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## **INTRODUCTION**

This manual is intended to simplify routine and extraordinary maintenance on the new air-conditioning recharging units Konfort 700R series.

The first chapter of this manual will aim to compare the features of the two refrigerants R134a and R1234yf in relation to their use in air-conditioning systems and, therefore, in the new Konfort 700R series equipments.

Since any type of assistance operation is not possible without an excellent knowledge of the equipment (in particular, of the components involved during its operating cycle), in the next chapter plenty space will be given to the description of each component involved in the cycle, firstly starting with a description of the overall operation, then gradually giving further details to the description.

In particular, the way in which Konfort 780R BiGas equipments are able to do the switch between the two types of refrigerant will be analyzed.

The third chapter will describe the main functions of the menu of the Konfort 700R series equipments.

In the fourth chapter, then, the features of the Service menu of the equipments will be carefully described. Particular attention will be given to the section which allows to check the functioning of the sensors and actuators of the Konfort unit. Furthermore, a detailed description of the new calibration procedures of the equipment's sensors will be provided.

The fifth chapter will provide a brief description of the main ordinary maintenance operations which will have to be periodically performed on the equipment.

The sixth chapter explains the procedures that are necessary to follow to perform the software updates required during the normal service and assistance operations on the equipment.

Finally, the seventh chapter will review in detail the techniques of diagnosis and resolution of problems you might encounter in the work of maintaining of Konfort equipments, produced by TEXA S.p.A. The goal is that of providing an easy-to-use trouble shooting, where each problem is separately dealt, leading the reader to its correct solution.

## GENERAL SAFETY

- **Konfort 700R series** equipments are intended for qualified personnel, who must demonstrate to have a basic knowledge of the principles of refrigeration, of the operation of refrigeration systems, of the physical properties of refrigerants and of the potential dangers which equipments under high pressure could cause.
- **Konfort 700R series** units are equipped with the following safety devices:
  - Safety pressure switch: it stops the compressor when action pressure (19 Bars) has been reached.
  - Safety valve: it is fully open if the action value (20 Bars) is reached.
  - Power supply line fuses: they allow the interruption of the power supply in case of overload by any device.

**Any type of tampering of the above mentioned safety devices is strictly forbidden. TEXA S.p.A. declines any liability for damages to people or things produced by not approved alterations, even partial, performed on the equipment.**

- The **Konfort 700R series** equipments are designed and constructed to treat exclusively with the refrigerant R134a or with refrigerant R1234yf. Their use is not approved with any other kind of gas.
  - The coolant fluid removed from an A/C system must be handled with extreme caution, in order to avoid any possible refrigerant output to the open air.
  - The tanks used for storing refrigerants must be dedicated each to a particular cooling fluid, in order to avoid any possible mixing between R134a and R1234yf. For any further information about the precautions to adopt, refer to the safety sheets released by the refrigerant fluid manufacturers.
  - The tanks must be clean and clearly marked, in order to identify the type of refrigerant inside them.
  - It is **absolutely forbidden** to use external tanks or other storage containers without homologation and not equipped with safety valves.
- **It's mandatory** to guard the equipments during their operation.
- **It's mandatory** to wear suitable protective clothes, like glasses and gloves. The refrigerant liquids could cause physical injuries (i.e. blindness). Due to their low boiling temperature (about -30 °C), the contact with the skin may cause cold burns to the operator.
- **Avoid** the inhalation of refrigerants' vapors.

- Some air and R134a mixtures have been shown to be combustible at high pressures. These mixtures are potentially dangerous and may generate fire or explosion, thus causing personal injuries and damage. In addition, the refrigerant R1234yf is classified as flammable. For these reasons, it is **absolutely forbidden** to use the equipment near open flames, hot surfaces or any other possible source of ignition.
- **Caution:** Before performing any kind of reparation or component replacement on the equipment, disconnect the it from the external power supply.
- **Caution:** It is always recommended to depressurize the equipment before making any maintenance or component replacement on it.
- **Caution:** Before disconnecting the equipment from the vehicle, make sure that every step of the service has been completed and that all valves are closed, in order to prevent any possible release of refrigerant into the atmosphere.
- **Caution:** The hoses can contain refrigerant under pressure. Disconnect the hoses with extreme care and, anyway, always after a proper depressurization of the equipment.
- **Caution:** When the hoses are rolled onto their lateral support and the rapid connectors are attached to their supports, be sure that the connectors themselves will not be open.

## CHAPTER 1 – COMPARISON BETWEEN R1234yf AND R134a REFRIGERANTS

### 1.1 Introduction to the Greenhouse Effect

The **greenhouse effect** is the natural principle that refers to the ability of a planet's atmosphere to retain the heat from the Sun. Thanks to the *greenhouse effect*, the development of life on Earth is possible, because the typical temperature imbalances of the celestial bodies with no atmosphere are avoided.

The atmospheric gases which are responsible for this natural phenomenon are called **greenhouse gases**, and they have the property of being transparent to incoming solar radiation on the Earth but they can hold, in a consistent manner, the infrared radiation emitted by the Earth's surface, by the atmosphere and by the clouds.

Water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) are the main greenhouse gases in the Earth's atmosphere. Ozone (O<sub>3</sub>), which is often listed as a greenhouse gas, is not exactly one of them: its action in the atmosphere, in fact, is mainly "cooling", because it acts as a filter against the solar UV rays.

The air pollution, due to the continuous and increasing combustion of fossil fuels, the emission of chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs) leads to an increase of the greenhouse gases in the atmosphere (especially CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>) and, at the same time, a thinning of the ozone layer. This leads to an abnormal increase in global temperature, with consequences in the medium/long term which are still unpredictable (extreme weather conditions, such as hurricanes, storms and floods).

The refrigerants used in cars' air conditioning systems can also contribute to this abnormal increase of the greenhouse effect. In order to quantify the impact of each type of refrigerant on raising global temperatures, a number of parameters are used, including **the GWP (Global Warming Potential)**. As benchmark for the calculation of this parameter, the CO<sub>2</sub> is taken into account (namely, the GWP value for each gas is defined with reference to that of CO<sub>2</sub>).

### 1.2 The Directive 2006/40/CE

With the **Directive 2006/40/EC** the European Community requires that, starting from **January 1<sup>st</sup>, 2011**, all the Member States **will no longer have the chance to grant EC type-approvals** or national type-approvals for vehicles which are equipped with air conditioning systems designed to contain fluorinated greenhouse gases with a **GWP > 150**.

The directive also requires that, starting from **January 1<sup>st</sup>, 2017**, all the new registered cars will be **prohibited** to have air-conditioning systems containing fluorinated gases with **GWP > 150**.

The refrigerant R134a, which is currently used in the A/C systems of vehicles with a mass less than 3,5 tones, has a GWP factor = 1400: this means that its global warming potential is 1400 times higher than the one of carbon dioxide.

According to the new constraints imposed by the EU Directive, the new refrigerant that has been established for the air conditioning systems of new registration vehicles will be the **R1234yf**, because characterized by a very low global warming potential (**GWP = 4**).

Refrigerant	GWP
R134a	1400
R1234yf	4
CO <sub>2</sub>	1

Table 1.1 – GWP coefficients of the two refrigerants compared to that of carbon dioxide

### 1.3 Features of the new refrigerant R1234yf

The decision to opt for the new refrigerant R1234yf is dictated by some of its interesting features:

- **excellent environmental properties** in relation to the greenhouse effect (GWP=4).
- **reduced levels of acute and chronic toxicity**, such as the ones of R134a. The refrigerant R1234yf does not constitute any risk of exposure due to chemical toxicity.
- **very similar performances to the ones of R134a**: R1234yf is thermally stable and compatible with R134a system components. This can lead to a potential direct replacement of the refrigerant in current systems employing R134a (through appropriate conversion kits).
- **slight flammability**: R1234yf is classified as a slightly-flammable liquid. However, even if ignited, this refrigerant would burn only weakly, with very limited effects. That flammability would be, therefore, absolutely manageable.



Properties	R1234yf	R134a
Boiling point $T_B$	-29°C	-26°C
Critical point $T_C$	95°C	102°C
$P_{VAP}$ MPA (25°C)	0,677	0,665
$P_{VAP}$ MPA (80°C)	2,44	2,63
GWP (100 ITH)	4	1410
Toxicity	Low	Low
Flammability	Slight	None

Table 1.2 – Comparative table of the properties of the two refrigerants

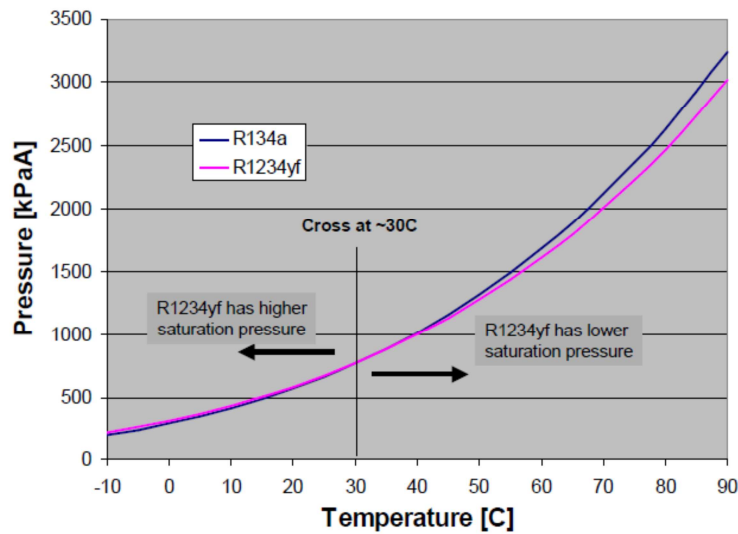


Image 1.1 – Comparative graph of the pressure-temperature characteristic of the two refrigerants

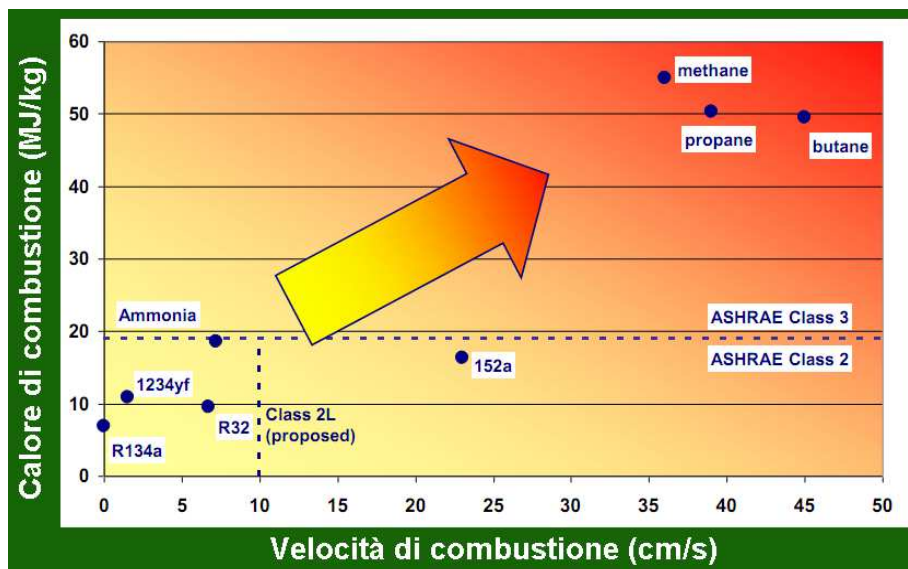


Image 1.2 – Diagram showing the combustion levels of the different types of refrigerant

#### 1.4 The TEXA solution: Konfort series 700R

In order to face up to the advent of the new refrigerant R1234yf, TEXA has developed a new line of innovative air-conditioning recharging units: **Konfort series 700R**.

All the Konfort series 700R units can be purchased right now for working either with R134a gas or with the new R1234yf refrigerant (the only exception is given by Konfort 780R BiGas, top of the line, which is able to work simultaneously with both types of refrigerant). The unit must be initialized to work with one of the two refrigerants by means of the Gas Kit, which has to be ordered together with the equipment.

If a user wishes to opt initially for the R134a refrigerant, he can, in any case, decide at any time to convert his Konfort unit to the use of the new refrigerant R1234yf by purchasing the appropriate Retrofit Kit R134a - R1234yf (available as optional).

The TEXA offer is now completed with two entry level models which are dedicated exclusively to the R134a refrigerant, that is Konfort 705R and Konfort 710R.

The following table summarizes the technical features of all the models of the new Konfort 700R series:



Image 1.3 – The complete **Konfort series 700R** new line

Description	K705R	K710R	K720R	K760R	K760R Bus	K780R
R134a Compatibility	●	●	●	●	●	●
R1234yf Compatibility	✘	✘	●	●	●	●
Double refrigerant management	✘	✘	✘	✘	✘	●
Rotating upper head system (*)	✘	✘	●	●	●	●
Totally automatic recycling	✘	✘	✘	●	●	●

Table 1.3 – Technical features of the various models of Konfort series 700R units  
((\*) – Feature not available for the German market)

Description	K705R	K710R	K720R	K760R	K760R Bus	K780R
Automatic hold test approach	●	●	●	●	●	●
TL System (scale locking system) (**)	✕	✕	✕	●	●	●
Internal cleaning system for the refrigerant change	✕	✕	✕	✕	✕	●
Advanced database	●	●	●	●	●	●
Vacuum pump	100 lt./min	100 lt./min	100 lt./min	100 lt./min	146 lt./min	100 lt./min
Compressor	Hermetic 12cc	Hermetic 12cc	Hermetic 12cc	Hermetic 12cc	Hermetic 21cc	Hermetic 12cc
Tank capability	10Kg	10Kg	12Kg	20Kg	30Kg	2 x 12Kg
Display	LCD Blue 80 char.	LCD Blue 80 char.	LCD Blue 80 char.	TFT 320x240 65000 col.	TFT 320x240 65000 col.	TFT 320x240 65000 col.
Maximum working pressure	20bars	20bars	20bars	20bars	20bars	20bars
Olio and UV electronic scales resolution	-	-	-	1gr	1gr	1gr
Refrigerant electronic scale resolution	5gr	5gr	5gr	5gr	5gr	5gr
SD card size	2GB	2GB	2GB	2GB	2GB	2GB

Table 1.3 (Continue) – Technical features of the various models of Konfort series 700R units (\*\*\*) – Device orderable as optional)

## CHAPTER 2 – GENERAL WORKING PRINCIPLE

### 2.1 Introduction

From a general point of view, the complete operating cycle of any Konfort A/C recharging unit consists in five basic steps:

- Refrigerant recovery and used oil drain;
- Vacuum creation;
- Oil/UV injection;
- Refrigerant injection;
- Recovery of the residual refrigerant from the hydraulic circuit of the equipment.

This operating cycle is schematized by the following flowchart:

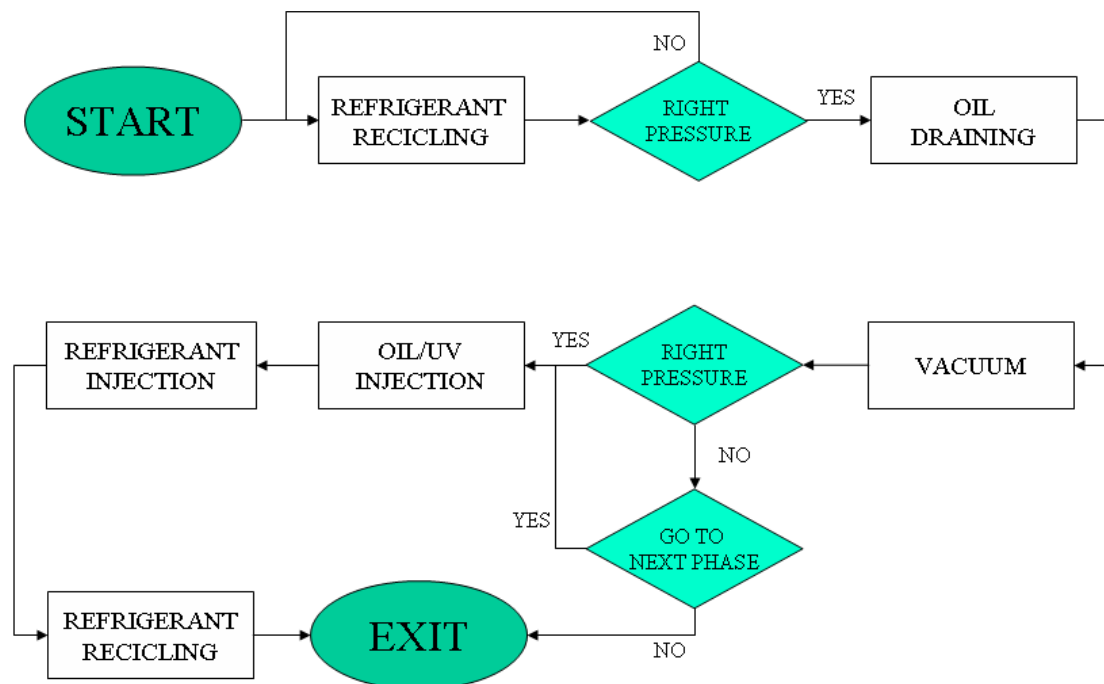


Image 2.1 – Simplified block diagram of the complete operating cycle of a Konfort equipment

Once the initial setup of the equipment will be completed, the compressor starts to **recover the refrigerant** from the system. When the pressure measured by the main sensor decreases under a threshold of -150mBars relative (850mBars absolute), the compressor stops and the equipment performs a check of the reached pressure: if the pressure remains below the threshold of 600mBars relative (1600mBars absolute), the unit proceeds with the next step, otherwise it restarts the compressor for a further recovery. This architecture allows the equipment to recover all

the refrigerant into the system, including those refrigerant pockets that might remain stored, for example, on points distant from the HP and LP connectors.

Then, a **oil drain** phase is following, in which oil and impurities picked up from the vehicle's A/C system together with the refrigerant during the recovery phase are discharged into the proper bottle.

At this point, the unit passes to the **vacuum** phase, during which it activates the vacuum pump in order to create the vacuum necessary for the success of the service. During this phase, the pressure measured by the main sensor and shown on the display is an absolute pressure, which decreases under the value of the room pressure, up to settling to the value  $P=1$  (thus indicating the achievement of the vacuum state). Conversely, the pressure measured by gauges is always a relative pressure, namely it is related to the room pressure, which means that the value 0 of the gauges actually corresponds with the room pressure ( $\approx 1000\text{mBars}$ ), therefore under vacuum conditions gauges cannot drop below zero (full scale).

After the evacuation of the system from the air and residual moisture, the equipment performs a **leak test** to assess the quality of the reached depression: if the reading of the pressure sensor is below the absolute value  $120\text{mBars}$ , the equipment passes to the next step. Otherwise, the unit stops and advises the operator about the fault by means of a beep and of a message on the display. It will be demanded to the operator's discretion to choose whether to block the service or to switch to the next step anyway.

The next step consists in the **oil and UV injection**. It occurs automatically in any case: in case of Konfort 705R, 710R and 720R, the opening of the corresponding electro-valves is automatically timed by the equipment according to the amount of fluid set to be injected at the beginning of the service; on the other hand, for Konfort 760R, 760R Bus and 780R BiGas units, the opening of the electro-valves is controlled with a high degree of accuracy depending on the weight decrease measure coming from the electronic scales.

At the end of each injection, the Konfort unit performs some controls on the depression state of the system: if the value is not sufficient to complete the next phase, the cycle is blocked. On the other hand, if the depression conditions are maintained, the equipment proceeds with the next phase, that is the **injection** of the desired amount of refrigerant.

Before ending the cycle, the unit performs a final **recovery** with the HP and LP fittings disconnected from the vehicle's A/C system: this allows the equipment to recover the residual refrigerant from the service pipes.

## 2.2 Detailed description of the single phases

We would like now to provide a more detailed description of each operating phase of the equipment. For each phase, the hydraulic components that are activated and the part of the hydraulic circuit involved will be shown. The flow diagram of a Konfort 760R will be taken as reference. From this diagram, the main components of the equipment (recovery group, compressor, vacuum pump, pressure sensor, electro-valves, condenser, refrigerant bottle) can be easily identified.

### 2.2.1 Refrigerant Recovery

During this phase, the equipment activates the following electrical components:

- Pressure sensor (1);
- **LP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **HP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **EVREC** electro-valve;
- Compressor CO;
- Condenser fan (2);
- Refrigerant load cell (3).

During this phase, the equipment carries out the refrigerant recovery from the A/C system of the vehicle. The recovered refrigerant does not end directly into the internal bottle, but it is firstly cleaned from any solid impurities and moisture, by submitting it to an appropriate filtering.

More specifically, the refrigerant, thanks to the opening of the four **HP** and **LP** electro-valves (only on Konfort 760R, 760R Bus and 780R BiGas units, in the K705R, K710R and K720R the LP and HP branches have to be manually opened by means of the HP and LP valves located on the side of the unit) and of the **EVREC** electro-valves, is converged into the recovery hydraulic circuit of the equipment. By entering in the filtering body, the refrigerant firstly encounters a **mechanic filter** (4), which aims is that of blocking any large solid impurity mixed with it.

Then, the fluid passes through an **expansion valve** (5), whose function is that of raising the temperature to values close to 0°C. Under these thermal conditions, the fluid enters the inner chamber of the following **separator filter** (6): there the refrigerant (which, at this temperature, is in the gas phase and is remaining suspended into the chamber) can be separated from the oil which has been recovered from the A/C system (which is in the liquid phase and, therefore, tends to settle in the bottom of the separator filter).

The refrigerant, now completely in the gaseous phase, passes through a **dryer filter** DF, where it is purified from any residual moisture.

The refrigerant emerging from the dryer filter is then brought into the **compressor** (CO), which compresses it thereby raising its pressure (and, therefore, its temperature).

Once coming out from the compressor, the fluid passes through a **second separator filter** (7), whose function is that of separating the compressed refrigerant from the oil taken from the equipment's compressor (which is then poured into the compressor itself).

The refrigerant (at high temperature) is then injected into the external chamber of the main separator filter where, thanks to the heat exchange with the inner chamber (where  $T \approx 0^{\circ}\text{C}$ ), it begins to cool and to condense into a liquid phase.

The cooling and condensation of the refrigerant are then completed in the next **condenser** (2), which allows the transit of the refrigerant to the liquid phase.

The fluid, now completely in the liquid state, is then pumped into the bottle of the equipment.

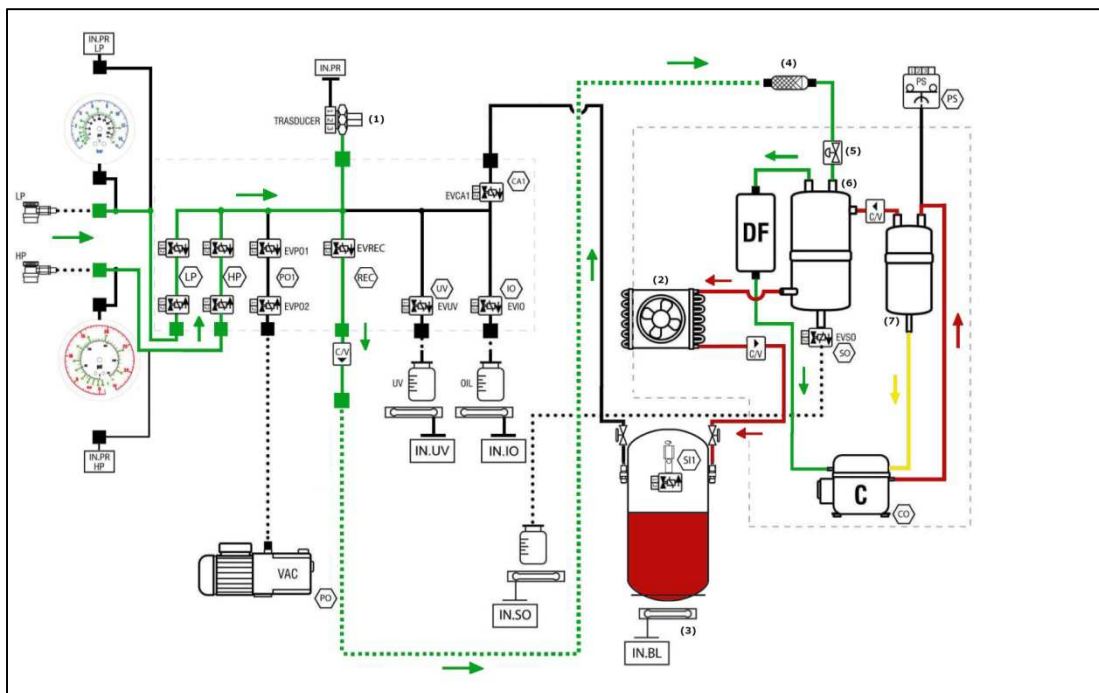


Image 2.2 – Part of the hydraulic circuit involved into the refrigerant recovery phase

### 2.2.2 Oil Drain

During this phase, the equipment activates the following electrical components:

- **EVSO** electro-valve;
- Load cell (8)<sup>1</sup>.

