filled in.

- Repeat the data entry and confirmation operation for all the items; in the end the main menu will be displayed again.



### 5.3 - Refrigerant recovery

**CAUTION:**

**Always wear protection goggles and gloves when working with refrigerant. Read and comply with warnings at the beginning of this manual before using the unit.**

**NOTA BENE:**

Run the A/C system for some minutes before starting recovery. Tests proved that a bigger amount of refrigerant is sucked if this operation is performed. Turn off the A/C system before servicing.

In order to recover the coolant present in the A/C system, carry out the following procedure:

- Some messages prompt the operator for the pipes connection. Press **ENTER** to go to the next message.
- Connect the **T1** low pressure and **T2** high pressure hoses of the A/C system.
- Open the valves on the hose quick couplers **T1** and **T2**.
- Open the high and low pressure valves on the unit.
- Press the **RECOVERY** key (**24**), and the self-cleaning function is started.
- The function is not started in case of lack of pressure in the system; in this case a message is displayed to inform the operator.

**NOTA BENE:**

This function is useful to ensure a correct weighing of the recovered coolant. The self-cleaning function can be passed by pressing the **MENU** key.

- When the self-cleaning is over, the refrigerant recovery starts.

**NOTA BENE:**

The function stops automatically when the pressure inside the system drops below 0 bar.

- To streamline the recovery, more cycles of oil drainage are carried out.
- At the end of the last cycle of oil drainage, the station waits the time needed to verify the pressure rises again.
- When the waiting time is over:
  - ✓ The function restarts automatically, if pressure has increased.
  - ✓ The display shows the amount of recovered refrigerant, if the pressure value has not changed.
- Close the valves on the unit.
- Press **STOP** to go back to the STAND-BY page. When quitting, the program asks whether to cancel the vehicle data set in memory or not.

- Some messages prompt the operator for the pipes disconnection.
- Select the wished option.

**NOTA BENE:**

For the units equipped with printer (optional), after the display of data, comply with the following procedure:

- ✓ Enter the recovered oil value through the numerical keys and use the **MENU** key to erase the entered value.
- ✓ Press **ENTER** to confirm the oil value.
- ✓ Press the **ENTER** key to print.
- ✓ Press the **STOP** key to exit.

## 5.4 - Evacuating the A/C system

**NOTA BENE:**

If the vacuum pump has run for more than 30 hours the message **CHANGE OIL** appears. Carry out the maintenance according to the procedures described in the relevant section.

- Some messages prompt the operator for the pipes connection. Press **ENTER** to go to the next message.
- Open the high and low pressure valves on the unit.
- Press the **VACUUM** key (**26**).
- The function is not started in case of pressure presence in the system; in this case a message is displayed to inform the operator.
- Enter the wished vacuum time.
- Press **ENTER** to confirm and start the function.
- When the vacuum time is over the pressure values check time starts. At the end of this time the check result is displayed showing whether leaks have been detected on the system.
- Close the valves on the unit.
- Press **STOP** to go back to the STAND-BY page. When quitting, the program asks whether to cancel the vehicle data set in memory or not.
- Some messages prompt the operator for the pipes disconnection.
- Select the wished option.

**NOTA BENE:**

For the units equipped with printer (optional), after displaying the result of the test it is possible to carry out the following procedure:

- ✓ Press the **ENTER** key to print.
- ✓ Press the **STOP** key to exit.

## 5.5 - Oil injection and A/C system charge



### CAUTION:

**This function must be performed only on A/C systems under vacuum (following a system evacuation function). At the end of the oil injection function, following a filling function.**

**Charge the oil from the high side only. In case of systems equipped with low side fitting only (LOW), wait at least 10 minutes before starting the A/C system after the charge.**

- Some messages prompt the operator for the pipes connection. Press **ENTER** to go to the next message.
- Check that the service pipes are connected and that their valves are open.
- Press the **CHARGE** key (**28**).
- The display requires whether to carry out the oil charge.
  - ✓ Select **YES** to charge oil before charging.
  - ✓ Select **NO** to start the charge phase directly.

### NOTA BENE:

To carry out the charge correctly, it is necessary to make sure that the tank contains at least 2 kilos of coolant more than the quantity needed to be charged. The software does not accept lower amounts.

- Enter the amount of coolant to be charged and press **ENTER** to confirm.
  - ✓ If oil charge has been selected, push the **MENU** key to open the solenoid valve for oil injection and push once again the **MENU** key to close it.
  - ✓ Press the **ENTER** key to continue.
- The unit carries out the coolant charge and at the end displays the value of the charged coolant.
- To verify if the circuit is efficient, you need to check the functioning pressures.
- Close the valves on the unit.



### CAUTION:

**Failure to close the valves may cause errors, malfunction or damage of the internal components.**

- Switch On the vehicle and the A/C system.
- Check pressure values.
- Switch Off the A/C system and the vehicle.
- Close the valves on the service pipes.
- Press **STOP** to go back to the STAND-BY page. When quitting, the program asks whether to cancel the vehicle data set in memory or not.
- Some messages prompt the operator for the pipes disconnection.
- Select the wished option.

**NOTA BENE:**

For the units equipped with printer (optional), after the display of the charged coolant carry out the following procedure:

- ✓ Enter the value of the injected oil through the numerical keys and use **MENU** key to erase the entered value.
- ✓ Press **ENTER** to confirm the oil value.
- ✓ Press the **ENTER** key to print.
- ✓ Press the **STOP** key to exit.

## 5.6 - Automatic function

This function allows carrying out recovery, vacuum, and charge functions in automatic function.



### CAUTION:

**For vehicles equipped with a single service fitting the charge function should be carried out manually by following the procedure suggested by the manufacturer.**

To carry out the automatic function:

- Some messages prompt the operator for the pipes connection. Press **ENTER** to go to the next message.
- Connect the **T1** low pressure and **T2** high pressure hoses of the A/C system.
- Open the valves on the hose quick couplers **T1** and **T2**.
- Open the high and low pressure valves on the unit.
- Press the **AUTOMATIC** function key (**30**).
- The display requires the entry of the vacuum time.
- Enter the value and press **ENTER** to confirm.
- The display requires whether to carry out the oil charge.
  - ✓ Select **YES** to charge oil (the station stops) before charging.
  - ✓ Select **NO** to start the charge phase directly.
- The display requires the entry of the amount of refrigerant to be charged.
- Enter the value and press **ENTER** to confirm.
- The function starts and continues automatically til the end.

### NOTA BENE:

In case of errors, the station stops and displays the relevant error message.

- To verify if the circuit is efficient, you need to check the functioning pressures.
- Close the valves on the unit.

**CAUTION:**

**Failure to close the valves may cause errors, malfunction or damage of the internal components.**

- Switch On the vehicle and the A/C system.
- Check pressure values.
- Switch Off the A/C system and the vehicle.
- Close the valves on the unit.
- Press **STOP** to go back to the STAND-BY page. When quitting, the program asks whether to cancel the vehicle data set in memory or not.
- Some messages prompt the operator for the pipes disconnection.
- Select the wished option.

**NOTA BENE:**

For the units equipped with printer (optional), after the display of data, comply with the following procedure:

- ✓ Enter the recovered oil value through the numerical keys and use the **MENU** key to erase the entered value.
- ✓ Press **ENTER** to confirm.
- ✓ Press the **STOP** key to exit.
- ✓ Enter the charged oil value through the numerical keys and use the **MENU** key to erase the entered value.
- ✓ Press **ENTER** to confirm the oil value.
- ✓ Press the **ENTER** key to print.
- ✓ Press the **STOP** key to exit.

## 5.7 - Recycling function

- Press the **MENU** key from the STAND-BY page.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **RECYCLING** and press **ENTER** to confirm.
- The function is self-limited to 60 minutes.
- Press **STOP** to stop the function.
- The function stops automatically after the complete draining of the internal circuit.

## 5.8 - Flushing (optional)

### **NOTA BENE:**

Carefully read the flushing kit instructions for the correct connection and use of accessories.