After the recovery phase, the equipment opens the exhaust oil **EVSO** electro-valve for the time necessary to empty the bottom of the separator filter from the oil and the impurities collected during the recovery phase from the A/C system of the vehicle. The discharge is helped by the residual pressure inside the equipment.

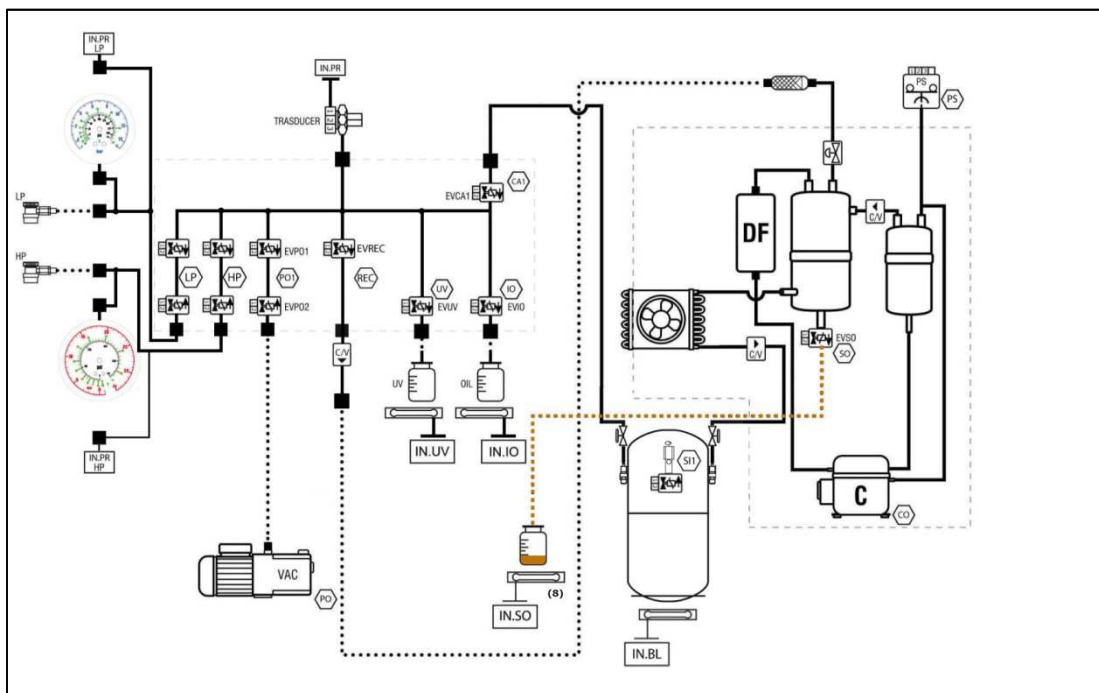


Image 2.3 – Part of the hydraulic circuit involved into the oil drain phase

### 2.2.3 Vacuum

During this phase, the equipment activates the following electrical components:

- Pressure sensor (1);
- **LP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **HP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **EVPO1** and **EVPO2** electro-valves;
- Vacuum pump PO;
- Heating band.

<sup>1</sup> Component available only on 760R, 760R Bus and 780R BiGas models



Before the starting of the real vacuum phase, the pressure sensor checks the residual pressure inside the system: if the pressure does not remain below the relative value of 600mbar, a further recovery phase is started, in order to remove any presence of residual refrigerant from the A/C system.

If, on the other hand, the pressure is lower than the above mentioned value, the two **EVPO1** and **EVPO2** electro-valves are opening and the vacuum pump switches on. In this way, the equipment evacuates the system from any residual air and moisture. The duration of the vacuum phase is selected during the initial setting of the A/C service from the menu of the equipment.

If, within 1/3 of the vacuum time initially set, the pressure does not reach a value which is below the threshold of 120mBars absolute, the equipment alerts the operator about the fault (by means of a beep and of a warning message on the display), but the vacuum pump will continue to operate. The user can decide whether to stop the cycle, by pressing the **STOP** button (this anomaly, in fact, could be indicative of a possible leak of the vehicle's A/C system) or to continue the service.

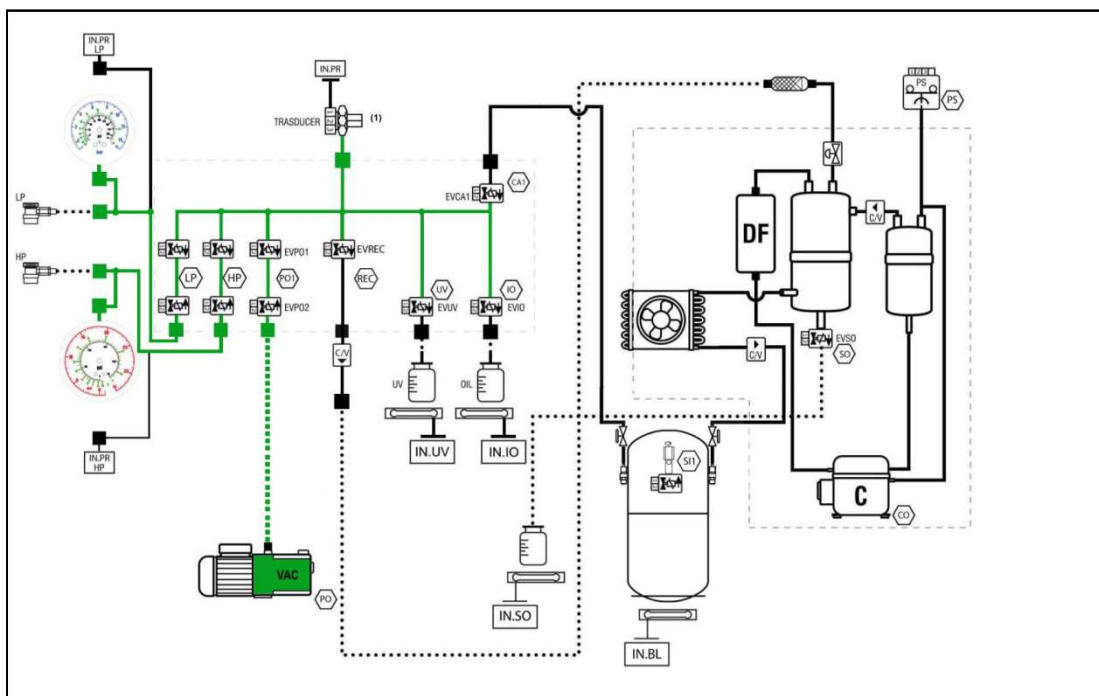


Image 2.4 – Part of the hydraulic circuit involved into the vacuum phase

### 2.2.4 Leak Test

During this phase, the equipment activates only the pressure sensor (1).

Spent the amount of time set for the vacuum phase, the vacuum pump turns off and the two electro-valves **EVPO1** and **EVPO2** close. At this point, the pressure sensor performs a further control of pressure inside the A/C system (for an amount of time preventively selected from the initial menu of the equipment).

If, within this laps of time, the pressure rises above the limit value of 120mBars absolute, the unit will automatically stop the cycle, by putting itself into a stand-by state and by alerting the operator (by means of a beep and of a special message on the display) about the anomaly (indicative, in this case, of a possible leak on the A/C system of the vehicle). If, on the other hand, the remaining pressure is below this threshold, the operative cycle of the Konfort unit automatically switches to the next step.

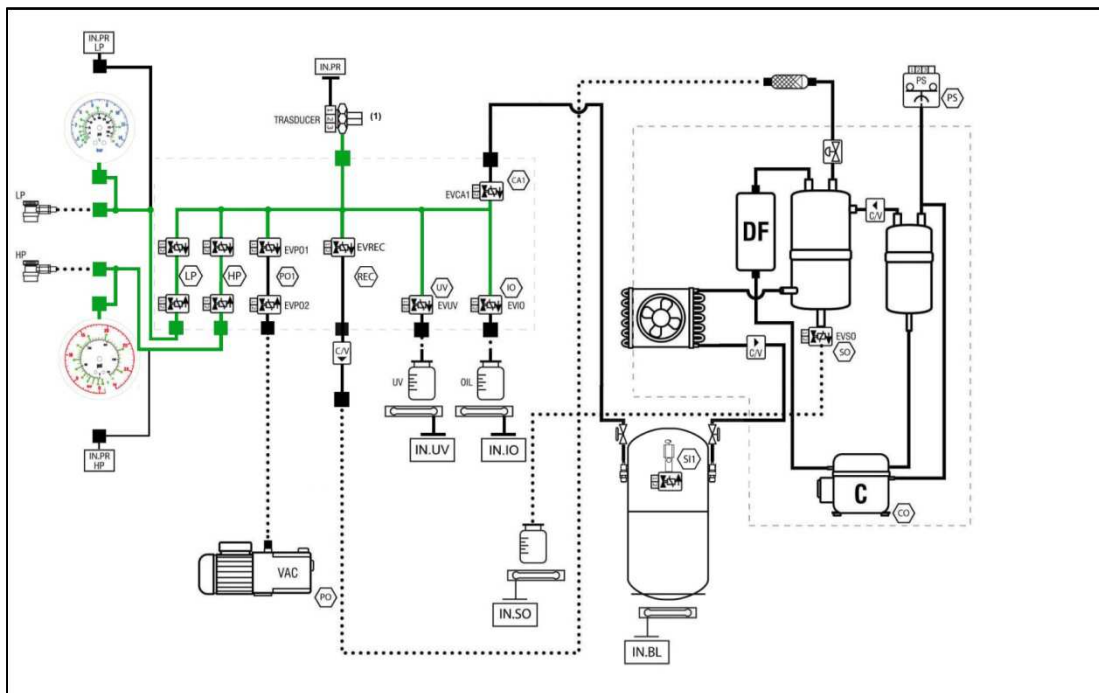


Image 2.5 – Part of the hydraulic circuit involved into the leak test

### 2.2.5 Oil Injection

During this phase, the equipment activates the following electrical components:

- Pressure sensor (1);
- **LP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **HP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **EVIO** electro-valve;

- Load cell (9)<sup>2</sup>.

The oil injection is mainly performed by opening the **EVIO** electro-valve and by pouring, thanks to the pressure difference, the new oil (PAG or POE) into the A/C system of the vehicle. The electro-valve opening is temporized in Konfort 705R, 710R and 720R units, while in all the other models is governed by the decrease of weight detected by the oil injection load cell. At the end of injection, the equipment will check the residual pressure into the system. This will ensure the possibility of implementing the next phase.

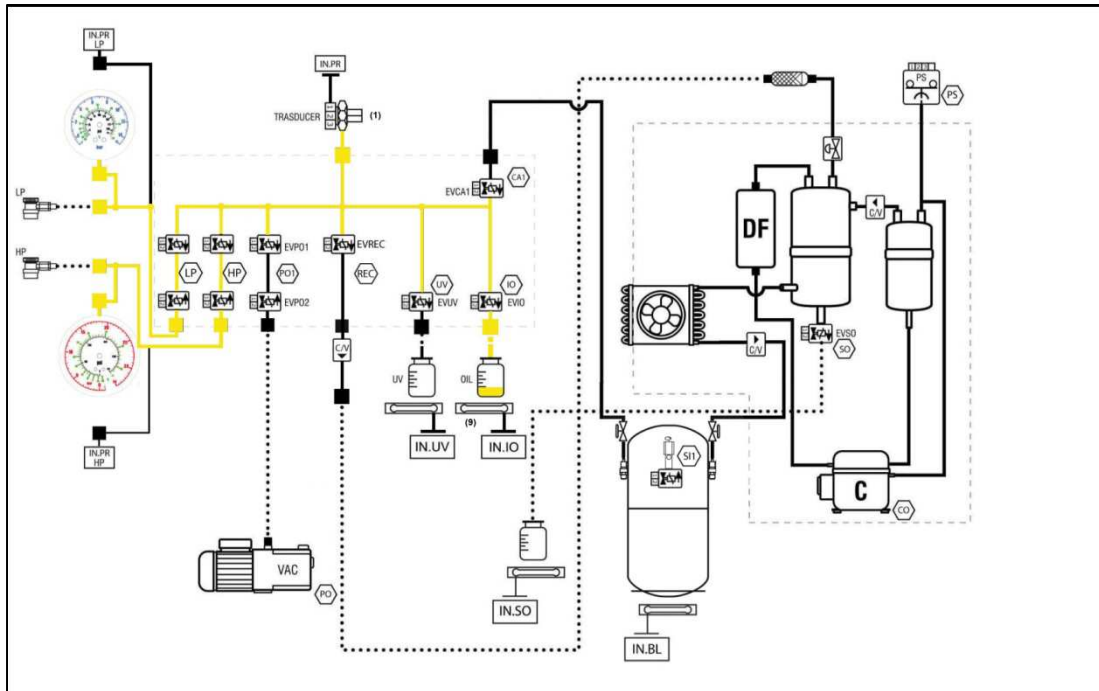


Image 2.6 – Part of the hydraulic circuit involved into the oil injection

## 2.2.6 UV Injection

During this phase, the equipment activates the following electrical components:

- Pressure sensor (1);
- **LP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **HP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **EVUV** electro-valve;
- Load cell (10)<sup>3</sup>.

The UV injection is similar to the oil one, thanks to the opening of the **EVUV** electro-valve and of the pour, because of the pressure difference, of the UV fluid into the A/C system of the vehicle. Once again, the electro-valve opening is temporized in Konfort 710R and 720R units,

<sup>2</sup> Component available only on 760R, 760R Bus and 780R BiGas models

<sup>3</sup> Component available only on 760R, 760R Bus and 780R BiGas models

while in all the other models is governed by the weight decrease measured by the corresponding load cell. Even at the end of this phase, the unit will check the residual pressure inside the system, in order to determine if the conditions for the execution of the next step will exist.

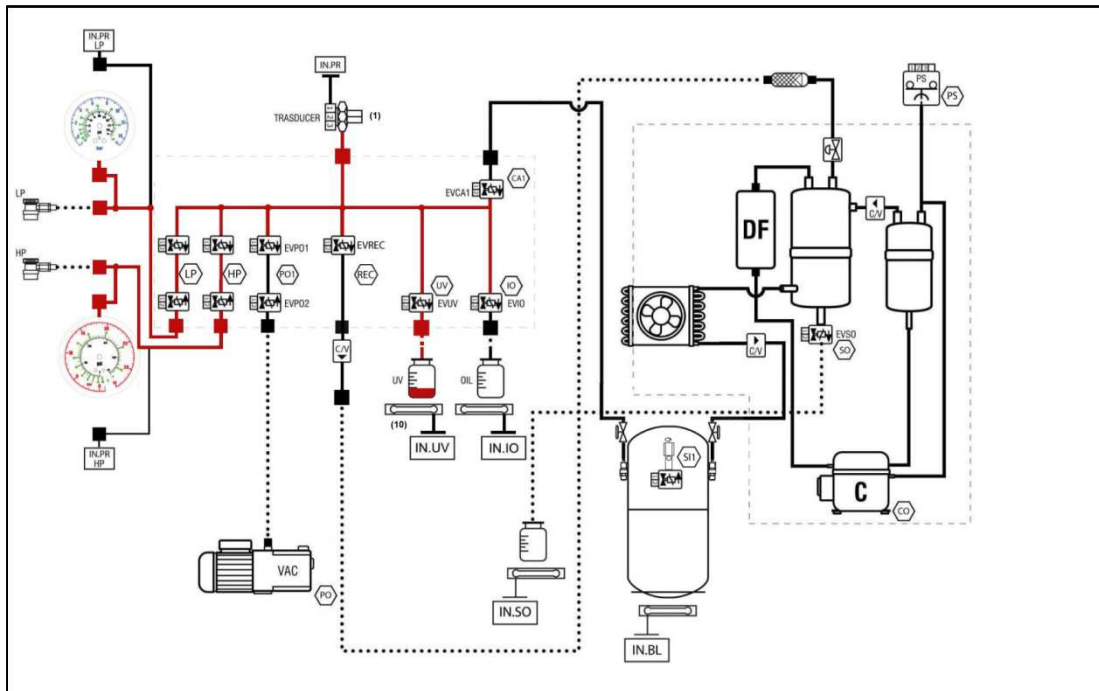


Image 2.7 – Part of the hydraulic circuit involved into the UV injection

### 2.2.7 Refrigerant Injection

During this phase, the equipment activates the following electrical components:

- Pressure sensor (1);
- **LP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **HP** electro-valves (only for 760R, 760R Bus and 780R BiGas);
- **EVCA1** electro-valve;
- Refrigerant load cell (3).

The refrigerant injection occurs by means of the transfer of the refrigerant amount, which has been initially set from the menu of the unit, from the inner vessel into the A/C system of the vehicle, thanks to the pressure difference. This transfer is performed simply thanks to the opening of the **EVCA1** electro-valve. The closure of this electro-valve is managed by the microcontroller board of the unit according to the weight decrease measured by the load cell located under the equipment's bottle.

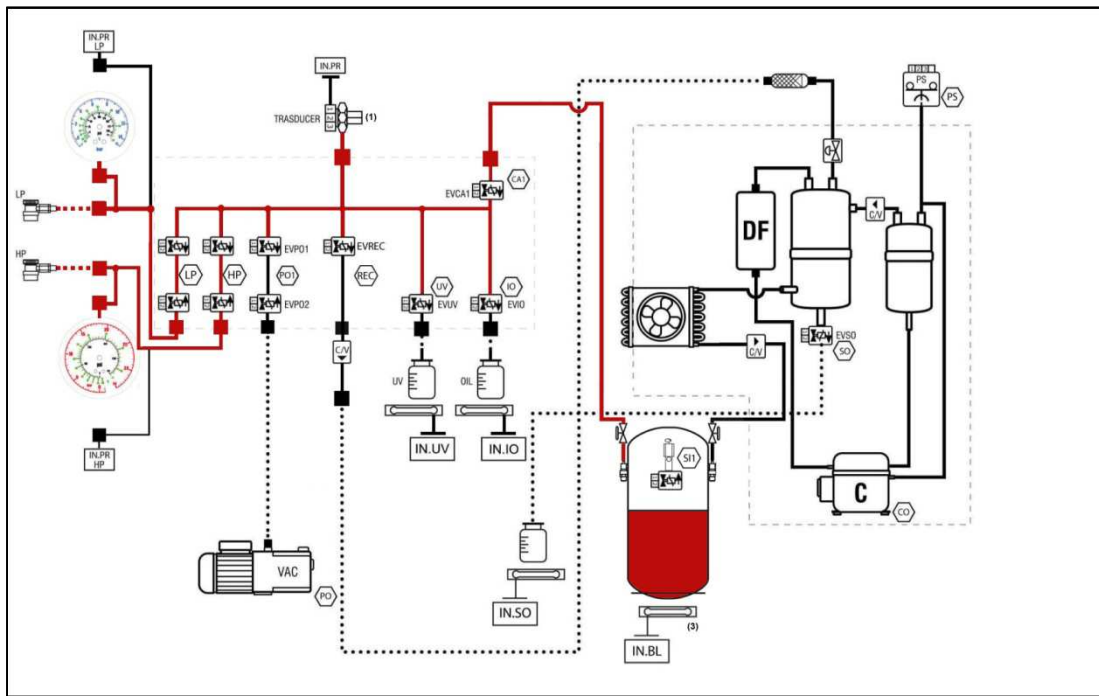


Image 2.8 – Part of the hydraulic circuit involved into the refrigerant injection

## 2.3 Evolution of the BiGas management: refrigerant recovery and injection into Konfort 780R units

Unlike all the other models, Konfort 780R BiGas units provide the chance to simultaneously manage both the services on the traditional A/C systems working with R134a and the ones on the new generation systems, based on the new refrigerant R1234yf.

This innovative architecture has led, inevitably, to a review of the operating logic, in order to avoid any possible contamination between the two different refrigerants within the equipment. More precisely, the splitting of the recovery and injection hydraulic circuits has been necessary, in order to keep the flows of R134a and R1234yf distinguished.

Now, the way in which the equipment performs the hydraulic switching that allows, depending on the type of A/C system, to deal either with R134a or with R1234yf, will be detailed described, both for the recovery phase and for the injection phase .

### 2.3.1 Recovery of R134a refrigerant

Before proceeding with the R134a refrigerant recovery from the vehicle's A/C system, the equipment performs a preliminary check of which refrigerant has been involved in previous service: if the service has been done on an A/C system operating with R1234yf, then Konfort starts an automatic **clean-up process of the hydraulic circuit**, in order to avoid

any possible contamination with the R134a, which will be employed in the current service.

Once the clean-up will be completed, the equipment will start the recovery phase, during which the following electrical components will be activated:

- Pressure sensor (1);
- **LP** electro-valves;
- **HP** electro-valves;
- **EVREC** electro-valve;
- Compressor CO;
- Upper condenser fan (2);
- **EVREF1** electro-valves;
- Refrigerant load cell (4).

The R134a refrigerant, thanks to the opening of the four **HP** and **LP** electro-valves and of the **EVREC** electro-valve, is made to flow (thanks to the compressor suction) inside the recovery hydraulic circuit of the equipment.

It will flow, according with processes and status changes similar to those described in paragraph 2.2.1, through the **mechanic filter** (5), the **expansion valve** (6), the **main separator filter** (7) and the **dryer filter** (DF).

At this point the R134a, which emerges from the dryer filter, is brought into the **compressor** (CO), whose function is that of compressing the refrigerant, thus raising its pressure (and therefore its temperature).

Once released from the compressor, the R134a refrigerant is passed through an **auxiliary separator filter** (8), thanks to the simultaneous opening of both the **EVREF1** electro-valves by the firmware of the unit. This auxiliary separator filter is exclusively dedicated to the separation of R134a from the oil taken from the compressor (which is, then, poured back to the compressor itself thanks to the opening of the EVREF1 electro-valve located on the output of the separator).

The refrigerant (now at high temperature) is then injected again into the main separator filter where, according with processes and status changes similar to those described in paragraph 2.2.1, the R134a begins to cool and condense into a liquid phase.

The cooling and condensation of R134a are then completed into the **condenser** (2), which allows the full refrigerant transition to the liquid phase.

The refrigerant, now completely in the liquid state, is finally conveyed into the **upper tank**, dedicated to the R134a.

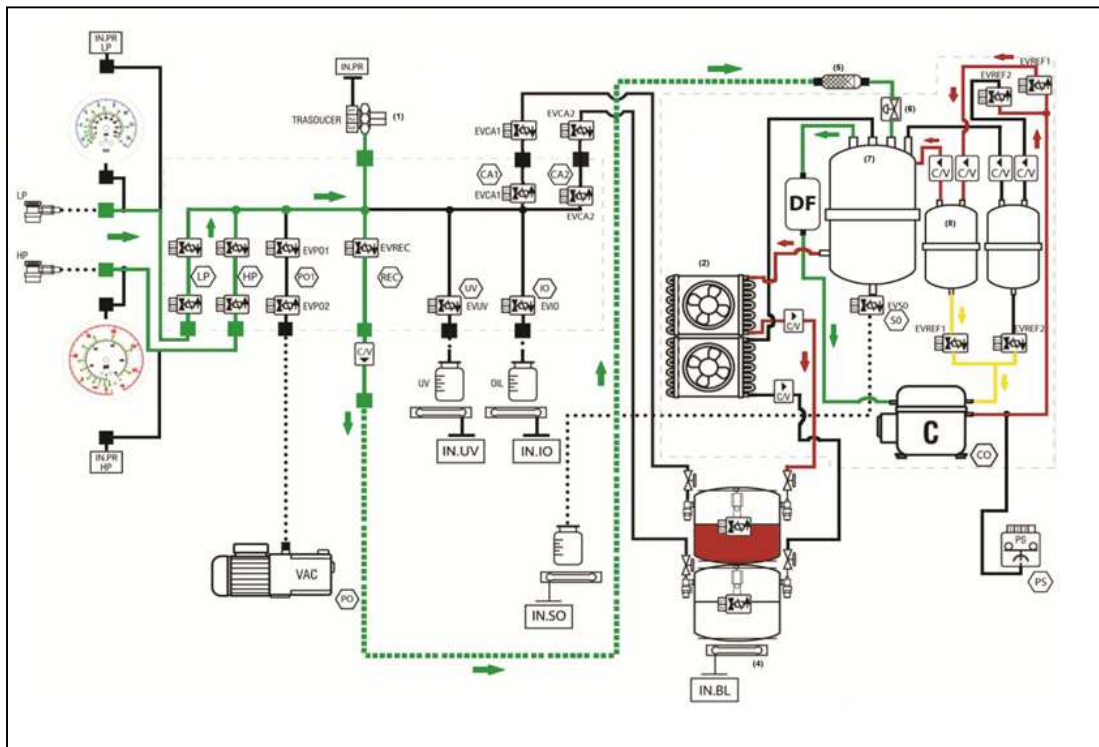


Image 2.9 – Part of the hydraulic circuit involved in the R134a recovery phase on Konfort 780R BiGas units

### 2.3.2 Recovery of R1234yf refrigerant

Before proceeding with the R1234yf refrigerant recovery from the vehicle's A/C system, the equipment performs a preliminary check of which refrigerant has been involved in previous service: if the service has been done on an A/C system operating with R134a, then Konfort starts an automatic **clean-up process of the hydraulic circuit**, in order to avoid any possible contamination with the R1234yf, which will be employed in the current service.