To use the flushing kit follow instructions below:

- Connect the flushing kit and the part to be flushed following instructions of the flushing kit manual.
- Open the low side valve and press **ENTER** to continue.
- Select the vacuum time and press **ENTER** to drain the component.
- After the vacuum phase a test is carried out to be sure of the absence of leaks.
- If the leak test is positive, open the **flushing** valve.
- Wait until the flushing time is over or, if the cleaning is correct, press the **MENU** key.
- Close the **flushing** valve and press **ENTER** to drain the circuit.
- Press **STOP** to terminate.

### **NOTA BENE:**

For the stations equipped with printer (optional) follow instructions below:

- ✓ Enter the amount of discharged oil and press **ENTER** to confirm.
- ✓ Press the **ENTER** key to print.
- ✓ Press the **STOP** key to exit.

## **6.0 - DISPLAYED MESSAGES**

### **6.1 - Service messages**

#### **CHANGE OIL**

Vacuum pump oil change (see chapter 7.1).

#### **CHANGE FILTER**

Change filter dryer (see chapter 7.3).

### **6.2 - Error messages**

#### **HIGH PRESSURE**

Out feed pressure from compressor is excessively high. Switch off the unit and wait for about 30 minutes. If the problem persists, apply to the Technical Service.

#### **SOFTWARE ERROR**

Error in the software, apply to the Technical Service.

#### **FULL BOTTLE**

Coolant level in the bottle reached the maximum capacity level, carry out some charges to reduce the amount of coolant inside.

#### **SCALE RECALIBRATION**

Error in scale calibration, reset it. If the error persists, apply to the Technical Service.

#### **HIGH RECOVERY TIME**

The recovery time exceeds the set safety limit. Make sure there are no leaks in the A/C system. If no leaks are detected, apply to the Technical Service.

#### **EMPTY SYSTEM**

There is no refrigerant in the A/C system.

#### **FULL SYSTEM**

The A/C system is charged with refrigerant.

#### **INCOMPLETE CHARGE**

Excessive charge time; this proves that the pressure inside the bottle is equal to the pressure inside the A/C system.



## **7.0 - MAINTENANCE**

The AC790PRO is a highly reliable unit built with top-quality components with the use of today's most advanced production techniques.

For these reasons, maintenance is reduced to a minimum and marked by a very low frequency of intervention. In addition, owing to the electronic control system, all periodic maintenance procedures are signalled at the prescribed time.

**CHANGE OIL**                      Change vacuum pump oil (30 hours).

**CHANGE FILTER**              Change filter dryer (150 kg of fluid).

### **7.1 - Vacuum pump oil change**

The oil of the vacuum pump must be changed frequently in order to assure higher performances of the unit.

When the oil has to be changed, the display shows **CHANGE OIL**.

To change the oil, follow carefully these instructions:

- Disconnect the unit from the power supply.
- Put a beaker under the cap (**41**), open the cap and discharge the oil contained in the vacuum pump.
- When the pump is empty, screw in the cap (**41**) and open the upper cap (**39**).
- Fill the pump with the oil through the upper hole. Check the oil level in the pump through the inspection glass (**40**); level has to reach the sight glass middle line.
- When the pump is filled, close the upper cap.

### **7.2 - Reset oil counter vacuum pump**

After having changed the oil of the vacuum pump, reset the counter.

To reset the counter follow carefully these instructions:

- Simultaneously press the **3** and **FLUSHING** keys for some seconds.
- The display shows the message **0000**.
- Digit **5555** on the keypad and press **ENTER**.
- The functions menu is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **OIL CHANGE** and press **ENTER** to confirm.

The display shows a value which corresponds to the working hours of the vacuum pump.

- Press the **MENU** key and keep it pressed.
- When the display shows **0000** release the **MENU** key.
- The display displays the functions menu again.
- Press **STOP** to go back to the STAND-BY page.

### 7.3 - Filter dryer change

The filter dryer of this unit has been designed in order to eliminate all acid residues and the high water content of the refrigerant R134a.

The filter has to be changed when the display shows the message **CHANGE FILTER**. To change correctly the filter dryer, follow carefully these instructions.

- Connect the unit to the electrical power supplied and press the **RECOVERY** key.
- Open the high and low pressure valves on the unit.
- Wait for the end of self-cleaning.
- Let the compressor operate until the pressure indicated on the manometers has not decreased under the 0 (zero) bar value.
- Press the **STOP** key to stop the compressor. Now all the refrigerant has been drained from the filter and no pressure should be present.
- Close the valves on the unit.
- Disconnect the unit from the electrical power supply and remove the lower front panel.



**CAUTION:**

**During the following phase it will be necessary to open the refrigerant circuit of the unit. Wear goggles and gloves.**

- Disconnect the filter with caution and replace it with a new one.



**CAUTION:**

**Check that the sealing rings are in the right position.**

- Set up the plastic protection again.

## **7.4 - Reset counter filter dryer**

After the change of the filter dryer, reset the counter.  
To reset the counter follow carefully these instructions:

- Simultaneously press the **3** and **FLUSHING** keys for some seconds.
- The display shows the message **0000**.
- Digit **5555** on the keypad and press **ENTER**.
- The functions menu is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **FILTER CHANGE** and press **ENTER** to confirm.

The display displays a value, either in kg or in Pounds, corresponding to the amount of coolant that has been filtered.

- Press the **MENU** key and keep it pressed.
- When the display shows **0000** release the **MENU** key.
- The display displays the functions menu again.
- Press **STOP** to go back to the STAND-BY page.

## 7.5 - Refrigerant scale calibration

Required equipment:

- ✓ 2 Sample weights.

After removing the rear cover, remove the container to the scale plate.

### NOTA BENE:

The hoses from the internal container do not have to be disconnected. If you wish to disconnect them, close the valves on the pipes and on the bottle.

- Simultaneously press the **3** and **FLUSHING** keys for some seconds.
- The displays shows **0000**.
- Set the value **1111**.
- Press the **ENTER** key.
- The functions menu is displayed.
- Press the upwards cursor shifting key (**26**) or the downwards cursor shifting key (**32**) to select either **BOTTLE CALIBRATION** and press **ENTER** to confirm.
- The displays shows **ZERO WEIGHT**.
- With the scale pan being completely empty, insert the numerical value **00.00** and press the **ENTER** key.
- The displays shows **SAMPLE WEIGHT**.
- Position the sample weight on the scale plate (the suggested weight ranges between 10 and 15 kg).
- Enter the sample weight value and press the **ENTER** key.
- The display displays the functions menu again.
- Press **STOP** to go back to the STAND-BY page.

## **8.0 - STOPPAGE FOR LONG PERIODS**

- The unit must be kept in a safe place
- Ensure that the valves on the internal tank are closed.
- To resume use, follow the activation process only after reopening the internal tank valves.

## **9.0 - DEMOLITION/DISPOSAL**

### **9.1 - Disposal of the equipment**

At the end of the equipment's lifetime, the following procedures must be performed:

- Detach and vent the gas from the unit circuit: be sure the refrigerant tank too is completely discharged, in compliance with the rules in force.
- Deliver the unit to a disposal center.

### **9.2 - Disposal of the recycled materials**

- The refrigerants recovered from A/C systems and which cannot be reused, must be delivered to gas suppliers for disposal as required.
- The lubricants extracted from systems must be delivered to used oil collection centres.

## 10.0 - TECHNICAL SPECIFICATIONS

**Refrigerant:**

R134

**Coolant electronic scale resolution:**

± 5 g

**M1 M2 gauges:**

Kl. 1.0

**M3 gauge:**

Kl. 2.5

**Container capacity:**

40 l

**Maximum weight that can be stored:**

35 kg

**Filtering station:**

1 spin-on filter dryer

**Supply voltage:**

230 V/50 Hz

**Power:**

1300 W

**Working temperature:**

10°C ÷ + 50°C

Humidity: 20 ÷ 75%

**Transport and storage temperature:**

- 25°C ÷ + 60°C

**Dimensions:**

1270 × 690 × 660

**Weight:**

120 kg approx with empty tank

**Noise:**

<70 dB (A)

## 11.0 - SPARE PARTS

Components indicated below are those necessary for routine maintenance.