Once the clean-up will be completed, the equipment will start the recovery phase, during which the following electrical components will be activated:

- Pressure sensor (1);
- **LP** electro-valves;
- **HP** electro-valves;
- **EVREC** electro-valve;
- Compressor CO;
- Lower condenser fan (3);
- **EVREF2** electro-valves;
- Refrigerant load cell (4).

The R1234yf refrigerant, thanks to the opening of the four **HP** and **LP** electro-valves and of the **EVREC** electro-valve, is made to flow (thanks to the compressor suction) inside the recovery hydraulic circuit of the equipment.

It will flow, according with processes and status changes similar to those described in paragraph 2.2.1, through the **mechanic filter** (5), the **expansion valve** (6), the **main separator filter** (7) and the **dryer filter** (DF).

At this point the R1234yf, which emerges from the dryer filter, is brought into the **compressor** (CO), whose function is that of compressing the refrigerant, thus raising its pressure (and therefore its temperature).

Once released from the compressor, the R1234yf refrigerant is passed through an **auxiliary filter separator** (9) (hydraulically connected in parallel to the separator filter (8), dedicated to the R134a), thanks to the simultaneous opening of both the **EVREF2** electro-valves by the firmware of the unit. This auxiliary separator filter is exclusively dedicated to the separation of R1234yf from the oil taken from the compressor (which is, then, poured back to the compressor itself thanks to the opening of the EVREF2 electro-valve located at the output of the separator itself).

The R1234yf refrigerant (now at high temperature) is then injected again into the main separator filter where, according with processes and status changes similar to those described in paragraph 2.2.1, it begins to cool and condense into a liquid phase.

The cooling and condensation of R1234yf are then completed into the **condenser** (3), which allows the full refrigerant transition to the liquid phase.

The refrigerant, now completely in the liquid state, is finally conveyed into the **lower tank**, dedicated to the R1234yf.



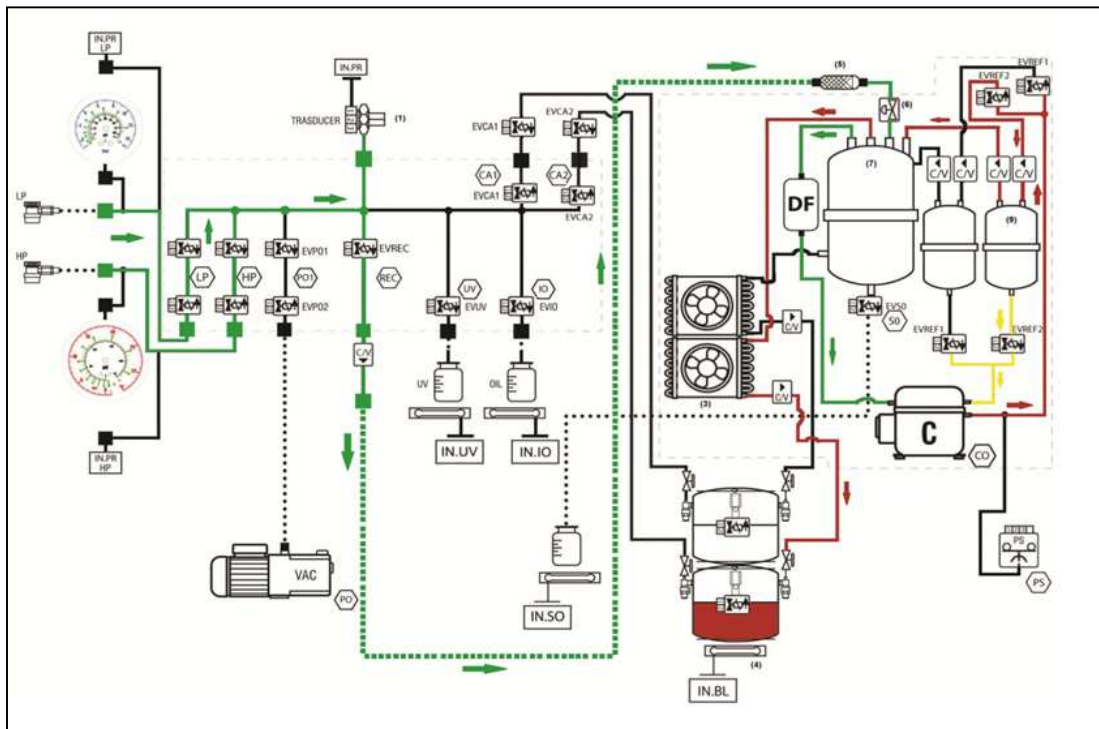


Image 2.10 – Part of the hydraulic circuit involved in the R1234yf recovery phase on Konfort 780R BiGas units

### 2.3.3 Refrigerant R134a injection

During this phase, the equipment activates the following electrical components:

- Pressure sensor (1);
- **LP** electro-valves;
- **HP** electro-valves;
- **EVCA1** charge electro-valves;
- Refrigerant load cell (4).

The injection of the R134a refrigerant occurs because of the transfer of the amount of refrigerant, initially set from the menu of the equipment, from the upper bottle to the A/C system of the vehicle (thanks to the pressure difference).

This transfer is simply performed thanks to the opening of the two **EVCA1** electro-valves in case of R134a.

The closure of these electro-valves is controlled by the firmware of the management board of the equipment depending on the weight decrease revealed by the load cell located under the two bottles of the unit.

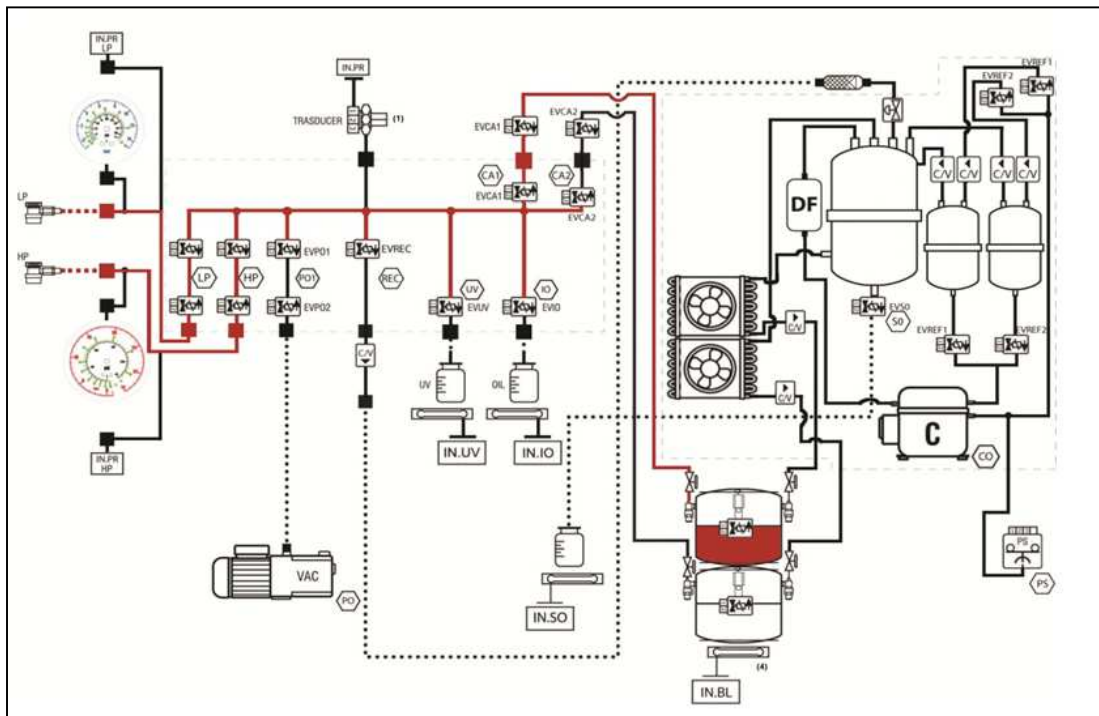


Image 2.11 – Part of the hydraulic circuit involved in the R134a injection phase on Konfort 780R BiGas units

### 2.3.4 Refrigerant R1234yf injection

During this phase, the equipment activates the following electrical components:

- Pressure sensor (1);
- **LP** electro-valves;
- **HP** electro-valves;
- **EVCA2** electro-valves;
- Refrigerant load cell (4).

The injection of the R1234yf refrigerant occurs because of the transfer of the amount of refrigerant, initially set from the menu of the equipment, from the lower bottle to the A/C system of the vehicle (thanks to the pressure difference).

This transfer is simply performed thanks to the opening of the two **EVCA2** electro-valves in case of R1234yf.

Also in this case, the closure of these electro-valves is controlled by the firmware of the management board of the equipment depending on the weight decrease revealed by the load cell located under the two bottles of the unit.

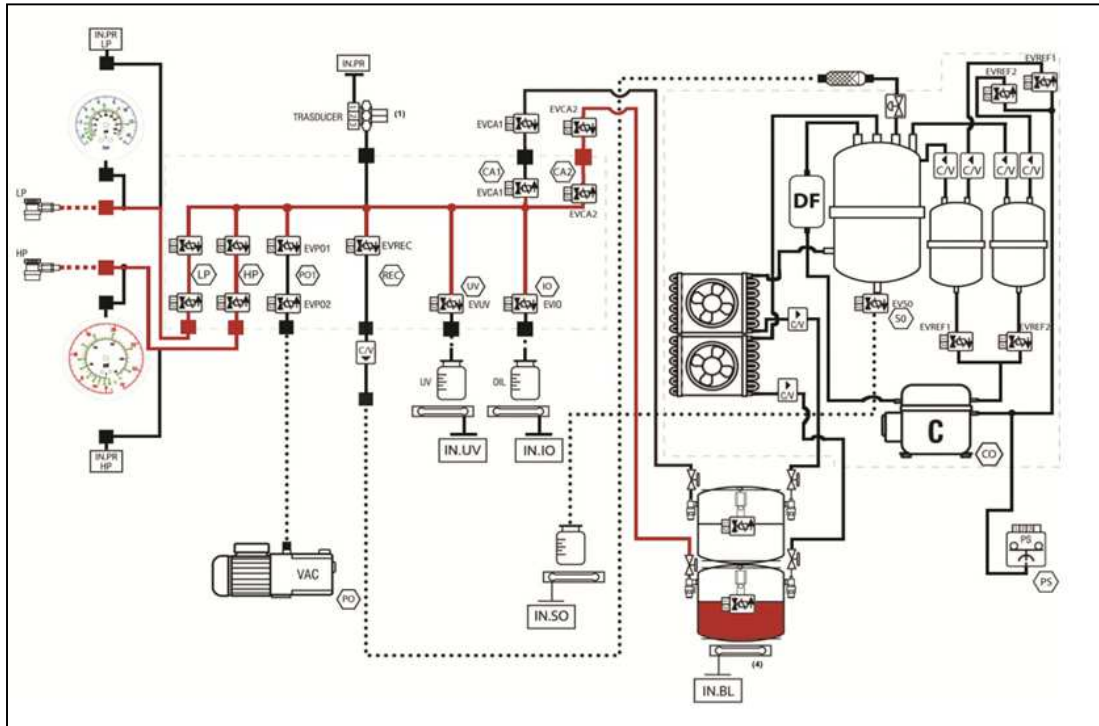


Image 2.12 – Part of the hydraulic circuit involved in the R1234yf injection phase on Konfort 780R BiGas units

## 2.4 Refrigerant Recovery on Konfort 705R

The refrigerant recovery on the Konfort 705R units is very similar to the one described in paragraph 2.2.1. The only difference, due to the need to simplify the hydraulic circuit of this model of A/C station for reasons of costs, consists in the fact that the separation of the oil, which is taken from the compressor, is performed because of coalescence effect by means of a **capillary tube** which is connected between the external chamber of the main separator filter and the compressor. Therefore, in this case, the unit is not using an auxiliary separator filter.

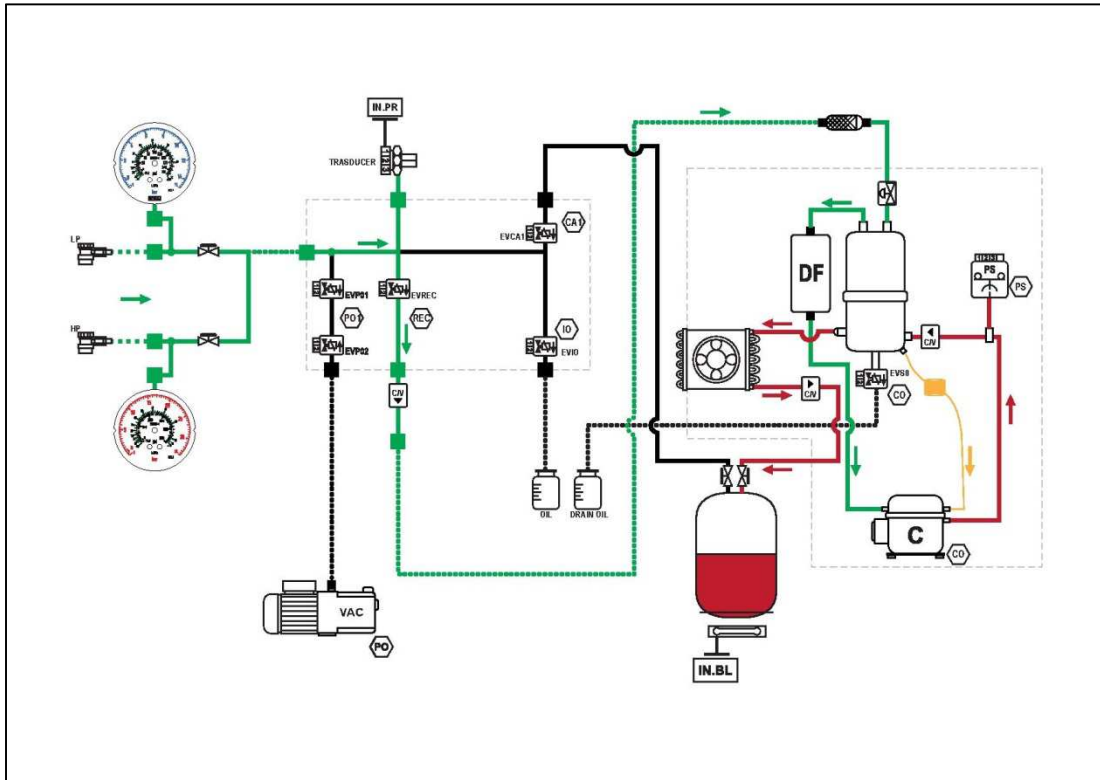


Image 2.13 – Part of the hydraulic circuit involved in the refrigerant recovery phase on Konfort 705R units

## CHAPTER 3 – KONFORT SERIES 700R: NEW ARCHITECTURE OF THE MENU

### 3.1 Konfort 705R, 710R, 720R: Text menu on blue LCD display

The menu of Konfort 705R, 710R and 720R recharging units is shown on a 80-digits blue display.

Once the unit is switched on, the following screenshot will be shown:

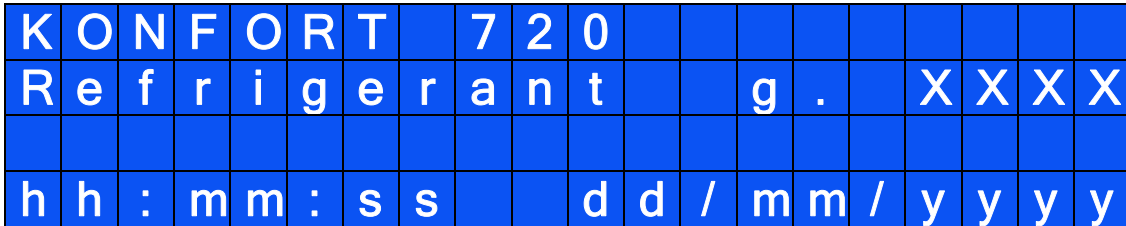


Image 3.1 – Main screen on the display of a Konfort 705R, 710R and 720R

By clicking on the **DOWN** button of the keyboard, the main page of the menu of the equipment will be shown:



Image 3.2 – Main page of the menu of Konfort 705R, 710R and 720R

The desired option can be selected by pressing the **UP** and **DOWN** buttons and by confirming the selection with the green **ENTER** button.

### 3.1.1 The AC maintenance menu

The **AC maintenance** option, selectable from the main menu, allows to choose how to operate with the equipment. Once this option will be selected, the display will show the following screenshot:

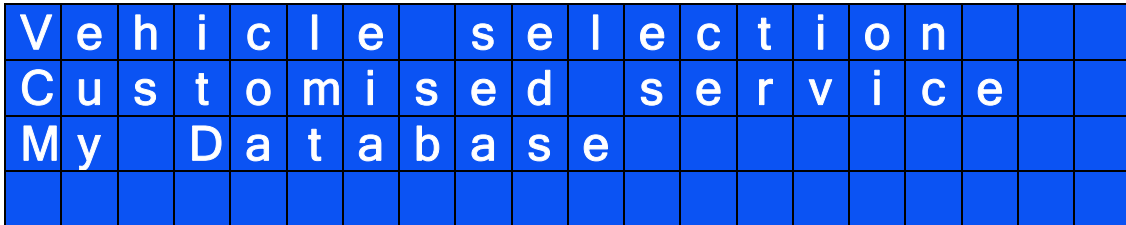


Image 3.3 – The **AC maintenance** menu of Konfort 705R, 710R and 720R

The available choices are:

- **Vehicle selection:** It allows user to select a specific vehicle from the database stored into the SD card of the equipment. The amount of refrigerant to be charged will be automatically set for the selected vehicle.
- **Customised service:** It allows user to customize which phase(s) of the operative cycle (recovery, vacuum, leak test, oil/UV injection, refrigerant injection) he would like to run on the equipment. This option can be a very useful tool for verifying the proper function of the unit.
- **My Database:** It allows user to store **up to 128 new vehicles**<sup>4</sup> and to specify, for each one of them, the quantity of refrigerant, the duration of vacuum and leak phases and the quantities of oil and UV to be injected. This option could be very useful, because it provides the operator the chance to add new vehicles to his liking, if not already included in the latest database release.

<sup>4</sup> This quantity depends on the capacity of the internal flash memory of the unit.

### 3.1.2 The Additional functions menu

The **Additional functions** option, selectable from the main menu, allows to select some interesting service functions for the equipment. Once this option will be selected, the display will show the following screenshot:

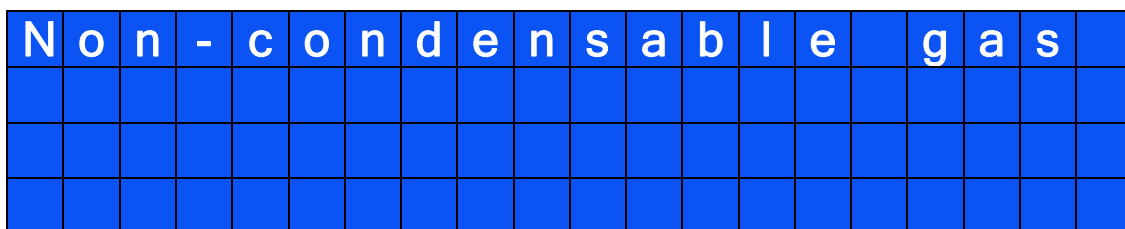
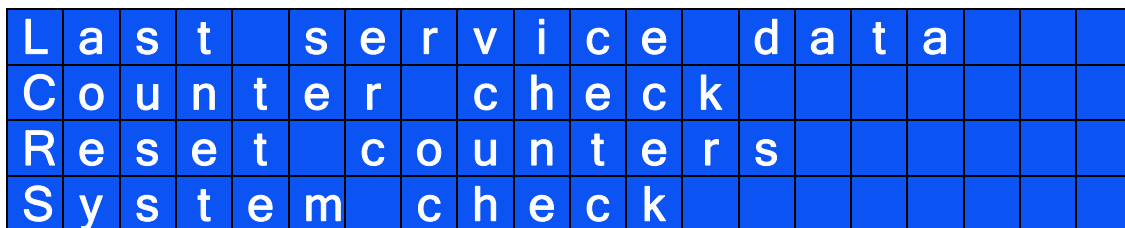
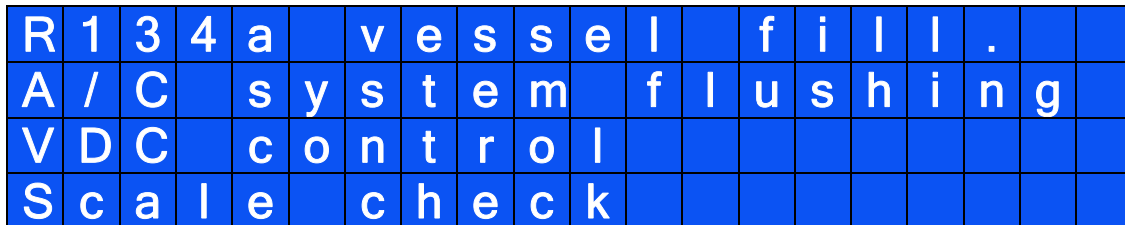


Image 3.4 – The **Additional function** menu of the Konfort 705R, 710R and 720R.  
It is possible to scroll the different pages/options of the menu by using the **UP** and **DOWN** buttons on the keyboard

The functions available inside this menu are:

- **Vessel fill.:** It allows user to recharge the internal tank of the equipment from an external bottle.
- **A/C system flushing:** It allows user to initiate the flushing procedure through the use of TEXA Flushing Kit, affordable as an accessory (only on Konfort 710R and 720R, refer to the corresponding instruction manual for further details).
- **VDC control:** It allows to perform the control, from the Konfort command panel, the variable displacement compressor of A/C systems which are equipped with dedicated electronic control unit. This control action can be done by using the TEXA VDC device, available as an optional (only on Konfort 720R, refer to the corresponding instruction manual for further details).
- **Scale check:** It allows to check the linearity of the refrigerant load cell of the equipment.

- **Last service data:** It allows to view the data of the last complete A/C service performed by the equipment.
- **Counter check:** It allows to perform the view of the counters (total and partial) of the equipment, both for the recovered refrigerant and for the time of vacuum.
- **Reset counters:** It allows to perform the reset of the counters of the recovered refrigerant and of the vacuum time of the unit. This action has to be performed during the ordinary maintenance of the equipment. Further details will be given on Chapter 5.
- **System check:** It allows to perform the check of the performances of the A/C system of the vehicle based on the pressure readings from the gauges or by means of the Climate Control Efficiency Kit, available as an optional (only on Konfort 720R, refer to the corresponding instruction manual for further details).
- **Non-condensable gas:** This function allows to force the automatic check and/or discharge of the non-condensable gases from the inside of the vessel of the unit<sup>5</sup>.

### 3.1.3 The Settings menu

The **Settings** option, selectable from the main menu, allows to perform some customization in the use of the equipment. By selecting this option, the equipment will show the following screenshot:

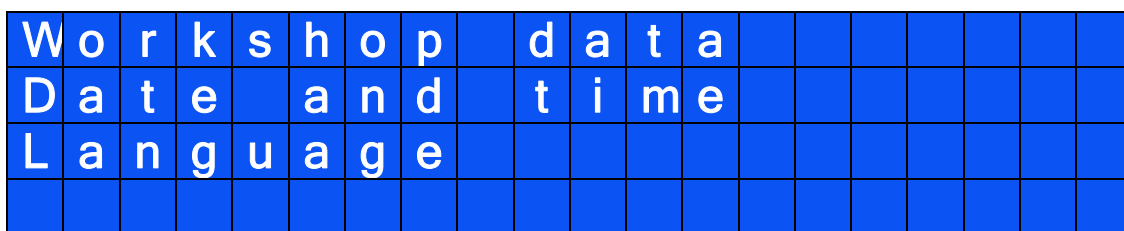


Image 3.5 – The **Settings** menu of the Konfort 705R, 710R and 720R.  
It is possible to scroll the different pages/options of the menu by using the **UP** and **DOWN** buttons on the keyboard

<sup>5</sup> Usually, the non-condensable gases check and/or discharge is performed automatically by the unit at the first ignition of the day.



The functions available inside this menu are:

- **Workshop data:** It allows to specify the name and the details of the own workshop.
- **Date and time:** It allows to change the date and time inside the equipment.
- **Language:** It allows to change the display language for the menu and for the various functions of the equipment.

### 3.1.4 The Service menu

The **Service** option, selectable from the main menu, allows to access to the service and maintenance features of the Konfort unit. By selecting this option, the display of the equipment will show the following screenshot:

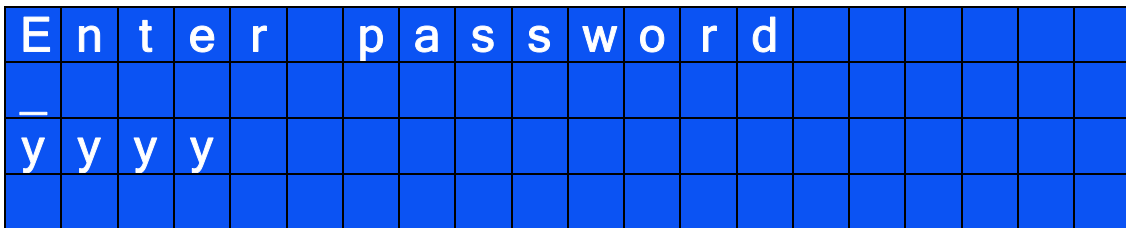


Image 3.6 – Request for password insertion from the **Service** menu of Konfort 705R, 710R and 720R

Because of the importance of this menu, it will be detailed described into Chapter 4.

### 3.2 Konfort 760R, 760R Bus and 780R BiGas: Graphic menu on color display

The menu of Konfort 760R, 760R Bus and 780R BiGas units is showed by a graphic 65000-color display.

When the equipment is turned on, the following screenshot will be displayed:



Image 3.7 – Initial screenshot of the display of Konfort 760R, 760R Bus and 780R BiGas

By clicking on the **DOWN** button of the keyboard, the main page of the menu of the equipment will be shown:

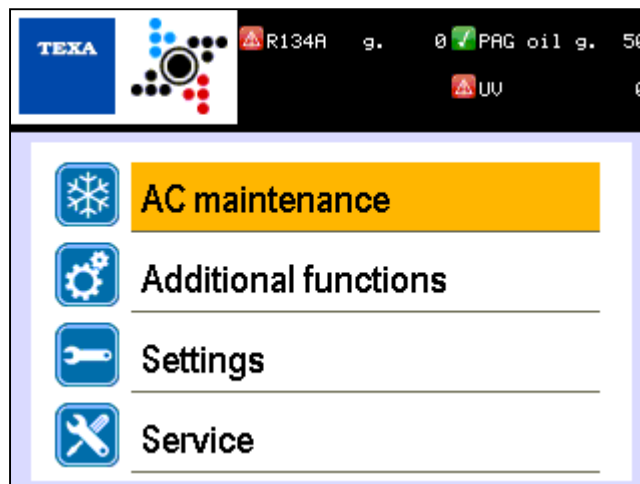


Image 3.8 – Main page of the menu of Konfort 760R, 760R Bus and 780R BiGas

In the black top part of the screen the amount of the various fluids (refrigerant(s), injection oil, UV tracer) is shown in grams. A colored icon is reported next to each fluid. When this icon is red:



it means that the corresponding fluid is insufficient.

When it is green:



it means that the fluid is sufficient to perform a service on the A/C system of a vehicle.

### 3.2.1 The AC maintenance menu

The **AC maintenance** option, selectable from the main menu, allows to choose how to operate with the equipment. Once this option will be selected, the display will show the following screenshot:

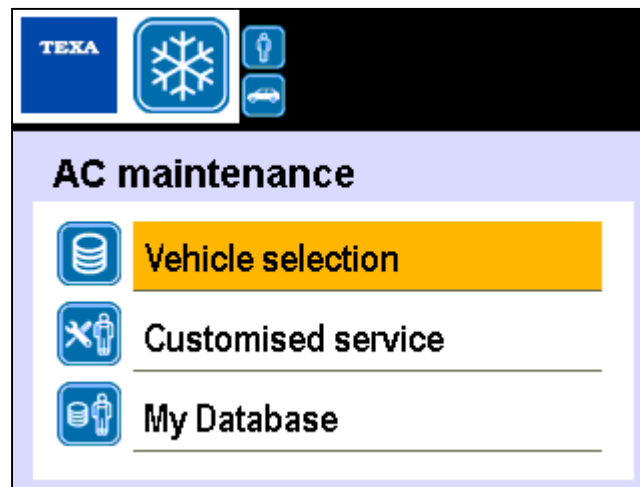


Image 3.9 – Options available in the **AC maintenance** menu of Konfort 760R, 760R Bus and 780R BiGas

The available choices are:

- **Vehicle selection:** It allows user to select a specific vehicle from the database stored into the SD card of the equipment. The amount of refrigerant to be charged will be automatically set for the selected vehicle.
- **Customised service:** It allows user to customize which phase(s) of the operative cycle (recovery, vacuum, leak test, oil/UV injection, refrigerant injection) he would like to run on the equipment. This option can be a very useful tool for verifying the proper function of the unit.
- **My Database:** It allows user to store **up to 128 new vehicles** and to specify, for each one of them, the quantity of refrigerant, the duration of vacuum and leak phases and the quantities of oil and UV to be injected. This option could be very useful, because it provides the operator the chance to add new vehicles to his liking, if not already included in the latest database release.

### 3.2.2 The Additional functions menu

The **Additional functions** option, selectable from the main menu, allows to select some interesting service functions for the equipment. Once this option will be selected, the display will show the following screenshot:

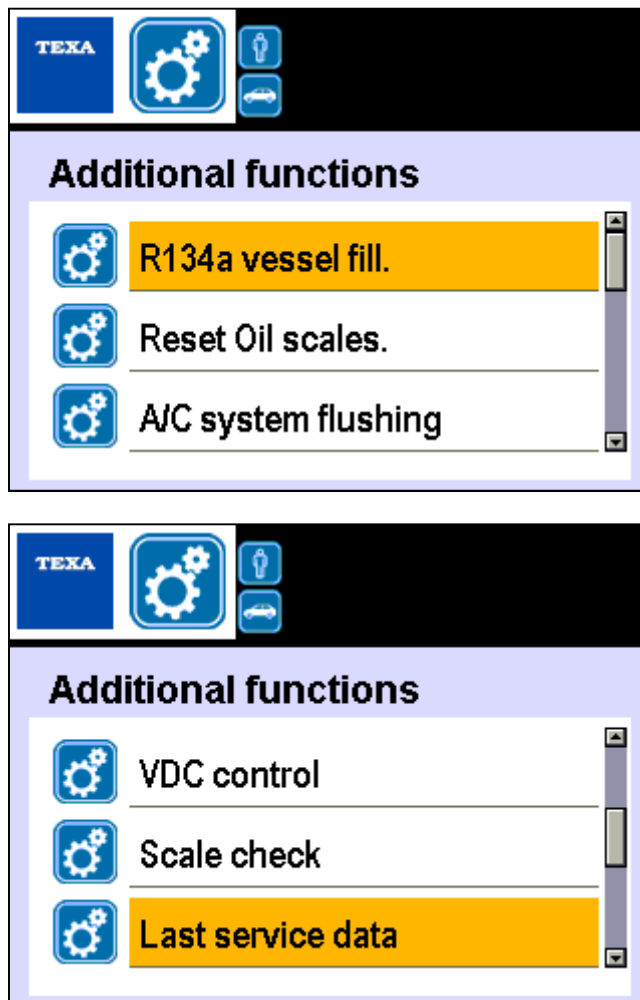


Image 3.10 – The **Additional functions** menu on Konfort 760R, 760R Bus and 780R BiGas. It is possible to scroll the various pages/options of the menu by using the **UP** and **DOWN** buttons on the keyboard

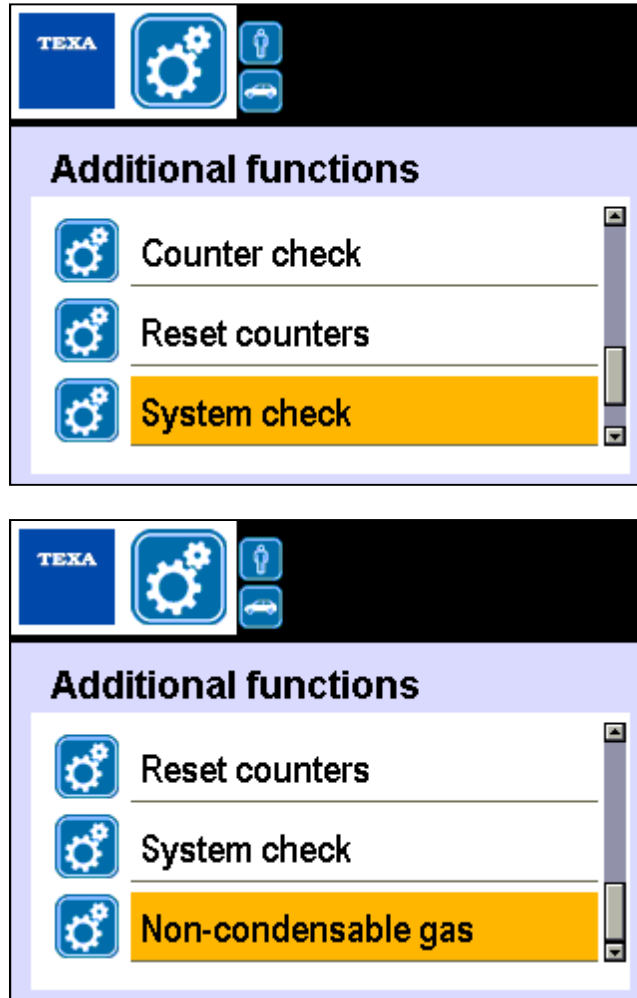


Image 3.10 (Continued) – The **Additional functions** menu on Konfort 760R, 760R Bus and 780R BiGas. It is possible to scroll the various pages/options of the menu by using the **UP** and **DOWN** buttons on the keyboard

The functions available inside this menu are:

- **Vessel fill.:** It allows user to recharge the internal tank of the equipment from an external bottle.
- **Reset Oil scales:** It allows to reset the zero measuring point of the auxiliary load cells.
- **A/C system flushing:** It allows user to initiate the flushing procedure through the use of TEXA Flushing Kit, affordable as an accessory (refer to the corresponding instruction manual for further details).
- **VDC control:** It allows to perform the control, from the Konfort command panel, the variable displacement compressor of A/C systems which are equipped with dedicated electronic control unit. This control action can be done by using the TEXA VDC device,

available as an optional (refer to the corresponding instruction manual for further details).

- **Scale check:** It allows to check the linearity of the refrigerant load cell of the equipment.
- **Last service data:** It allows to view the data of the last complete A/C service performed by the equipment.
- **Counter check:** It allows to perform the view of the counters (total and partial) of the equipment, both for the recovered refrigerant and for the time of vacuum.
- **Reset counters:** It allows to perform the reset of the counters of the recovered refrigerant and of the vacuum time of the unit. This action has to be performed during the ordinary maintenance of the equipment. Further details will be given on Chapter 5.
- **System check:** It allows to perform the check of the performances of the A/C system of the vehicle based on the pressure readings from the gauges or by means of the Climate Control Efficiency Kit, available as an optional (refer to the corresponding instruction manual for further details).
- **Non-condensable gas:** This function allows to force the automatic check and/or discharge of the non-condensable gases from the inside of the vessel of the unit.

### 3.2.3 The Settings menu

The **Settings** option, selectable from the main menu, allows to perform some customization in the use of the equipment. By selecting this option, the equipment will show the following screenshot:

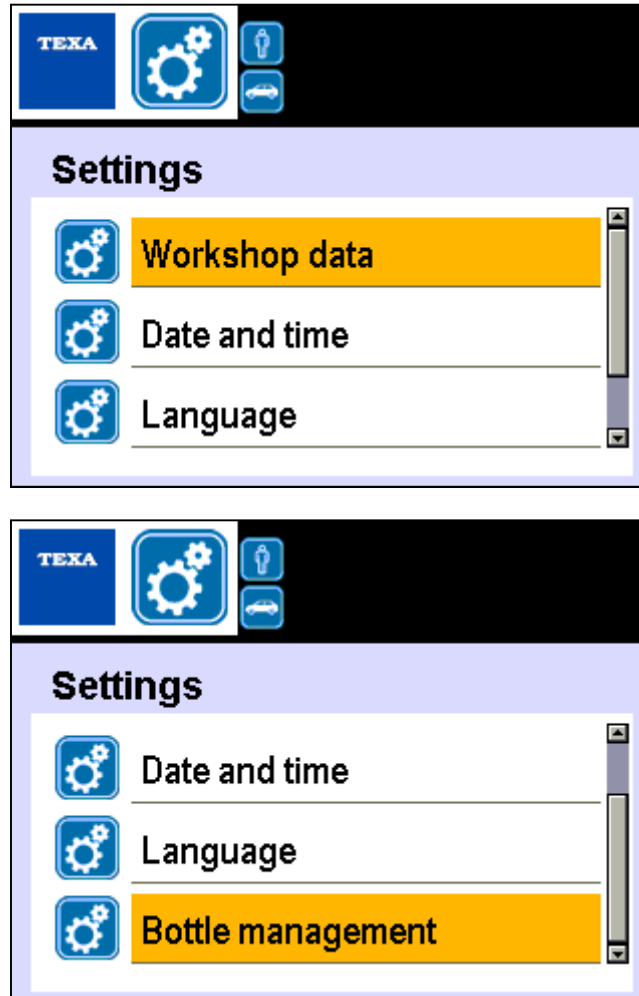


Image 3.11 – The **Settings** menu on Konfort 760R, 760R Bus and 780R BiGas. It is possible to scroll the various pages/options of the menu by using the **UP** and **DOWN** buttons on the keyboard

The functions available inside this menu are:

- **Workshop data:** It allows to specify the name and the details of the own workshop.
- **Date and time:** It allows to change the date and time inside the equipment.
- **Language:** It allows to change the display language for the menu and for the various functions of the equipment.

- **Bottle management:** It allows to initialize the drained oil, injection oil and injection UV bottles.

### 3.2.4 The Service menu

The **Service** option, selectable from the main menu, allows to access to the service and maintenance features of the Konfort unit. By selecting this option, the display of the equipment will show the following screenshot:

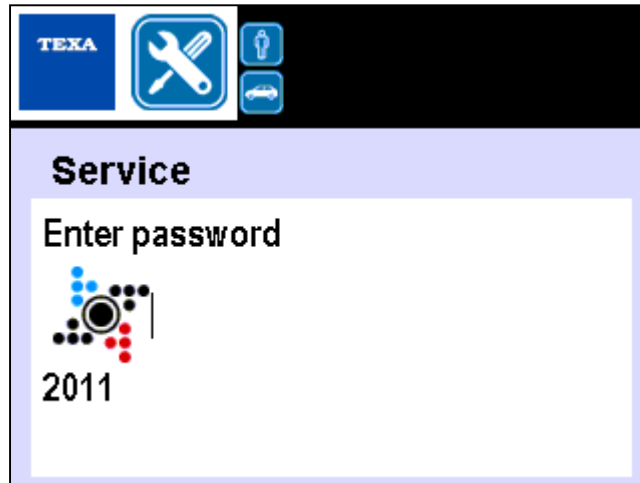


Image 3.12 – Request for password insertion from the **Service** menu of Konfort 760R, 760R Bus and 780R BiGas

Because of the importance of this menu, it will be detailed described into Chapter 4.



## CHAPTER 4 – THE SERVICE MENU

### 4.1 The Service menu

The **Service** option, selectable from the main menu, allows to access to the service and maintenance features of the Konfort unit. By selecting this option, the display of the equipment will show the following screenshot:

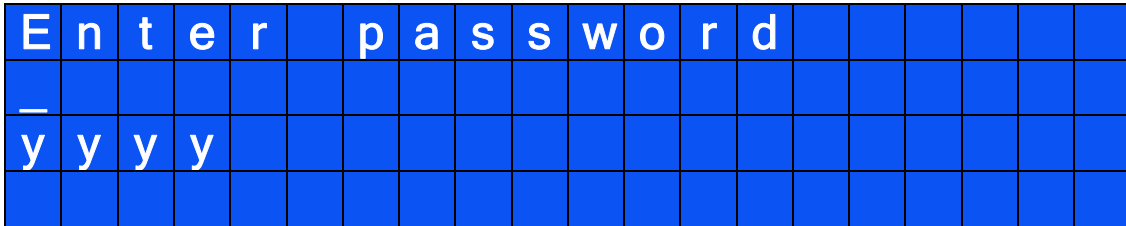


Image 4.1 – Request for password insertion from the **Service** menu of Konfort 705R, 710R and 720R

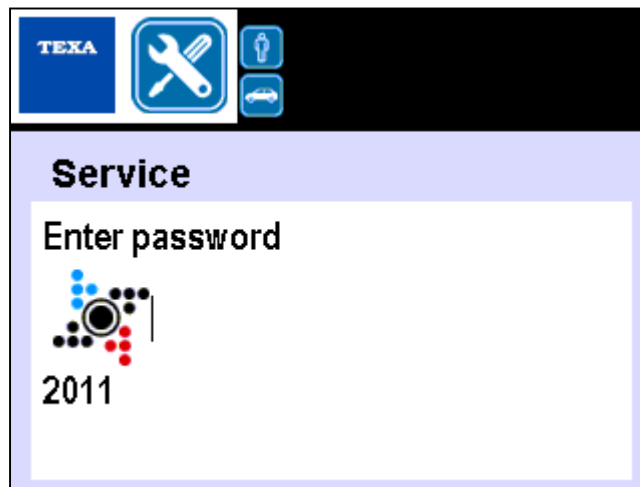


Image 4.2 – Request for password insertion from the **Service** menu of Konfort 760R, 760R Bus and 780R BiGas

There are two different levels of access to the service menu:

- **User Level:** Any end user can access the Konfort **Service** menu through the user password **1236**. By accessing the menu in this way, the equipment will display the following functions:

S	e	n	s	o	r		c	a	l	i	b	r	a	t	i	o	n	.		
P	u	b	l	i	c		p	a	r	a	m	e	t	e	r	s				
C	a	l	i	b	r	a	t	i	o	n		s	t	a	t	u	s			
S	t	o	r	e	d		e	r	r	o	r	s								

D	e	f	a	u	l	t		p	a	r	a	m	e	t	e	r	s		

Image 4.3 – Access to the **Service** menu with user level on Konfort 705R, 710R and 720R by means of the password **1236**

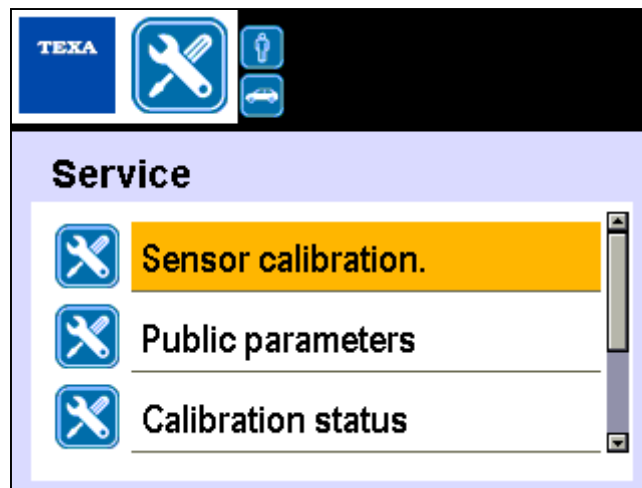


Image 4.4 – Access to the **Service** menu with user level on Konfort 760R, 760R Bus and 780R BiGas by means of the password **1236**

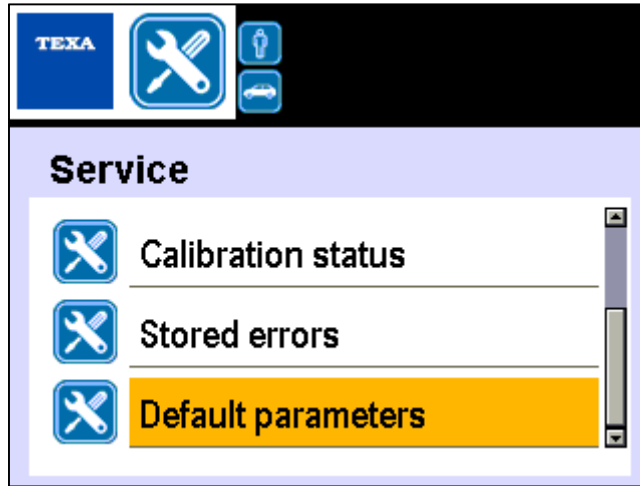


Image 4.4 (Continue) – Access to the **Service** menu with user level on Konfort 760R, 760R Bus and 780R BiGas by means of the password **1236**

- **Dealer level:** This access mode to the **Service** menu allows **only** the dealer to have the access to an extended variety of features of the service menu. Such extended access can be performed by means of the dealer password provided annually by TEXA S.p.A. and it allows the display of the following functions:

P	o	w	e	r		o	u	t	p	u	t	s								
S	e	n	s	o	r		c	a	l	i	b	r	a	t	i	o	n	.		
P	r	i	v	a	t	e		p	a	r	a	m	e	t	e	r	s			
P	u	b	l	i	c		p	a	r	a	m	e	t	e	r	s				

C	a	l	i	b	r	a	t	i	o	n		s	t	a	t	u	s		
S	e	l	e	c	t		r	e	f	r	i	g	e	r	a	n	t		
S	t	o	r	e	d		e	r	r	o	r	s							
D	e	f	a	u	l	t		p	a	r	a	m	e	t	e	r	s		

C	u	s	t	o	m	i	s	e	d		s	e	r	v	i	c	e		

Image 4.5 – Access to the **Service** menu with the dealer level on Konfort 705R, 710R and 720R unit by using the dealer password (annually renewed)

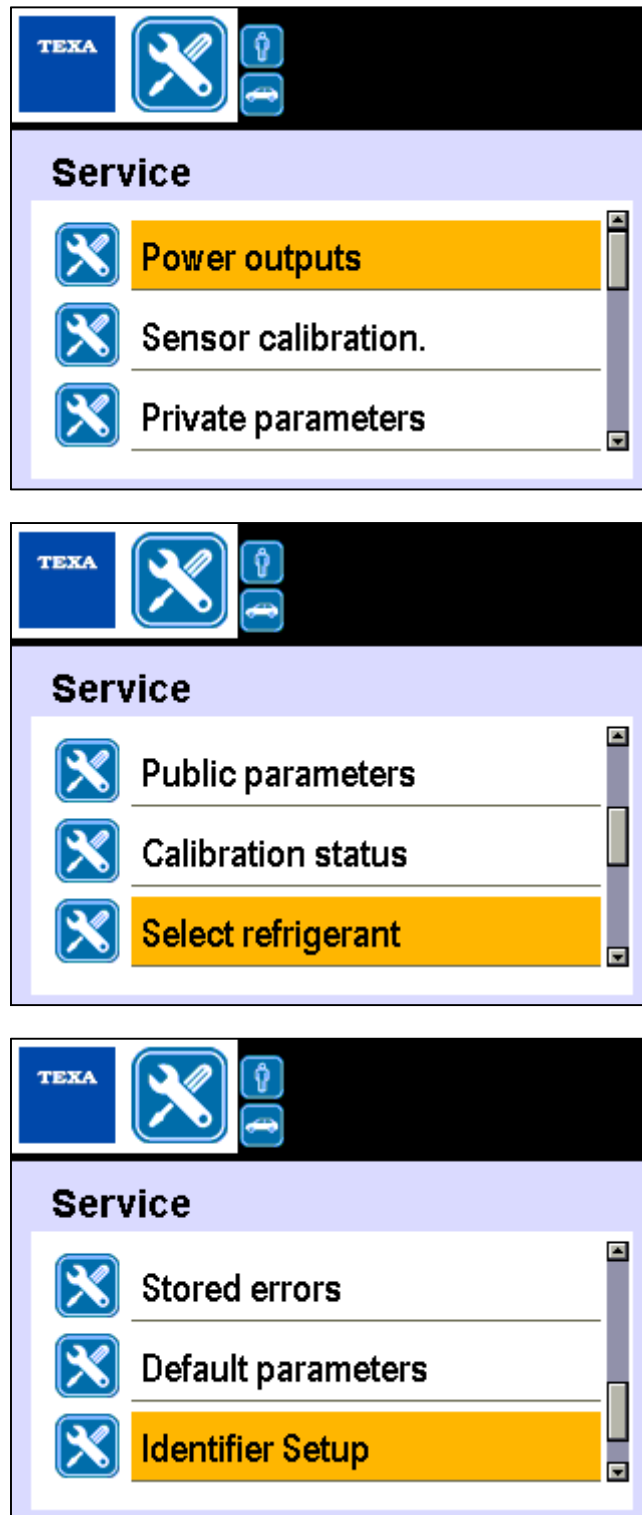


Image 4.6 – Access to the **Service** menu with the dealer level on Konfort 760R, 760R Bus and 780R BiGas units by using the dealer password (annually renewed)

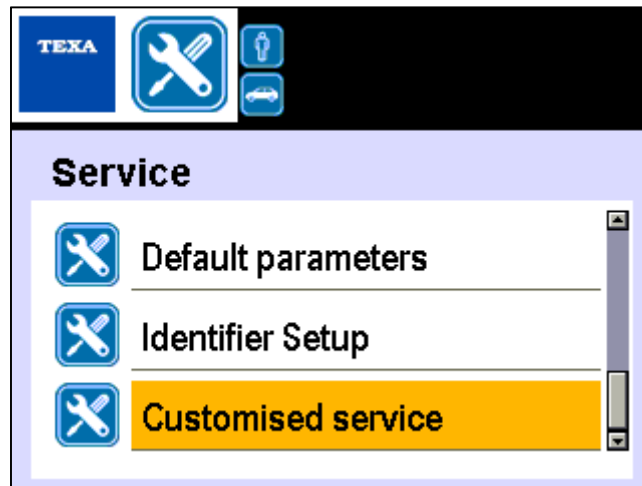


Image 4.6 (Continue) – Access to the **Service** menu with the dealer level on Konfort 760R, 760R Bus and 780R BiGas units by using the dealer password (annually renewed)

The following paragraphs will describe in detail the various functions of the **Service** menu.