Dehydrating filter

**5117399**

N°1 Vacuum pump oil bottle

**RA13119B**

Thermal paper roller (for units with printers)

**5607069**

## 12.0 - GLOSSARY OF TERMS

- **Refrigerant:** A refrigerant solely of the type for which the unit has been created (ex. R134a).
- **A/C system:** Air-conditioning system in the motor vehicle.
- **Unit or Station:** AC790PRO equipment for the recovery, recycling, evacuation and filling of the A/C system.
- **External tank:** Non-refillable fresh refrigerant (ex. R134a) cylinder, used to fill the refrigerant tank.
- **Refrigerant tank:** The tank specifically designed for the unit.
- **Function:** Execution of an individual function.
- **Recovery/Recycling:** Function in which the refrigerant is recovered by an A/C system and stored in the internal container.
- **Evacuation:** Function in which incondensables and moisture are evacuated from an A/C system solely by means of a vacuum pump.
- **Oil injection:** Introduction of oil inside an A/C system for the purpose of maintaining the amount of oil specified by the manufacturer.
- **Filling:** Function during which refrigerant is introduced into an A/C system in the amount specified by the manufacturer.

**SPX****DECLARATION OF CONFORMITY****2009**No  
**09CE004****SPX Italia s.r.l. - Divisione Tecnotest**Via Provinciale N°12,  
Sala Baganza (Parma) - Italy  
VAT IT 01304801002**DECLARES, under our own responsibility,  
that the product****Description: A/C RECOVERY AND RECHARGING SYSTEM - "COOL TECH"  
FOR BUS****Model: AC790PRO****to which this declaration refers,****conform to the requirements of the applicable European Directive(s)****DE 89/336/CE (EMC)****DE 2006/42/CE (SAFETY OF MACHINERY)****DE 2006/95/CE (LVD)****DE 97/23/CE (PED)****PED data:** Class : II^

Conformity Evaluation Module : A1

Notified body: **Bureau Veritas Italia****Viale Monza, 261****20160 Milano****Notified Body Number: 1370**

Design specifications:

PS = 18 bar

T (°C) = 10°C - 50°C

V(max) = 40 liters

Equipment components subject to pressure:

Description	Manufacturer	Category / Module	PS(bar)
Safety valve D7/S	Nuova General Instruments	Cat. 4 / Module H1	40,0 bar
Safety Pressoswitch PS3-W4S 13/16 bar	Alco controls (Emeson Electric GmbH & Co.)	Cat. 4 / Module B+D	36,0 bar
Tank 40 liters SB2757	GLI Ets. (Schneider Industrie)	Cat. 2 / Module B+D	48,0 bar
Oil separator 103.0027.R	Frigomec spa	Art. 3 - Par. 3	20,0 bar
Compressor GX23TG 230V 50/60Hz	ACC Compressor	Art. 3 - Par. 3	55,0 bar
Filter-drier PLD 412	Parker	Art. 3 - Par. 3	47,9 bar
Heat Exchanger 89X150mm 6 step	Roen Est	Art. 3 - Par. 3	20,0 bar
Copper hoses (DN min 6mm / DN max 12mm)	N/A	Art. 3 - Par. 3	20,0 bar
Rubber flexible hoses (DN min 4,8mm / DN max 6,12mm)	ZEC spa e Good Year	Art. 3 - Par. 3	40,0 bar

**has been tested and conforms to the following norms:**

EN 55022 (+A1+A2)	(2003)	EN 61000-4-4 (+A1+A2)	(2001)
EN 55014 (+A1+A2)	(2002)	EN 61000-4-5 (+A1)	(2001)
EN 61000-3-2	(2000)	EN 61000-4-11 (+A1)	(2001)
EN 61000-3-3 (+A1)	(2001)	EN 60204-1	(1998)
EN 61000-4-3 (+A1+A2)	(2001)	UNI EN ISO 12100-1	(2005)
EN 61000-4-8 (+A1)	(2001)	UNI EN ISO 12100-2	(2005)
EN 61000-4-2 (+A1+A2)	(2001)	UNI EN 378-1	(2003)
		UNI EN 378-2	(2002)

**Sala Baganza,****Company authorized person:****Alessandro Mora**

(Research &amp; Development Manager)

<b>Data</b> <b>04/02/2009</b>	CE Conformity Dept. <b>Ugo Arienti</b>	No Dossier or TCF <b>07FT002</b>
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