#### 4.2 The “POWER OUTPUTS” function on K705R, K710R, K720R

By selecting the feature called **Power outputs** in a Konfort 705R, 710R or 720R, the following page of the **Service** menu will be displayed:

C O	P O	S O	U V	I O	C 1	C 2
0	0	0	0	0	0	0
H P	R E	L P	R 1	R 2	F 1	F 2
0	0	0	0	0	0	0

Image 4.7 – The first page of **Power outputs** function in the **Service** menu of a Konfort 705R, 710R and 720R

This page offers to the dealer the chance to perform the manual activation of each equipment’s actuator (compressor, vacuum pump, electro-valves) and may reveal to be very useful in the identification of possible anomalies in the behavior of the unit.

The marks reported on the first and on the third lines of this screenshot indicate the different actuators of the equipment. More precisely:

- **CO** = Compressor;
- **PO** = Vacuum pump;
- **SO** = Oil discharge electro-valve;
- **UV** = UV injection electro-valve (not available on K705R);
- **IO** = Oil injection electro-valve;
- **C1** = Refrigerant injection electro-valve;
- **C2** = (not available)

- **HP** = (not available)
- **RE** = Refrigerant recovery electro-valve;
- **LP** = (not available)
- **R1** = (not available)
- **R2** = (not available)
- **F1** = Non-condensable gases automatic discharge electro-valve (not available on K705R and K710R);
- **F2** = (not available).

By using the **UP** and **DOWN** buttons on the keyboard of the equipment, the user can select the second or the fourth line of the screen. Then, by using the buttons from **1** to the **7**, the status of each of the actuators shown in the previous line can be changed. The possible states are:

- **0** = Actuator off;
- **1** = Actuator on.

For example, by placing the cursor on the second line, the **1** button activates or deactivates the compressor (**CO**), the **2** key switches on or off the vacuum pump (**PO**), and so on for all other actuators.

Similarly, by placing the cursor on the fourth line, the **2** button activates or deactivates the recovery electro-valve (**RE**) and the **6** key activates or deactivates the non-condensable gas automatic discharge electro-valve (**F1**).

By further pressing the **DOWN** button from the previous page of **Power outputs** menu, the following screenshots will be displayed:

S	E	N	S	O	R	S	(	P	O	I	N	T	S	)				
P	R				4	1	7	8	B	L			1	5	9	7	7	
D	O							0	I	O								0
U	V							0	H	P							9	7

S	E	N	S	O	R	S	(	P	O	I	N	T	S	)				
L	P					8	6	R	F			3	0	7	1	8		
T	A			1	0	6	0	9	T	V			1	6	3	7	2	
T	U				2	3	2	8	A	L	L	H	P					0

Image 4.8 – Punctual values obtained by means of the digital conversion of the analog electrical signals incoming to the ACE Micro board from the sensors of the Konfort unit

The parameters displayed in these two screens provide a **punctual indication**, that is instant per instant, of the measure of all the sensors (load cells, pressure transducers, temperature sensors) which are connected to the inputs of the ACE Micro board. These values give the possibility to make an estimation of the dynamic operation of each sensor.

These punctual values, in fact, correspond to the digital conversion of the analog electrical signal provided to the ACE Micro board from each sensor. More precisely:

- **PR** indicates the value (in points) of the signal coming from the **main pressure sensor** ;
- **BL** indicates the value (in points) of the signal coming from the **main load cell**;
- **DO, IO** and **UV** are not used in Konfort 705R, 710R and 720R;
- **HP** indicates the value (in points) of the signal coming from the **auxiliary pressure sensor** mounted on the **HP** branch (only in case of installation of the VDC device);
- **LP** is not used in Konfort 705R, 710R and 720R<sup>6</sup>;
- **TA** indicates the value (in points) of the signal coming from the **room temperature sensor**;
- **TV** is not used;
- **TU** indicates the value (in points) of the signal coming from the **microcontroller temperature sensor**;
- **ALLHP** indicates a state of **alarm** in the case of excessive pressure into the hydraulic circuit of the Konfort unit: when the safety pressure switch is not operating (normal condition), the state of this parameter is **0**. In case the safety pressure switch would operate (by interrupting, in case of too much high pressures, the power supply of the compressor), the state of this parameter will get the value **1**.

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<sup>6</sup> Although not related to any sensor, the punctual value of this input could be in any case different from zero, as the ACE Micro board is characterized by floating inputs.

By further pressing the **DOWN** button on the keyboard of the Konfort unit, the following screens will be displayed:

S	E	N	S	O	R	S	(	M	E	A	S	U	R	E	)					
P	R					1	0	4	9			B	L			1	0	7	3	2
D	O								0			I	O							0
U	V								0			H	P						9	9

S	E	N	S	O	R	S	(	M	E	A	S	U	R	E	)					
L	P							8	8			R	F			2	2	9	6	
T	A					2	5	8				T	V			-	4	1	3	
T	U					2	7	4				A	L	L	H	P				0

Image 4.9 – Absolute values of the physical quantities measured by the different sensors connected to the inputs of the ACE Micro board of the Konfort unit

The values displayed in these two screenshots show the **conversion into physical quantity** of each punctual value of the same parameters displayed by the screenshots shown in Image 4.8. Specifically:

- **PR** indicates the **absolute pressure** (in mBars) measured by the **main pressure sensor** of the equipment;
- **BL** indicates the value of the **absolute weight** (in grams, sum of the net refrigerant weight and of the tare weight of the bottle) currently located on the **main load cell**;
- **DO**, **UV** and **IO** are not used in Konfort 705R, 710R and 720R;
- **HP** indicates the **absolute pressure** (in mBars) measured by the **auxiliary pressure sensor** mounted on the **HP** branch (only in case of installation of the VDC device);
- **LP** is not used in Konfort 705R, 710R and 720R;
- **TA** indicates the **temperature** (in Celsius degrees) measured by the **room temperature sensor** of the Konfort unit. The last digit of the parameter indicates the tenths of degree (hence, for example, TA=258 indicates a temperature of 25,8°C);
- **TV** is not used;
- **TU** indicates the **temperature** (in Celsius degrees) measured by the **microcontroller temperature sensor** of the Konfort unit. The last



digit of the parameter indicates the tenths of degree (hence, for example, TU=274 indicates a temperature of 27,4°C);

- **ALLHP** indicates, once again, a state of **alarm** in the case of excessive pressure into the hydraulic circuit of the Konfort unit (as also described on Image 4.8).

By pressing again the **DOWN** button on the key board of the Konfort unit, the following screen will be displayed:

F	A	N		S	T	A	T	U	S										
F	A	N	1					1											
F	A	N	2					1											
F	A	N	3					1											

Image 4.10 – Page for checking the status of the fans  
in Konfort 705R, 710R and 720R

From this page, the user can check which is the status of the functioning/malfunctioning of the fans of the unit. More precisely:

- **FAN1** is the main fan of the unit, located on the back door of the equipment (not available on Konfort 705R and 710R);
- **FAN2** is the fan located on the condenser of the intake assembly of the unit (not electronically controlled on Konfort 705R and 710R);
- **FAN3** is not used on Konfort 705R, 710R and 720R.

The possible statuses of the fans are:

- **status 1**: the fan is working properly;
- **status 0**: the fan is in overload;
- **status 3**: the fan is in open circuit.

By further pressing the **DOWN** button on the keyboard of the Konfort unit, the following screen will be displayed:

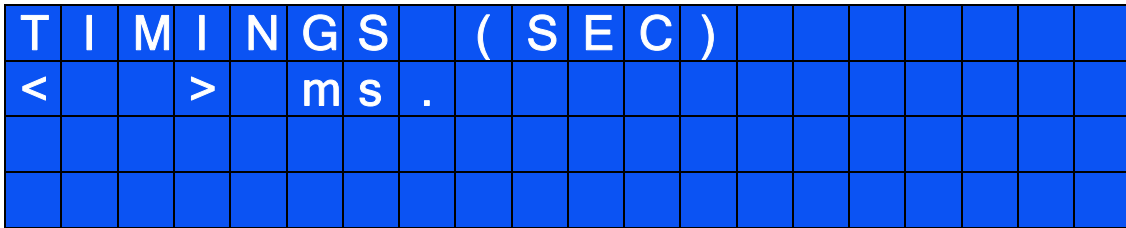


Image 4.11 – Page for setting the timing for the activation of the actuators in Konfort 705R, 710R and 720R

From this page, user can select the duration (in milliseconds) with which he wants to operate the actuators by the manual activation page shown in Image 4.7. For example, by setting a value of 1000 (1000msec = 1 sec), while each actuator is manually activated, when its status will be **1 (on)**, it will be activate and deactivate consecutively every second. This function can be very useful to check the status of operation of the electronic drivers (relays and triacs) of the ACE Power board which control the various actuators of the unit.

#### 4.3 The "POWER OUTPUTS" function on Konfort 760R, 760R Bus or 780R BiGas

By selecting the feature called **Power outputs** in a Konfort 760R, 760R Bus or 780R BiGas, the following page of the **Service** menu will be displayed:

<input type="checkbox"/> CO	<input type="checkbox"/> HP1	T. [ms]	THP	86
<input type="checkbox"/> PO	<input type="checkbox"/> REC	<input type="checkbox"/>	fan1-3239	
<input type="checkbox"/> SO	<input type="checkbox"/> LP	PRE 1909	TLP	98
<input type="checkbox"/> UW	<input type="checkbox"/> REF1	426	fan2-3231	
<input type="checkbox"/> IO	<input type="checkbox"/> REF2	GAS 19142	REF 30843	
<input type="checkbox"/> CA1	<input type="checkbox"/> FR1	15833	fan3 2306	
<input type="checkbox"/> CA2	<input type="checkbox"/> FR2	ESA 20328	TEX 10060	
		332	tk1 256	
		OIL 23349	TVE 16340	
		359	tk2 -409	
		UVA 19259	HP	0
		305		

Image 4.12 - The **Power outputs** page in the **Service** menu of Konfort 760R, 760R Bus and 780R BiGas units

The left side of the screen shows the manual activation of the actuators of the equipment:

<input type="checkbox"/> CO	<input type="checkbox"/> HP1	T. [ms]	THP	86
<input type="checkbox"/> PO	<input type="checkbox"/> REC	<input type="checkbox"/>	fan1-3239	
<input type="checkbox"/> SO	<input type="checkbox"/> LP	PRE 1909	TLP	98
<input type="checkbox"/> UW	<input type="checkbox"/> REF1	426	fan2-3231	
<input type="checkbox"/> IO	<input type="checkbox"/> REF2	GAS 19142	REF 30843	
<input type="checkbox"/> CA1	<input type="checkbox"/> FR1	15833	fan3 2306	
<input type="checkbox"/> CA2	<input type="checkbox"/> FR2	ESA 20328	TEX 10060	
		332	tk1 256	
		OIL 23349	TVE 16340	
		359	tk2 -409	
		UVA 19259	HP	0
		305		

Image 4.13 - **Power output** page section dedicated to manual activation of the actuators

It is possible to scroll through the list of the actuators by means of the **UP** and **DOWN** keys of the equipment's keyboard: then, it will be enough to press the green **ENTER** button to activate (a flag on correspondent square will appear) or deactivate (the flag will disappear) each actuator. The actuators powered from this section are:

- **CO** = Compressor;
- **PO** = Vacuum pump;
- **SO** = Oil discharge electro-valve;
- **UV** = UV injection electro-valve;
- **IO** = Oil injection electro-valve;
- **CA1** = Refrigerant charge electro-valve;
- **CA2** = R1234yf charge electro-valve (available only on K780R BiGas);
- **HP1** = HP branch electro-valves;
- **REC** = Refrigerant recovery electro-valve;
- **LP** = LP branch electro-valves;
- **REF1** = R134a separation electro-valves (only on K780R BiGas);
- **REF2** = R1234yf separation electro-valves (only on K780 BiGas);
- **FR1** = Automatic non-condensable gases discharge electro-valve;
- **FR2** = Automatic non-condensable gases discharge electro-valve from the R1234yf tank (only on K780R BiGas).

The central part of the screen shows, on the other hand, the values of the quantities measured by sensors connected to the equipment's ACE Micro board:

<input type="checkbox"/> CO	<input type="checkbox"/> HP1	T. [ms]	THP	86
<input type="checkbox"/> PO	<input type="checkbox"/> REC	PRE	fan1-	3239
<input type="checkbox"/> SO	<input type="checkbox"/> LP	426	TLP	98
<input type="checkbox"/> UV	<input type="checkbox"/> REF1	GAS	fan2-	3231
<input type="checkbox"/> IO	<input type="checkbox"/> REF2	19142	REF	30843
<input type="checkbox"/> CA1	<input type="checkbox"/> FR1	15833	fan3	2306
<input type="checkbox"/> CA2	<input type="checkbox"/> FR2	ESA	TEX	10060
		20328	tk1	256
		OIL	VE	16340
		23349	tk2	-409
		359	IP	0
		UVA		
		19259		
		305		

Image 4.14 – Section of the **Power output** page dedicated to the signals from the Konfort sensors

In particular, each parameter of this section is characterized by **two values**:

- the first one is given by the **points** of the digital conversion of the analog signal coming from the sensor in object;
- the second one is given by the **absolute value** of the physical quantity measured by the sensor in object.

The parameters shown in this section of the **Power outputs** page are:

- **PRE**: punctual values and absolute pressure (in mBars) measured by the **main pressure sensor** of the equipment;

- **GAS:** punctual values and absolute weight (in grams, sum of the net refrigerant weight and of the tare weight of the bottle(s)) measured by the **main load cell** of the equipment;
- **ESA:** punctual values and absolute weight (in grams) measured by the **discharged oil load cell** of the equipment;
- **OIL:** punctual values and absolute weight (in grams) measured by the **injected oil load cell** of the equipment;
- **UVA:** punctual values and absolute weight (in grams) measured by the **UV load cell** of the equipment.

In the middle of the screen of this section, finally, the timing option for manually enabling/disabling the actuators from the **Power outputs** menu is shown (similarly to what described for Konfort K720R):

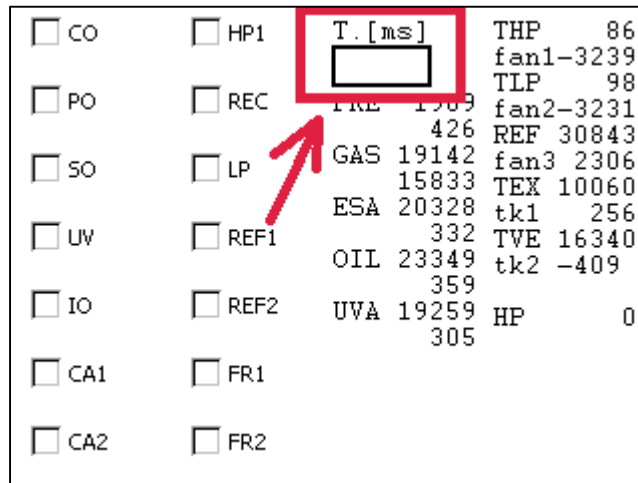


Image 4.15 - Setup of the timing for the manual powering of the actuators in Konfort 760R, 760R Bus and 780R BiGas

By keeping the orange **INFO** button pressed for few seconds, the status of the fans of the unit will be shown on the right side of the display:

<input type="checkbox"/> CO	<input type="checkbox"/> HP1	T. [ms]	TWP	1
			fan1	1
<input type="checkbox"/> PO	<input type="checkbox"/> REC	PRE 1964	fan2	1
		439		
<input type="checkbox"/> SO	<input type="checkbox"/> LP	GAS 1914	fan3	1
		15835		
<input type="checkbox"/> UV	<input type="checkbox"/> REF1	ESA 20327	tk1	535
		332	TVE	0
<input type="checkbox"/> IO	<input type="checkbox"/> REF2	OIL 23342	tk2	0
		359		
<input type="checkbox"/> CA1	<input type="checkbox"/> FR1	UVA 19254	HP	0
		305		
<input type="checkbox"/> CA2	<input type="checkbox"/> FR2			

Image 4.16 - Page for checking the status of the fans in Konfort 760R, 760R Bus and 780R BiGas

From this section, the user can check which is the status of the functioning/malfunctioning of the fans of the unit. More precisely:

- **FAN1** is the main fan of the unit, located on the back door of the equipment;
- **FAN2** is the fan located on the condenser of the intake assembly of the unit;
- **FAN3** is the fan located on the lower condenser (R1234yf) of the intake assembly of the K780R BiGas.

The possible statuses of the fans are:

- **status 1**: the fan is working properly;
- **status 0**: the fan is in overload;
- **status 3**: the fan is in open circuit.

#### 4.4 The "SENSOR CALIBRATION" function on K705R, K710R and K720R

By selecting the feature called **Sensor calibration** in a Konfort 705R, 710R and 720R, the following page of the **Service** menu will be displayed:

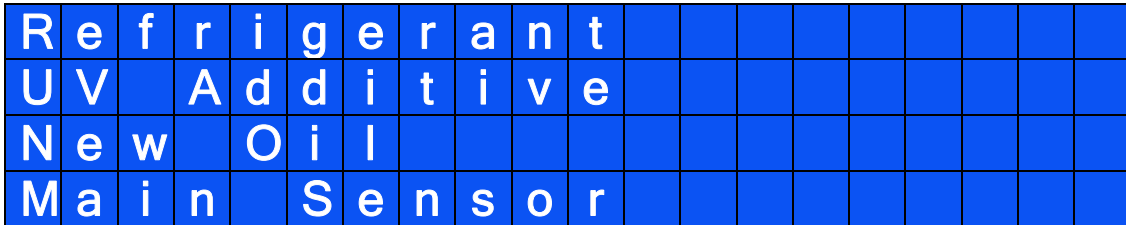


Image 4.17 – The first page of the **Sensor Calibration** function of the **Service** menu in a Konfort 705R, 710R and 720R

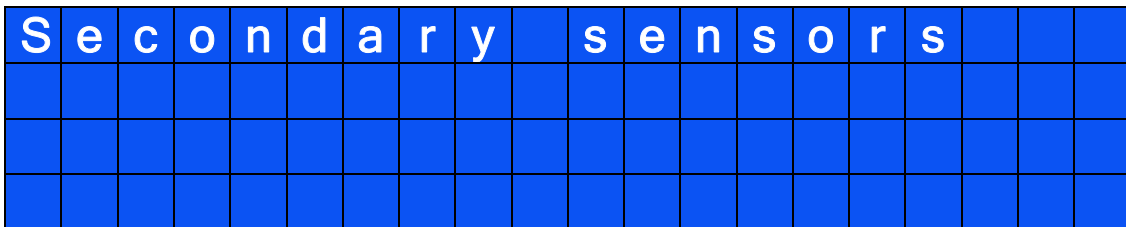


Image 4.18 – The second page of the **Sensor Calibration** function of the **Service** menu in a Konfort 705R, 710R and 720R

Now the calibration procedures for each individual sensor of the Konfort 705R, 710R and 720R units will be passed in review.

##### 4.4.1 "REFRIGERANT" calibration on K705R, K710R and K720R

The **Refrigerant** function, available in the **Sensor Calibration** menu, allows to calibrate the refrigerant load cell of the equipment.

In order to proceed with the calibration, the user must first of all remove the front panel of the Konfort unit and release the cylinder from the scale, in order to easily make the steps required during the calibration procedure.

More specifically, the user has to:

- unscrew (by means of an 3-millimeters Allen key) the two screws on the top panel of the equipment:



Image 4.19 – Screws removal from the top panel of the equipment

- unscrew (by means of an 3-millimeters Allen key, preferably with a flexible handle) the four screws on the rear-side edges of the equipment:

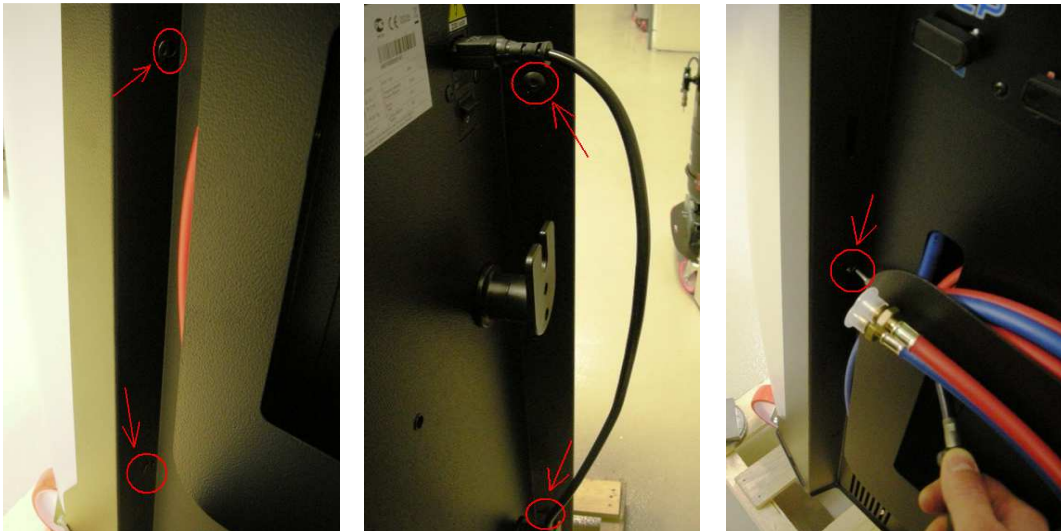


Image 4.20 – Removal of the four screws on the rear side of the Konfort unit

- lift the top panel and remove the plastic front panel of the equipment, in order to open it completely;



- remove the heating band from the tank. Remove it and place it on the one side, ensuring that it will not touch the scale (otherwise, it would alter the calibration):



Image 4.21 – Heating band removal from the refrigerant tank

- remove (with the help of a 8-millimeters hexagonal wrench) the screw of the bracket which blocks the tank on the scale. Then remove the bracket:



Image 4.22 – Removal of the bracket that blocks the tank to the structure of the scale

At this point, it will be possible to proceed with the calibration of the main load cell. By pressing the **ENTER** green button at the **Refrigerant** option of the **Sensor calibration** menu, the Konfort unit will display the following screenshot:

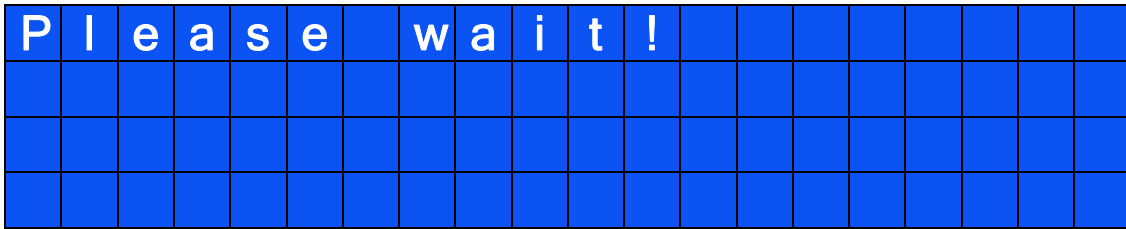


Image 4.23 – Waiting message during calibration of the refrigerant load cell in a Konfort 705R, 710R or 720R

followed, after few seconds, by the message here below:



Image 4.24 – Request for removal of the refrigerant tank during the calibration of the load cell of a Konfort 705R, 710R or 720R

Remove the refrigerant tank from the scale, by turning it counterclockwise and by lifting it from the scale:



Image 4.25 – Lifting of the refrigerant tank during the calibration of the load cell in a Konfort 705R, 710R or 720R

Press, then, the green **ENTER** button on the keyboard, while keeping the tank **raised** from the scale. The equipment will display the following screenshot:

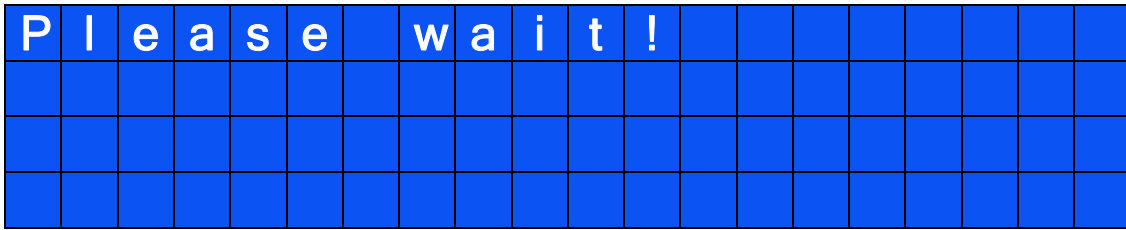


Image 4.26 – Waiting message during calibration of the refrigerant load cell in a Konfort 705R, 710R or 720R

followed by the message here below:

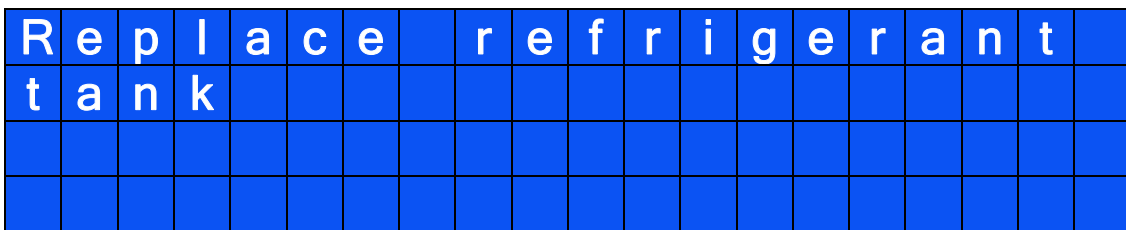


Image 4.27 – Request for replacement of the tank on the scale

Replace the tank on the scale, by putting its lower edges in the four conical pins of the scale plate and by turning clockwise to lock it. Then press **ENTER** to confirm.

The equipment, then, will show the following screenshot:

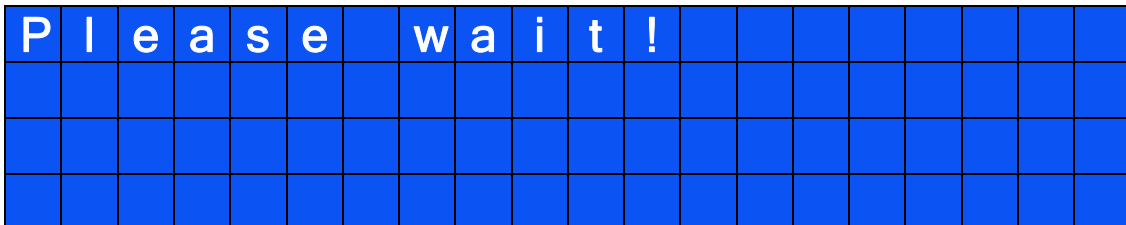


Image 4.28 – Waiting message during calibration of the refrigerant load cell in a Konfort 705R, 710R or 720R

followed by the message here below:

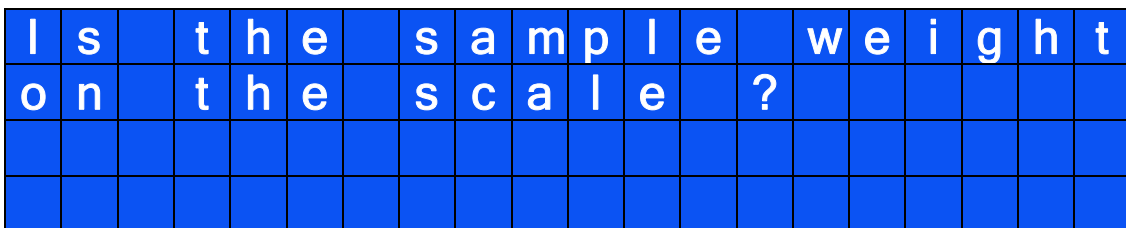


Image 4.29 – Request for placement of the sample weight

Place a sample weight of **at least 1 kg**<sup>7</sup> over the refrigerant tank:



Image 4.30 – Placement of the sample weight on refrigerant tank

then press **ENTER** to continue.

The display, then, will show the following message:

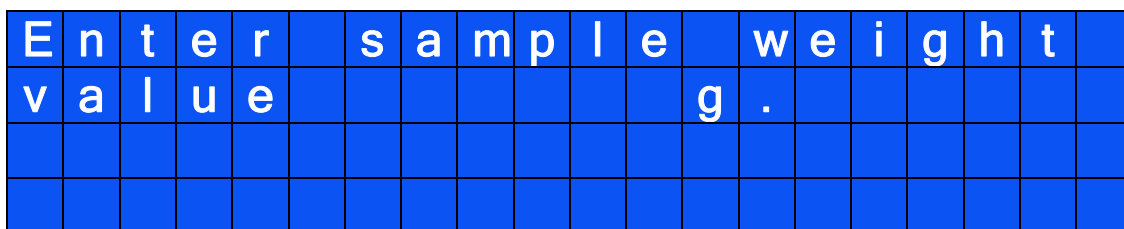


Image 4.31 – Request for insertion of the value of the sample weight

Type the value **in grams** of sample weight (for example, in the case of a sample weight of 1 Kg, type 1000), then press **ENTER** to confirm.

<sup>7</sup> We recommend to perform the scale calibration by using the magnetic 1-kilogram sample weight included into the new sample weight kit for Konfort 700R. The kit is available for purchase from the Electronic Spare Parts website (part no. **4800103**).

The unit will show the following screenshot:

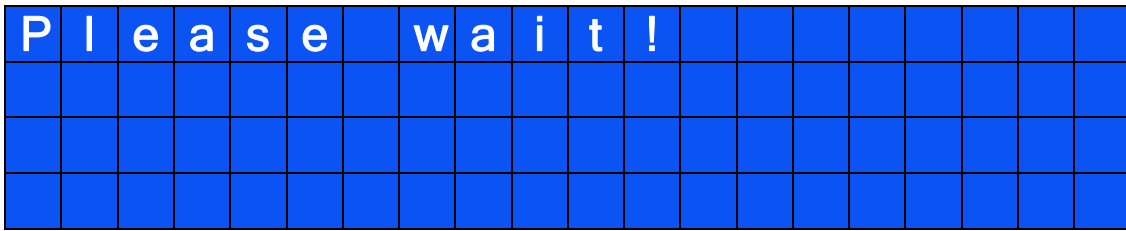


Image 4.32 – Waiting message during calibration of the refrigerant load cell in a Konfort 705R, 710R or 720R

followed by the message here below:

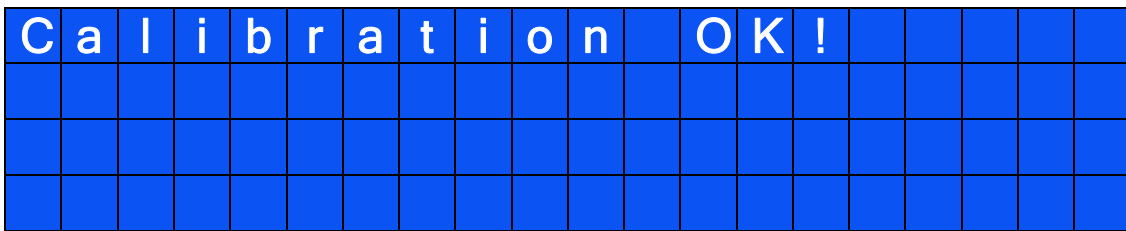


Image 4.33 – Confirmation message of the correctness of the calibration

thus confirming the correctness of the procedure.

#### 4.4.2 "UV ADDITIVE" calibration on K710R and K720R

Although not equipped with a scale for the management of the amount of UV additive that is injected during a service on the A/C system of a vehicle, Konfort 710R and 720R units allow in any case the calibration of the time constant which controls the opening of the **EVUV** electro-valve.

#### 4.4.3 "NEW OIL" calibration on K705R, K710R and K720R

Although not equipped with a scale for the management of the amount of oil that is injected during a service on the A/C system of a vehicle, Konfort 705R, 710R and 720R units allow in any case the calibration of the time constant which controls the opening of the **EVIO** electro-valve.

#### 4.4.4 "MAIN SENSOR" calibration on K705R, K710R and K720R

The **Main Sensor** function available in the **Sensor calibration** menu allows user to calibrate the main pressure sensor of equipment.

By pressing the **ENTER** button on this option, Konfort K720R displays the following screenshot:

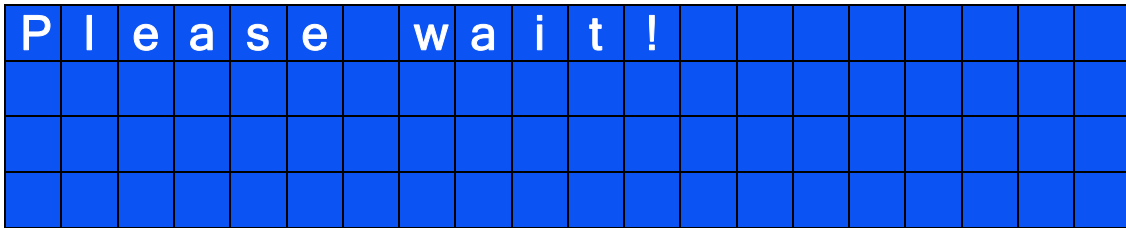


Image 4.34 – Waiting message during calibration of the main pressure sensor in a Konfort 705R, 710R or 720R

After few seconds, the unit will show the following message:



Image 4.35 – Request for opening of the LP and HP valves on the side of the unit

Open the two **HP** and **LP** valves positioned on the side of the equipment, then press the **ENTER** button to confirm.

The unit will show the following screenshot:

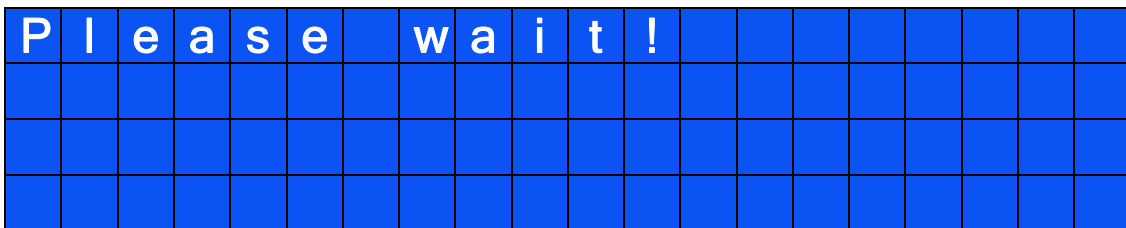


Image 4.36 – Waiting message during calibration of the main pressure sensor in a Konfort 705R, 710R or 720R

followed by the message here below :

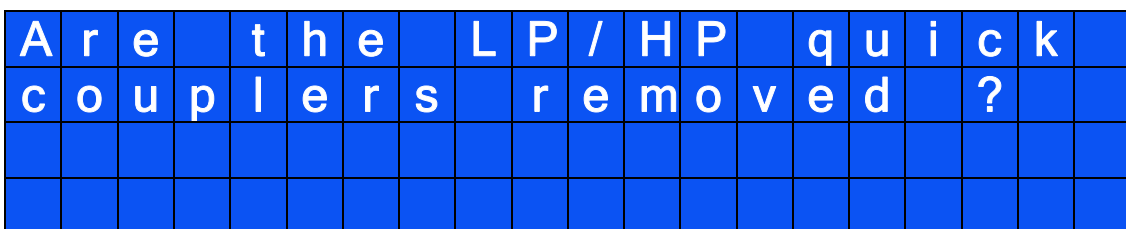


Image 4.37 – Request for removal of the **LP** and **HP** fittings from service pipes

Unscrew the fittings from the **HP** and **LP** service pipes:

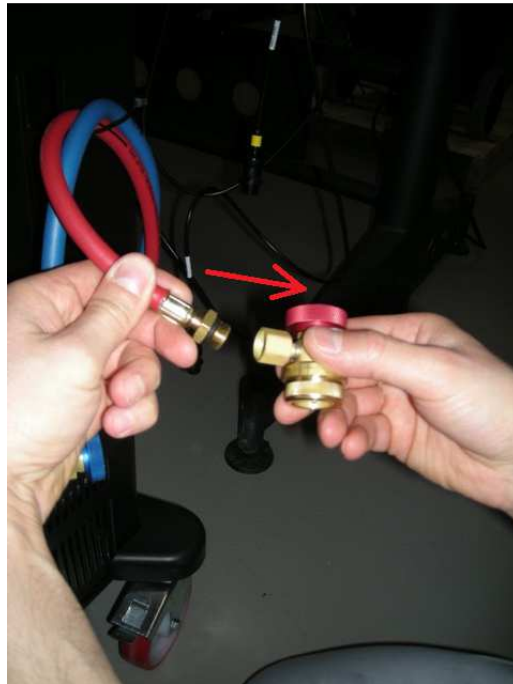


Image 4.38 – Removal of both the **HP** and **LP** fittings from the service pipes of the unit

then press **ENTER** to confirm.

The display will show the following screenshot:



Image 4.39 - Waiting message during calibration of the main pressure sensor in a Konfort 705R, 710R or 720R

followed by the message here below:

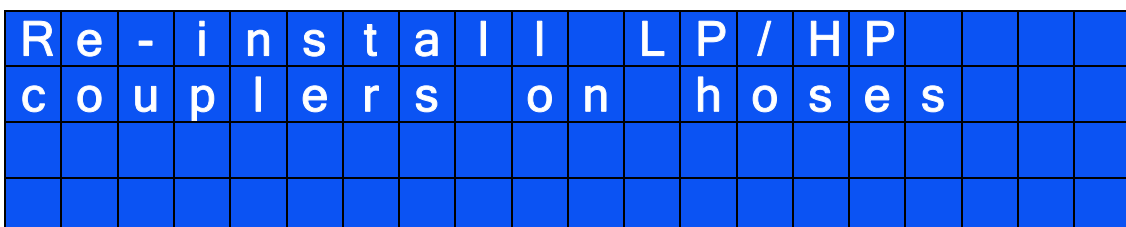


Image 4.40 – Request for reconnection of the **HP** and **LP** fittings to the service pipes

Reconnect the **HP** and **LP** fittings to the service pipes of the unit, then press the **ENTER** button to confirm. The equipment will display the following screenshot:

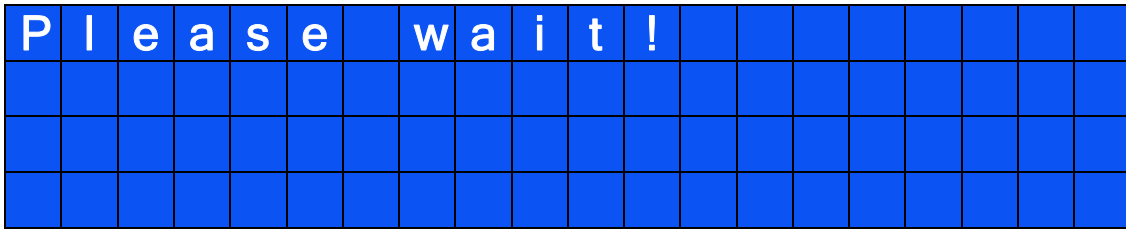


Image 4.41 - Waiting message during calibration of the main pressure sensor in a Konfort 705R, 710R or 720R

during which the Konfort unit makes a brief vacuum phase into service tubes to set the zero value of the sensor calibration. Once finished, the display of equipment will show the following message:

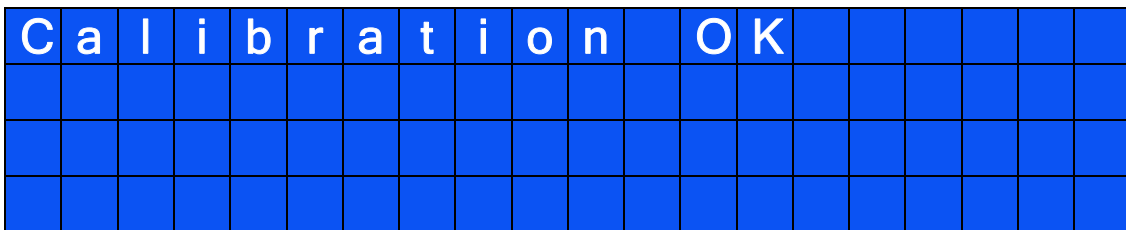


Image 4.42 - Confirmation message of the correctness of the calibration

thus confirming the fact that the calibration has been successful.

#### 4.4.5 "SECONDARY SENSORS" calibration on K705R, K710R, K720R

The **Secondary sensors** function in the **Sensor calibration** menu allows user to calibrate the auxiliary pressure sensors of the equipment, if installed. Refer, for further information, to the VDC device installation manual.



#### 4.5 The "SENSOR CALIBRATION" function on Konfort 760R, 760R Bus and 780R BiGas

By selecting the feature called **Sensor calibration** in on Konfort 760R, 760R Bus and 780R BiGas, the following page of the **Service** menu will be displayed:

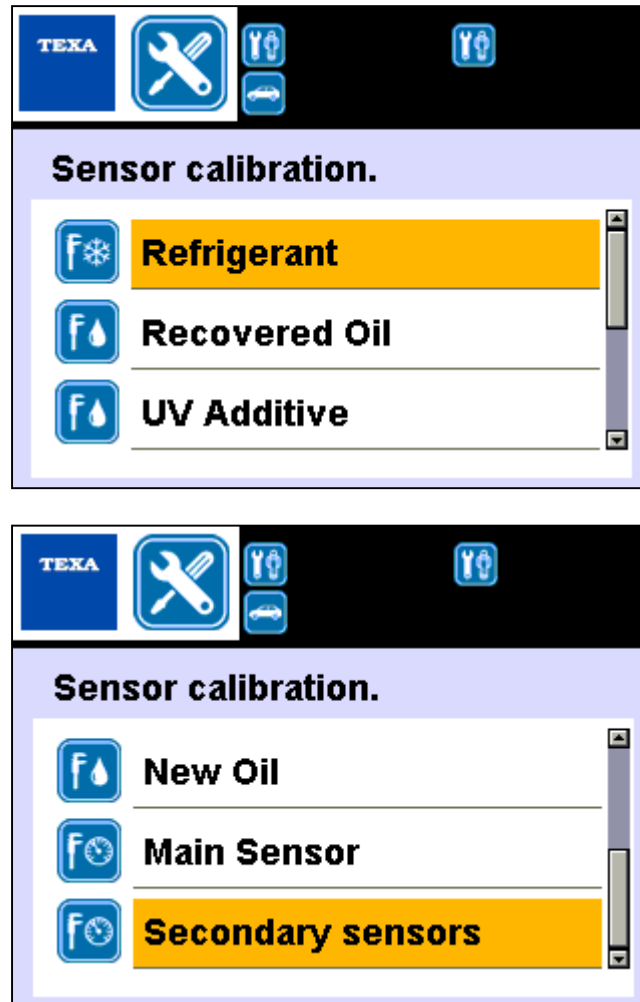


Image 4.43 - The **Sensors calibration** function in the **Service** menu of Konfort 760R, 760R Bus and 780R BiGas units

Now the calibration procedures for each individual sensor of Konfort 760R, 760R Bus and 780R BiGas units will be passed in review.

##### 4.5.1 "REFRIGERANT" calibration on Konfort 760R and 760R Bus

The **Refrigerant** function, available in the **Sensor calibration** menu, allows user to calibrate the refrigerant load cell of the equipment.

In order to proceed with the calibration, the front panel of the unit has to be removed, according to the instruction already provided on Paragraph 4.4.1.

By pressing the **ENTER** button on the **Refrigerant** option, the Konfort 760R or 760R Bus unit will display the following screenshot:



Image 4.44 – Waiting message during calibration of the main load cell

followed, after few seconds, by the following screenshot:

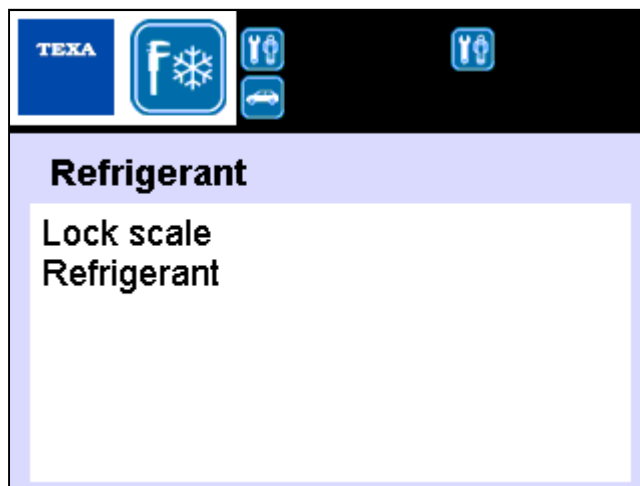


Image 4.45 – Request for locking of the refrigerant scale

Proceed with the lock of the refrigerant scale, by pushing and rotating the lock/unlock mechanism **clockwise** with a 8-millimeters hex wrench:



Image 4.46 – Refrigerant scale lock

then press the **ENTER** button to confirm. The unit will show the following screenshot:



Image 4.47 – Waiting message during calibration of the main load cell

followed, after few seconds, by the following screenshot:

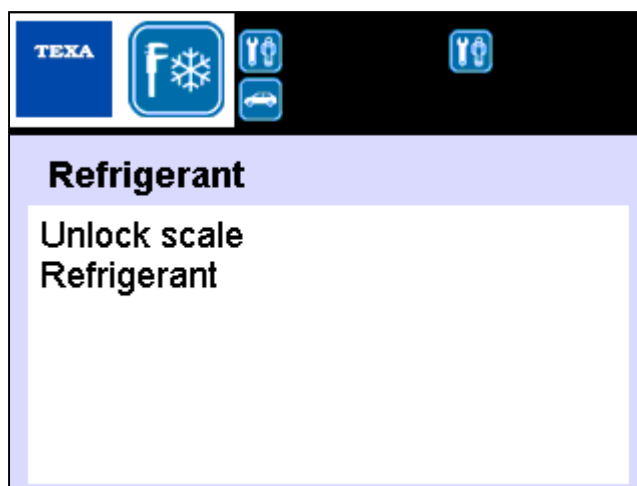


Image 4.48 - Request for unlocking of the refrigerant scale

Proceed with the unlock of the refrigerant scale, by pushing and rotating the lock/unlock mechanism **counterclockwise**:



Image 4.49 - Refrigerant scale unlock

then press the **ENTER** button to confirm.

The unit will show the following screenshot:

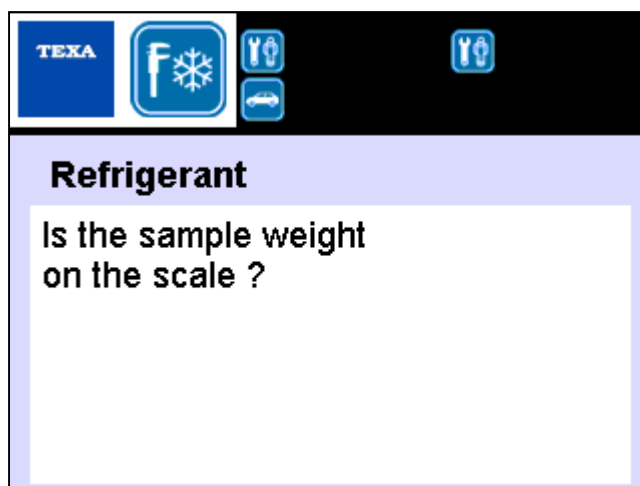


Image 4.50 – Request for placing a sample weight above the refrigerant tank

Place a sample weight of **at least 1 Kg**<sup>8</sup> over the refrigerant tank:



Image 4.51 – Positioning of a sample weight over the tank

then press the **ENTER** button to confirm.

<sup>8</sup> Also in this case, the 1-Kilogram magnetic sample weight included into the sample weight kit (spare part no. **4800103**) can be used

The unit will show the following screenshot:

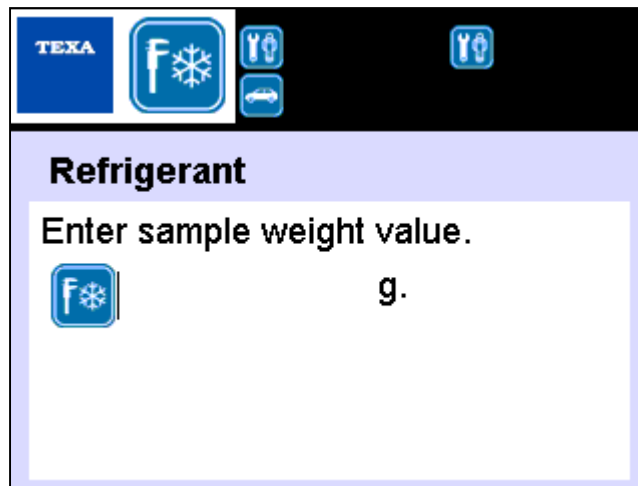


Image 4.52 – Request for entering the value in grams of the sample weight

Type the value **in grams** of sample weight (for example, in case of a 1Kg sample weight, type 1000), then press **ENTER** button to confirm.

The unit will show the following screenshot:

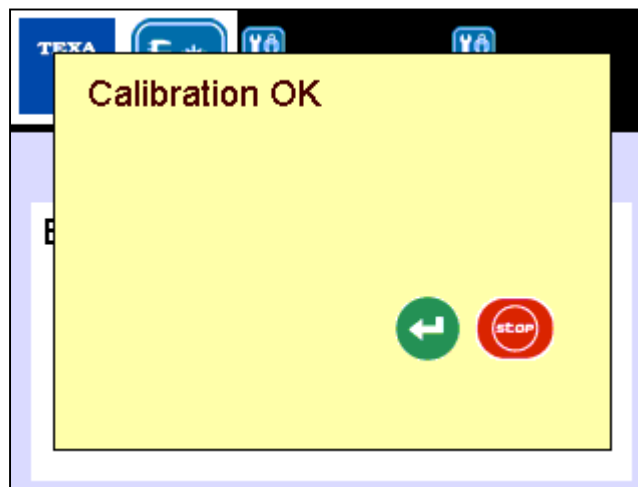


Image 4.53 – Confirmation message of the correctness of the calibration thus certifying the correctness of the main load cell calibration.

#### 4.5.2 "REFRIGERANT" calibration on Konfort 780R BiGas

The **Refrigerant** function, available in the **Sensor calibration** menu, allows user to calibrate the refrigerant load cell of the equipment.

In order to proceed with the calibration, the front panel of the unit has to be removed, according to the instruction already provided on Paragraph 4.4.1.

By pressing the **ENTER** button on the **Refrigerant** option, the Konfort 780R BiGas unit will display the following screenshot:



Image 4.54 – Waiting message during calibration of the main load cell

followed, after few seconds, by the following screenshot:

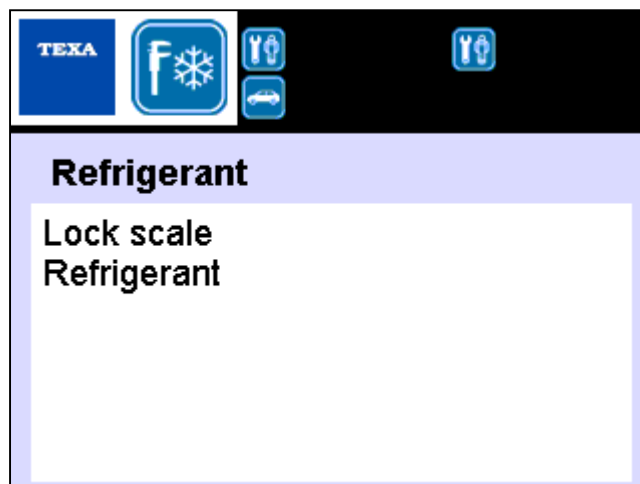


Image 4.55 – Request for scale lock

Proceed with the lock of the refrigerant scale, by pushing and rotating the lock/unlock mechanism **clockwise** with a 8-millimeters hex wrench:



Image 4.56 – Scale lock on a Konfort 780R BiGas

then press the **ENTER** button to confirm. The unit will show the following screenshot:



Image 4.57 – Waiting message during calibration of the main load cell



followed, after few seconds, by the following screenshot:

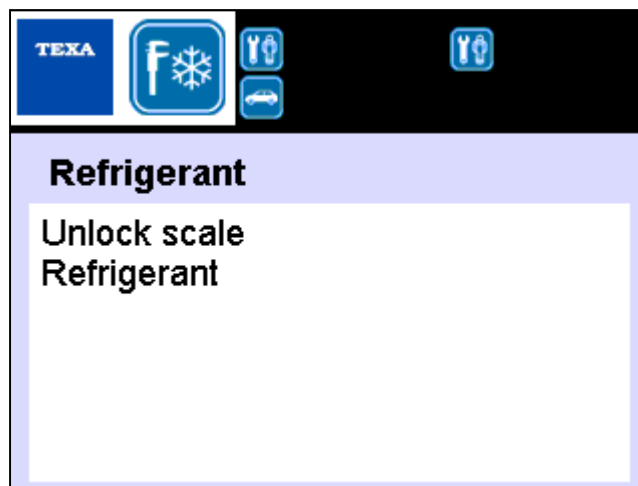


Image 4.58 – Request for scale unlock

Proceed with the unlock of the refrigerant scale, by pushing and rotating the lock/unlock mechanism **counterclockwise**:



Image 4.59 – Scale unlock on a Konfort 780R BiGas

then press the **ENTER** button to confirm.

The unit will show the following screenshot:

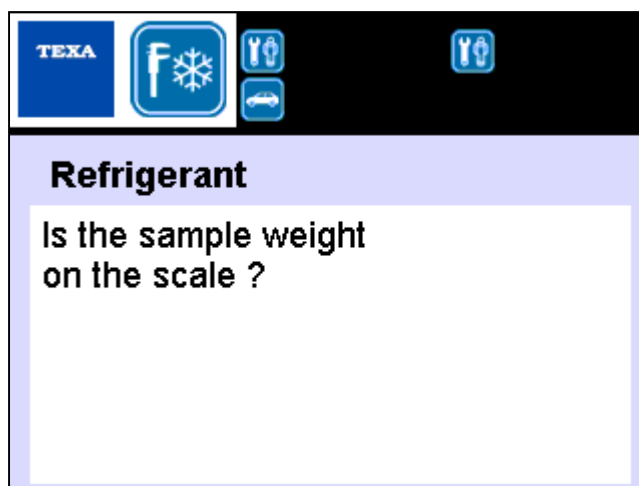


Image 4.60 – Request for placing a sample weight above the refrigerant tank

Place a sample weight of **at least 1 Kg<sup>9</sup>** over the upper refrigerant tank:



Image 4.61 – Positioning of a sample weight over the upper tank of 780R BiGas

then press the **ENTER** button to confirm.

<sup>9</sup> Also in this case, the 1-kilogram magnetic sample weight included into the sample weight kit (spare part no. **4800103**) can be used

The unit will show the following screenshot:

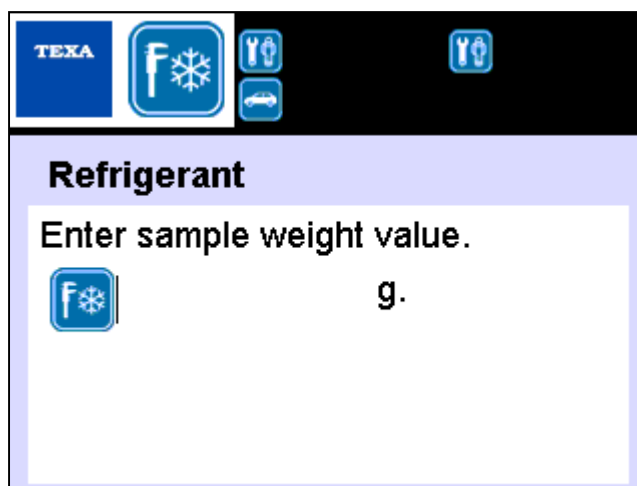


Image 4.62 – Request for entering the value in grams of the sample weight

Type the value **in grams** of sample weight (for example, in case of a 1Kg sample weight, type 1000), then press **ENTER** button to confirm.

The unit will show the following message:

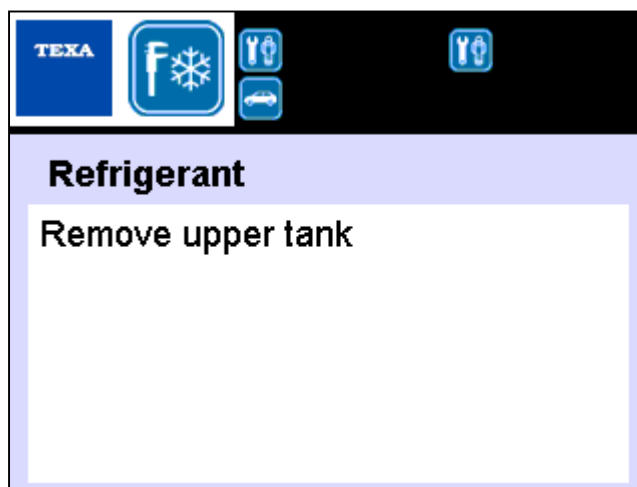


Image 4.63 – Request for removal of the upper tank on Konfort 780R BiGas

Remove the heating band from the upper tank of the unit:



Image 4.64 – Removal of the heating band from the upper tank of the Konfort 780R BiGas

as well as the the screw of the bracket which blocks the upper tank to the lower one (with the help of a 8-millimeters hexagonal wrench). Then remove the bracket:



Image 4.65 – Removal of the blocking bracket from the upper tank of the Konfort 780R BiGas

Now, rotate the upper refrigerant tank counterclockwise and raise it from lower tank, by ensuring that it will not touch the four conical pins located on the lower tank (see picture below, refer to the red circles):



Image 4.66 – Raising of the upper tank from the lower one of the Konfort 780R BiGas

Then, press the **ENTER** button to proceed. The unit will show the following message:



Image 4.67 – Waiting message during calibration of the main load cell

followed by the message here below:

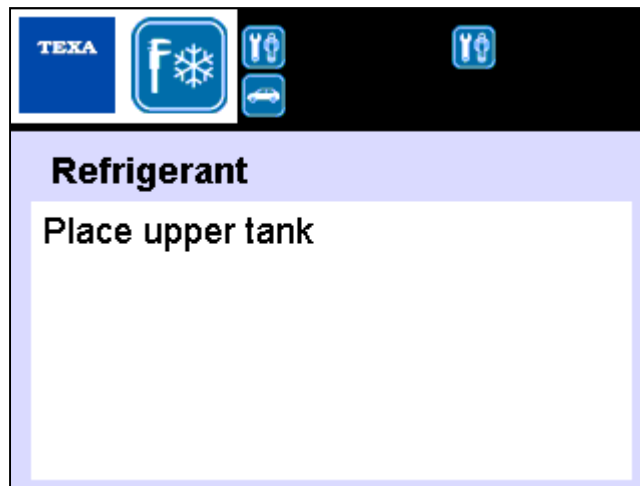


Image 4.68 – Request for replacement of the upper tank on Konfort 780R BiGas

Replace the upper tank of the unit on its original position, by locking it clockwise. Then, press **ENTER** button to confirm.

The unit will show the following message:



Image 4.69 – Waiting message during calibration of the main load cell

followed by the message here below:

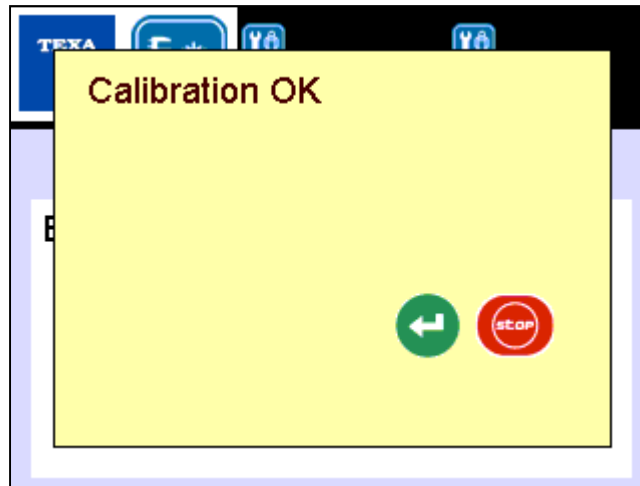


Image 4.70 – Confirmation message of the correctness of the calibration

thus certifying the correctness of the main load cell calibration.

#### 4.5.3 "RECOVERED OIL" calibration on Konfort 760R, 760R Bus and 780R BiGas

The **Recovered Oil** function, available in the **Sensor calibration** menu, allows user to calibrate the auxiliary load cell for the drained oil.

By pressing the **ENTER** button on this option, the following screenshot will be shown:



Image 4.71 – Waiting message during calibration of the drained oil load cell

followed, after few seconds, by the following screenshot:

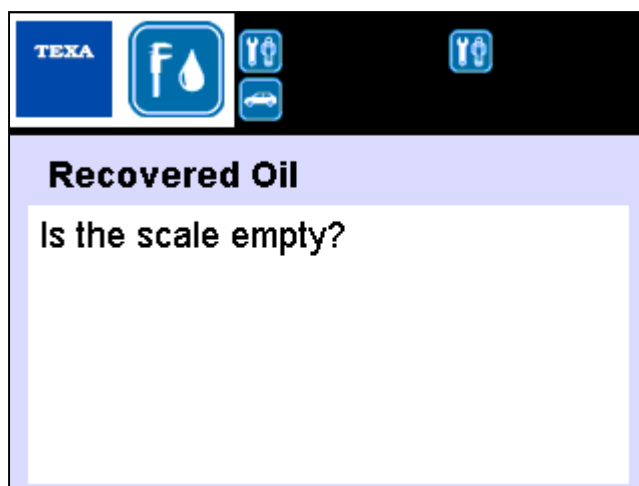


Image 4.72 - Request for removing of the drained oil bottle

Remove the bottle for the oil drain from the back of Konfort, then press the **ENTER** button to confirm. The equipment will then display the following screenshot:



Image 4.73 - Waiting message during calibration of the drained oil load cell



followed, after few seconds, by the following screenshot:

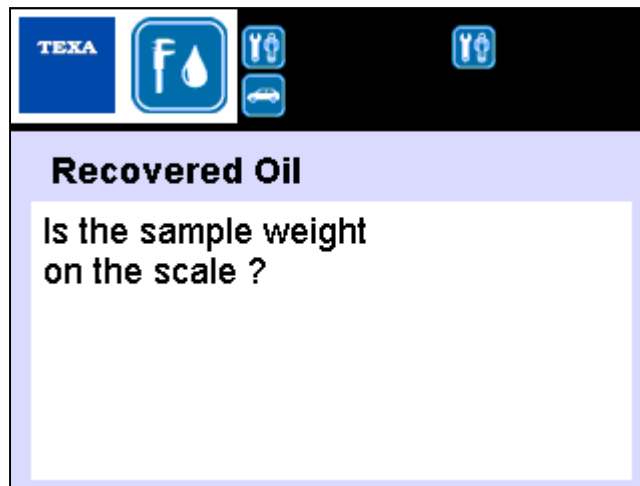


Image 4.74 – Request for sample weight connection

Connect the appropriate **400-grams** sample weight<sup>10</sup> to the connector for the oil drain on the back of the unit:



Image 4.75 – Connection of the 400-grams sample weight to the plug of the drained oil

Then press **ENTER** button to confirm.

<sup>10</sup> This sample weight is included, together with the 1-kilogram magnetic one, into the sample weight kit for Konfort 700R (spare part no. **4800103**)

The equipment will display the following screenshot:

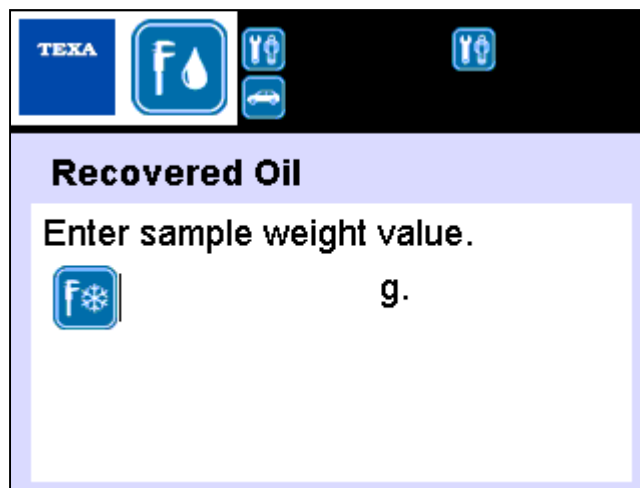


Image 4.76 – Request for insertion of the sample weight value in grams

Type the value **in grams** of the sample weight (for example, in case of a 400-grams sample weight, type 400), then press **ENTER** to confirm.

The unit will show the following message:



Image 4.77 – Waiting message during calibration of the drained oil load cell

followed, after few seconds, by the message here below:

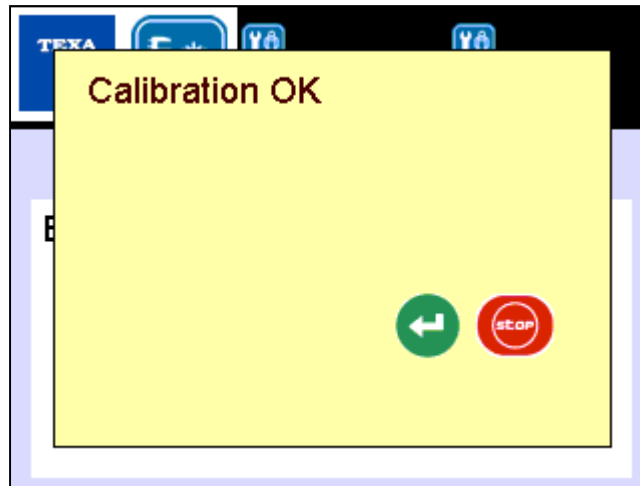


Image 4.78 – Confirmation message of the correctness of the calibration

thus certifying the correctness of calibration of the drained oil the load cell.

#### 4.5.4 “UV ADDITIVE” calibration on Konfort 760R, 760R Bus and 780R BiGas

The **UV Additive** function, available in the **Sensor calibration** menu, allows user to calibrate the auxiliary load cell for the UV injection on the equipment.

Refer to the procedure reported on Paragraph 4.5.3 for the calibration of the auxiliary load cell for the drained oil. When requested, place the appropriate sample weight to the UV injection plug on the back of the unit:



Image 4.79 – Connection of the 400-grams sample weight to the plug of the UV injection

#### 4.5.5 "NEW OIL" calibration on Konfort 760R, 760R Bus e 780R BiGas

The **New Oil** function, available in the **Sensor calibration** menu, allows user to calibrate the auxiliary load cell for the oil injection on the equipment.

Refer to the procedure reported on Paragraph 4.5.3 for the calibration of the auxiliary load cell for the drained oil. When requested, place the appropriate sample weight to the oil injection plug on the back of the unit:



Image 4.80 – Connection of the 400-grams sample weight to the plug of the oil injection

#### 4.5.6 "MAIN SENSOR" calibration on Konfort 760R, 760R Bus and 780R BiGas

The **Main sensor** function, available from the **Sensor calibration** menu, allows user to calibrate the main pressure sensor of the equipment.

By pressing the **ENTER** button on this option, the display will show the following screenshot:

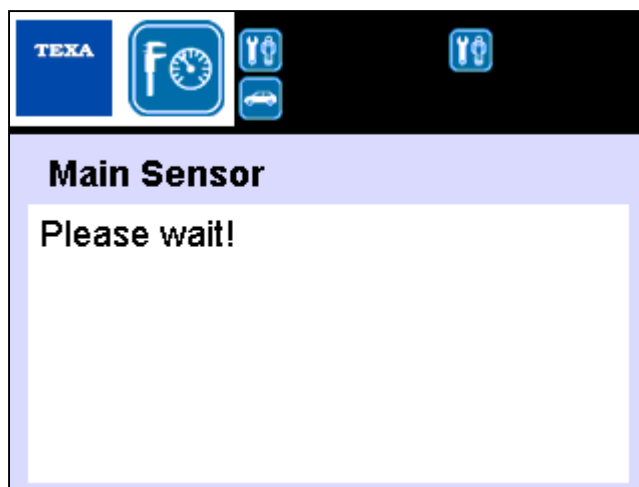


Image 4.81 – Waiting message during calibration of the main pressure sensor

followed, after few seconds, by the message here below:

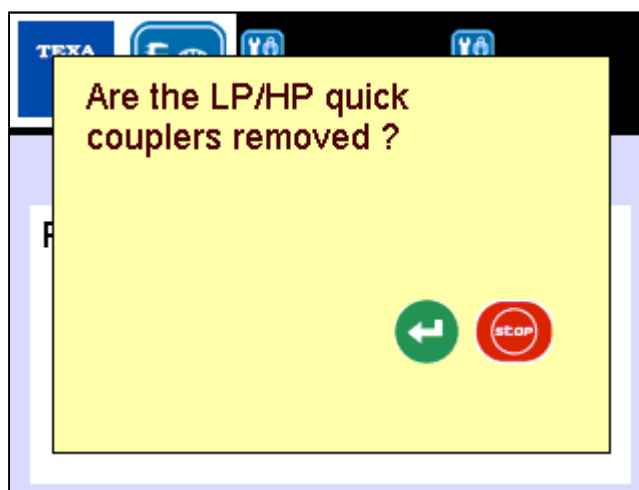


Image 4.82 – Request for removal of the **HP** and **LP** fittings from the service tubes

Unscrew the fittings from the **HP** and **LP** service pipes (see Image 4.38), then press **ENTER** to confirm.

The unit will show the following screenshot:

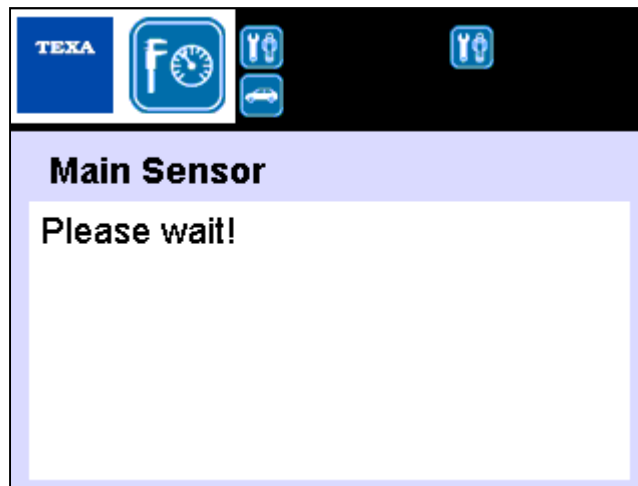


Image 4.83 – Waiting message during calibration of the main pressure sensor

followed, after few seconds, by the message here below:

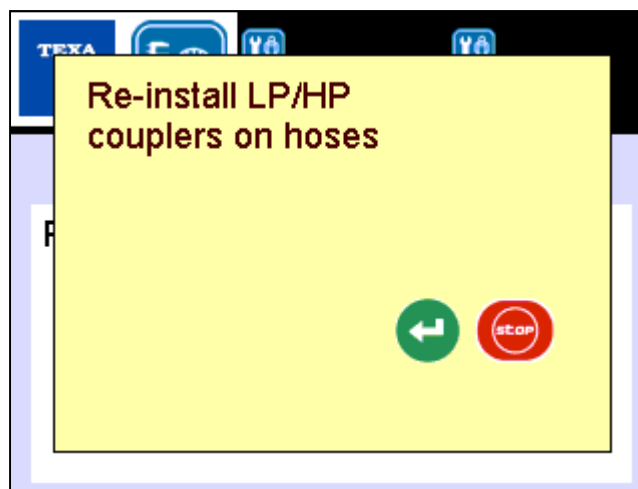


Image 4.84 – Request for reconnection of the **HP** and **LP** fittings to the service tubes

Reconnect the fittings to the **HP** and **LP** service pipes, then press **ENTER** to confirm.

The unit will show the following screenshot:

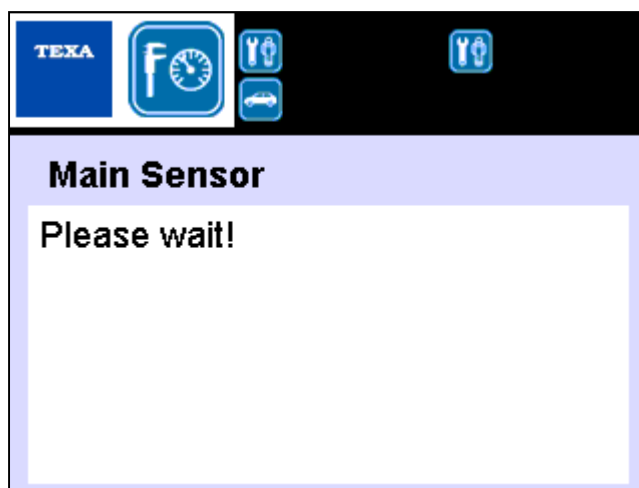


Image 4.85 – Waiting message during calibration of the main pressure sensor

during which the Konfort will perform a short vacuum phase into service tubes, in order to set the zero value for the calibration of the sensor.

Finally, the display of the Konfort unit will show the following message:

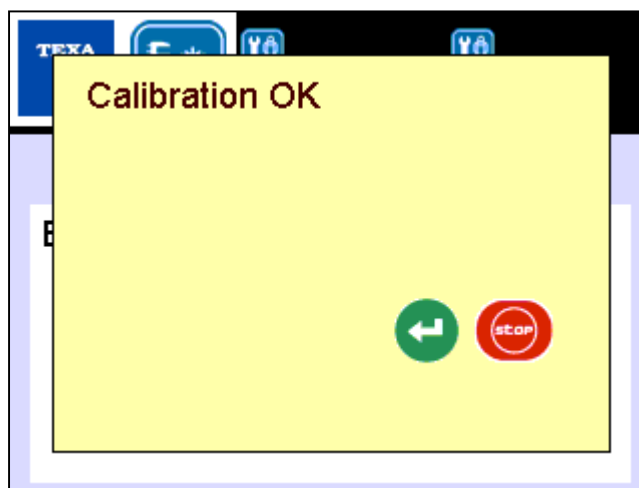


Image 4.86 – Confirmation message of the correctness of the calibration of the main pressure sensor

thus confirming the fact that the main sensor calibration has been successful.

#### 4.5.7 "SECONDARY SENSORS" calibration on Konfort 760R, 760R Bus and 780R BiGas

The **Secondary sensors** function in the **Sensor calibration** menu allows user to calibrate the auxiliary pressure sensors of the equipment, if installed. Refer, for further information, to the VDC device installation manual.

#### 4.6 "PRIVATE PARAMETERS" function on Konfort 700R units

The **Private parameters** function, available from the **Service** menu, allows user to check the value of some reserved functional parameters of the equipment.

The following subparagraphs will report the default values for the private parameters of each model of Konfort 700R unit. The changing of each parameter will be possible by simply editing the new value and by confirming with the **ENTER** button.

**WARNING! The private parameters change implies a modification of the behavior of the unit. Please, contact TEXA Technical Assistance for being instructed in any parameter change.**

##### 4.6.1 List of the private parameters for Konfort 705R

PARAMETER	DEFAULT VALUE
MAX ABSOLUTE WEIGHT MAIN TANK	gr. 25000
MAX ABSOLUTE WEIGHT SECOND TANK	gr. 0
OTHER OILS	3
CLEANING TIME	sec. 10
FIRST RECOVERY TIME	sec. 30
USED OIL PHASE	sec. 40
RECOVERY CLEANING TIME	sec. 90
HOSES CLEANING TIME	sec. 75
VACUUM TIME FOR FLUXING	min. 5
MINIMUM WEIGHT FOR FLUXING	Kg. 5
AUTOCALIBRATION THRESHOLD (10 pt.)	15
ON TIME LP PRESSURE CHARGING PHASE (0.1 sec.)	5
RECOVERY PHASE WAITING TIME	sec. 20
RECOVERY PHASE FINAL TIME	sec. 20
CHECK WAITING TIME	sec. 2
IO/UV DELAY TIME (0.01 sec.)	30
REFR. IDENTIFIER CALIBRATION THRESHOLD T(h)	0
MAX FAILED DRAIN RETRIES	4

Table 4.1 – List of the private parameters for Konfort 705R



<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
LEAK TIME FOR FLUXING	min. 3
FORCE DISCHARGE BEFORE RECOVERY	0
ANALYZE GAS	1
PRE VACUUM TIME	min. 15

Table 4.1 (Continue) – List of the private parameters for Konfort 705R

#### 4.6.2 List of the private parameters for Konfort 710R

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
MAX ABSOLUTE WEIGHT MAIN TANK	gr. 25000
MAX ABSOLUTE WEIGHT SECOND TANK	gr. 0
OTHER OILS	3
CLEANING TIME	sec. 10
FIRST RECOVERY TIME	sec. 30
USED OIL PHASE	sec. 40
RECOVERY CLEANING TIME	sec. 90
HOSES CLEANING TIME	sec. 75
VACUUM TIME FOR FLUXING	min. 5
MINIMUM WEIGHT FOR FLUXING	Kg. 5
AUTOCALIBRATION THRESHOLD (10 pt.)	15
ON TIME LP PRESSURE CHARGING PHASE (0.1 sec.)	5
RECOVERY PHASE WAITING TIME	sec. 20
RECOVERY PHASE FINAL TIME	sec. 20
CHECK WAITING TIME	sec. 2
IO/UV DELAY TIME (0.01 sec.)	30
REFR. IDENTIFIER CALIBRATION THRESHOLD T(h)	0
MAX FAILED DRAIN RETRIES	4
LEAK TIME FOR FLUXING	min. 3
FORCE DISCHARGE BEFORE RECOVERY	0
ANALYZE GAS	1
PRE VACUUM TIME	min. 15

Table 4.2 – List of the private parameters for Konfort 710R

**4.6.3 List of the private parameters for Konfort 720R**

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
MAX ABSOLUTE WEIGHT MAIN TANK	gr. 25000
MAX ABSOLUTE WEIGHT SECOND TANK	gr. 0
OTHER OILS	3
CLEANING TIME	sec. 10
FIRST RECOVERY TIME	sec. 30
USED OIL PHASE	sec. 40
RECOVERY CLEANING TIME	sec. 90
HOSES CLEANING TIME	sec. 75
VACUUM TIME FOR FLUXING	min. 5
MINIMUM WEIGHT FOR FLUXING	Kg. 5
AUTOCALIBRATION THRESHOLD (10 pt.)	15
ON TIME LP PRESSURE CHARGING PHASE (0.1 sec.)	5
RECOVERY PHASE WAITING TIME	sec. 20
RECOVERY PHASE FINAL TIME	sec. 20
CHECK WAITING TIME	sec. 2
IO/UV DELAY TIME (0.01 sec.)	30
REFR. IDENTIFIER CALIBRATION THRESHOLD T(h)	0
MAX FAILED DRAIN RETRIES	4
LEAK TIME FOR FLUXING	min. 3
FORCE DISCHARGE BEFORE RECOVERY	0
ANALYZE GAS	1
PRE VACUUM TIME	min. 15

Table 4.3 - List of the private parameters for Konfort 720R

**4.6.4 List of the private parameters for Konfort 760R**

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
MAX ABSOLUTE WEIGHT MAIN TANK	gr. 37000
MAX ABSOLUTE WEIGHT SECOND TANK	gr. 0
OTHER OILS	3
CLEANING TIME	sec. 10
FIRST RECOVERY TIME	sec. 30
USED OIL PHASE	sec. 40
RECOVERY CLEANING TIME	sec. 90
HOSES CLEANING TIME	sec. 75
VACUUM TIME FOR FLUXING	min. 5
MINIMUM WEIGHT FOR FLUXING	Kg. 5
AUTOCALIBRATION THRESHOLD (10 pt.)	15
ON TIME LP PRESSURE CHARGING PHASE (0.1 sec.)	5
RECOVERY PHASE WAITING TIME	sec. 20
RECOVERY PHASE FINAL TIME	sec. 20
CHECK WAITING TIME	sec. 2
IO/UV DELAY TIME (0.01 sec.)	30
REFR. IDENTIFIER CALIBRATION THRESHOLD T(h)	0

Table 4.4 - List of the private parameters for Konfort 760R

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
MAX FAILED DRAIN RETRIES	4
LEAK TIME FOR FLUXING	min. 3
FORCE DISCHARGE BEFORE RECOVERY	0
ANALYZE GAS	1
PRE VACUUM TIME	min. 15

Table 4.4 (Continue) – List of the private parameters for Konfort 760R

#### 4.6.5 List of the private parameters for Konfort 760R Bus

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
MAX ABSOLUTE WEIGHT MAIN TANK	gr. 55000
MAX ABSOLUTE WEIGHT SECOND TANK	gr. 0
OTHER OILS	3
CLEANING TIME	sec. 10
FIRST RECOVERY TIME	sec. 30
USED OIL PHASE	sec. 40
RECOVERY CLEANING TIME	sec. 90
HOSES CLEANING TIME	sec. 75
VACUUM TIME FOR FLUXING	min. 5
MINIMUM WEIGHT FOR FLUXING	Kg. 5
AUTOCALIBRATION THRESHOLD (10 pt.)	15
ON TIME LP PRESSURE CHARGING PHASE (0.1 sec.)	5
RECOVERY PHASE WAITING TIME	sec. 20
RECOVERY PHASE FINAL TIME	sec. 20
CHECK WAITING TIME	sec. 2
IO/UV DELAY TIME (0.01 sec.)	30
REFR. IDENTIFIER CALIBRATION THRESHOLD T(h)	0
MAX FAILED DRAIN RETRIES	4
LEAK TIME FOR FLUXING	min. 3
FORCE DISCHARGE BEFORE RECOVERY	0
ANALYZE GAS	1
PRE VACUUM TIME	min. 15

Table 4.5 – List of the private parameters for Konfort 760R Bus

#### 4.6.6 List of the private parameters for Konfort 780R BiGas

PARAMETER	DEFAULT VALUE
MAX ABSOLUTE WEIGHT MAIN TANK	gr. 25000
MAX ABSOLUTE WEIGHT SECOND TANK	gr. 25000
OTHER OILS	3
CLEANING TIME	sec. 10
FIRST RECOVERY TIME	sec. 30
USED OIL PHASE	sec. 40
RECOVERY CLEANING TIME	sec. 90
HOSES CLEANING TIME	sec. 75
VACUUM TIME FOR FLUXING	min. 5
MINIMUM WEIGHT FOR FLUXING	Kg. 5
AUTOCALIBRATION THRESHOLD (10 pt.)	15
ON TIME LP PRESSURE CHARGING PHASE (0.1 sec.)	5
RECOVERY PHASE WAITING TIME	sec. 20
RECOVERY PHASE FINAL TIME	sec. 20
CHECK WAITING TIME	sec. 2
IO/UV DELAY TIME (0.01 sec.)	30
REFR. IDENTIFIER CALIBRATION THRESHOLD T(h)	0
MAX FAILED DRAIN RETRIES	4
LEAK TIME FOR FLUXING	min. 3
FORCE DISCHARGE BEFORE RECOVERY	0
ANALYZE GAS	1
PRE VACUUM TIME	min. 15

Table 4.6 – List of the private parameters for Konfort 780R BiGas

#### 4.7 “PUBLIC PARAMETERS” function on Konfort 700R units

The **Public parameters** function, available from the **Service** menu, allows user to check the value of some standard functional parameters of the equipment.

The following subparagraphs will report the default values for the public parameters of each model of Konfort 700R units. The changing of each parameter will be possible by simply editing the new value and by confirming with the **ENTER** button.

**WARNING! The public parameters change implies a modification of the behavior of the unit. Please, contact TEXA Technical Assistance for being instructed in any parameter change.**

**4.7.1 List of the public parameters for Konfort 705R**

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
VESSEL TARE MAIN TANK	gr. 6400
VESSEL TARE SECOND TANK	gr. 0
MAX RELATIVE WEIGHT MAIN TANK	gr. 8000
MAX RELATIVE WEIGHT SECOND TANK	gr. 0
NEW OIL TARE	gr. 90
UV TARE	gr. 60
USED OIL TARE	gr. 90
USED OIL MAX WEIGHT AT START	gr. 50
USED OIL MAX WEIGHT	gr. 150
AIR EVACUATION TIME FOR GAS ANALYZER	msec. 0
GAS HEATING VACUUM MINIMUM TIME	min. 0
VESSEL RECHARGE OFFSET WEIGHT	gr. 300
STOP COMPRESSOR THRESHOLD	mbar. 840
USED OIL PHASE THRESHOLD	mbar. 850
FILLING PHASE DEFAULT WEIGHT	gr. 700
VACUUM DEFAULT TIME	min. 20
LEAK TEST DEFAULT TIME	min. 4
ADJUST HP TUBE LENGTH	gr. 30
ADJUST LP TUBE LENGTH	gr. 0
ADJUST LP-HP TUBE LENGTH	gr. 30
PRESSURE TRANSDUCER OFFSET	mbar. 30
PRESSURE CONTROL DEFAULT TIME	min. 2
GAS HEATING TIME (0=AUTO)	sec. 0
OIL DEFAULT QUANTITY	ml. 10
UV DEFAULT QUANTITY	ml. 5
VACUUM TIME STANDARD	min. 20
VACUUM CHECK POINT DEFAULT TIME	min. 10
FLUSHING DEFAULT TIME	sec. 30
REPLACEMENT FILTER MAX WEIGHT	hg. 1500
REPLACEMENT OIL PUMP MAX TIME	min. 5400
RESTART COMPRESSOR THRESHOLD	mbar. 1600
LEAK TEST THRESHOLD	mbar. 120
NOT ENOUGH VACUUM THRESHOLD	mbar. 50
UV/NEW OIL PHASE THRESHOLD	mbar. 400
BOTTLE CHECK MODE	2
FAN CHECK MODE	1
VACUOMETER OFFSET	mbar. 0
DEBUG ON SD CARD 0=OFF, 1=ON	0

Table 4.7 – List of the public parameters for Konfort 705R

**4.7.2 List of the public parameters for Konfort 710R**

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
VESSEL TARE MAIN TANK	gr. 9300
VESSEL TARE SECOND TANK	gr. 0
MAX RELATIVE WEIGHT MAIN TANK	gr. 10000
MAX RELATIVE WEIGHT SECOND TANK	gr. 0
NEW OIL TARE	gr. 90
UV TARE	gr. 60
USED OIL TARE	gr. 90
USED OIL MAX WEIGHT AT START	gr. 50
USED OIL MAX WEIGHT	gr. 150
AIR EVACUATION TIME FOR GAS ANALYZER	msec. 0
GAS HEATING VACUUM MINIMUM TIME	min. 0
VESSEL RECHARGE OFFSET WEIGHT	gr. 300
STOP COMPRESSOR THRESHOLD	mbar. 840
USED OIL PHASE THRESHOLD	mbar. 850
FILLING PHASE DEFAULT WEIGHT	gr. 700
VACUUM DEFAULT TIME	min. 20
LEAK TEST DEFAULT TIME	min. 4
ADJUST HP TUBE LENGTH	gr. 30
ADJUST LP TUBE LENGTH	gr. 0
ADJUST LP-HP TUBE LENGTH	gr. 30
PRESSURE TRANSDUCER OFFSET	mbar. 30
PRESSURE CONTROL DEFAULT TIME	min. 2
GAS HEATING TIME (0=AUTO)	sec. 0
OIL DEFAULT QUANTITY	ml. 10
UV DEFAULT QUANTITY	ml. 5
VACUUM TIME STANDARD	min. 20
VACUUM CHECK POINT DEFAULT TIME	min. 10
FLUSHING DEFAULT TIME	sec. 30
REPLACEMENT FILTER MAX WEIGHT	hg. 1500
REPLACEMENT OIL PUMP MAX TIME	min. 5400
RESTART COMPRESSOR THRESHOLD	mbar. 1600
LEAK TEST THRESHOLD	mbar. 120
NOT ENOUGH VACUUM THRESHOLD	mbar. 50
UV/NEW OIL PHASE THRESHOLD	mbar. 400
BOTTLE CHECK MODE	2
FAN CHECK MODE	1
VACUOMETER OFFSET	mbar. 0
DEBUG ON SD CARD 0=OFF, 1=ON	0

Table 4.8 – List of the public parameters for Konfort 710R

**4.7.3 List of the public parameters for Konfort 720R**

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
VESSEL TARE MAIN TANK	gr. 11300
VESSEL TARE SECOND TANK	gr. 0
MAX RELATIVE WEIGHT MAIN TANK	gr. 12000
MAX RELATIVE WEIGHT SECOND TANK	gr. 0
NEW OIL TARE	gr. 90
UV TARE	gr. 60
USED OIL TARE	gr. 90
USED OIL MAX WEIGHT AT START	gr. 50
USED OIL MAX WEIGHT	gr. 150
AIR EVACUATION TIME FOR GAS ANALYZER	msec. 0
GAS HEATING VACUUM MINIMUM TIME	min. 0
VESSEL RECHARGE OFFSET WEIGHT	gr. 300
STOP COMPRESSOR THRESHOLD	mbar. 840
USED OIL PHASE THRESHOLD	mbar. 850
FILLING PHASE DEFAULT WEIGHT	gr. 700
VACUUM DEFAULT TIME	min. 20
LEAK TEST DEFAULT TIME	min. 4
ADJUST HP TUBE LENGTH	gr. 30
ADJUST LP TUBE LENGTH	gr. 0
ADJUST LP-HP TUBE LENGTH	gr. 30
PRESSURE TRANSDUCER OFFSET	mbar. 30
PRESSURE CONTROL DEFAULT TIME	min. 2
GAS HEATING TIME (0=AUTO)	sec. 0
OIL DEFAULT QUANTITY	ml. 10
UV DEFAULT QUANTITY	ml. 5
VACUUM TIME STANDARD	min. 20
VACUUM CHECK POINT DEFAULT TIME	min. 10
FLUSHING DEFAULT TIME	sec. 30
REPLACEMENT FILTER MAX WEIGHT	hg. 1500
REPLACEMENT OIL PUMP MAX TIME	min. 5400
RESTART COMPRESSOR THRESHOLD	mbar. 1600
LEAK TEST THRESHOLD	mbar. 120
NOT ENOUGH VACUUM THRESHOLD	mbar. 50
UV/NEW OIL PHASE THRESHOLD	mbar. 400
BOTTLE CHECK MODE	2
FAN CHECK MODE	1
VACUOMETER OFFSET	mbar. 0
DEBUG ON SD CARD 0=OFF, 1=ON	0

Table 4.9 – List of the public parameters for Konfort 720R

**4.7.4 List of the public parameters for Konfort 760R**

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
VESSEL TARE MAIN TANK	gr. 16000
VESSEL TARE SECOND TANK	gr. 0
MAX RELATIVE WEIGHT MAIN TANK	gr. 20000
MAX RELATIVE WEIGHT SECOND TANK	gr. 0
NEW OIL TARE	gr. 310
UV TARE	gr. 310
USED OIL TARE	gr. 270
USED OIL MAX WEIGHT AT START	gr. 200
USED OIL MAX WEIGHT	gr. 250
AIR EVACUATION TIME FOR GAS ANALYZER	msec. 500
GAS HEATING VACUUM MINIMUM TIME	min. 10
VESSEL RECHARGE OFFSET WEIGHT	gr. 300
STOP COMPRESSOR THRESHOLD	mbar. 840
USED OIL PHASE THRESHOLD	mbar. 850
FILLING PHASE DEFAULT WEIGHT	gr. 700
VACUUM DEFAULT TIME	min. 20
LEAK TEST DEFAULT TIME	min. 4
ADJUST HP TUBE LENGTH	gr. 30
ADJUST LP TUBE LENGTH	gr. 0
ADJUST LP-HP TUBE LENGTH	gr. 30
PRESSURE TRANSDUCER OFFSET	mbar. 30
PRESSURE CONTROL DEFAULT TIME	min. 2
GAS HEATING TIME (0=AUTO)	sec. 0
OIL DEFAULT QUANTITY	ml. 10
UV DEFAULT QUANTITY	ml. 5
VACUUM TIME STANDARD	min. 20
VACUUM CHECK POINT DEFAULT TIME	min. 10
FLUSHING DEFAULT TIME	sec. 30
REPLACEMENT FILTER MAX WEIGHT	hg. 1500
REPLACEMENT OIL PUMP MAX TIME	min. 5400
RESTART COMPRESSOR THRESHOLD	mbar. 1600
LEAK TEST THRESHOLD	mbar. 120
NOT ENOUGH VACUUM THRESHOLD	mbar. 50
UV/NEW OIL PHASE THRESHOLD	mbar. 400
BOTTLE CHECK MODE	2
FAN CHECK MODE	1
VACUOMETER OFFSET	mbar. 0
DEBUG ON SD CARD 0=OFF, 1=ON	0

Table 4.10 – List of the public parameters for Konfort 760R



**4.7.5 List of the public parameters for Konfort 760R Bus**

<b>PARAMETER</b>	<b>DEFAULT VALUE</b>
VESSEL TARE MAIN TANK	gr. 24000
VESSEL TARE SECOND TANK	gr. 0
MAX RELATIVE WEIGHT MAIN TANK	gr. 30000
MAX RELATIVE WEIGHT SECOND TANK	gr. 0
NEW OIL TARE	gr. 310
UV TARE	gr. 310
USED OIL TARE	gr. 270
USED OIL MAX WEIGHT AT START	gr. 200
USED OIL MAX WEIGHT	gr. 250
AIR EVACUATION TIME FOR GAS ANALYZER	msec. 500
GAS HEATING VACUUM MINIMUM TIME	min. 10
VESSEL RECHARGE OFFSET WEIGHT	gr. 600
STOP COMPRESSOR THRESHOLD	mbar. 920
USED OIL PHASE THRESHOLD	mbar. 920
FILLING PHASE DEFAULT WEIGHT	gr. 800
VACUUM DEFAULT TIME	min. 20
LEAK TEST DEFAULT TIME	min. 4
ADJUST HP TUBE LENGTH	gr. 30
ADJUST LP TUBE LENGTH	gr. 0
ADJUST LP-HP TUBE LENGTH	gr. 30
PRESSURE TRANSDUCER OFFSET	mbar. 30
PRESSURE CONTROL DEFAULT TIME	min. 2
GAS HEATING TIME (0=AUTO)	sec. 0
OIL DEFAULT QUANTITY	ml. 10
UV DEFAULT QUANTITY	ml. 5
VACUUM TIME STANDARD	min. 20
VACUUM CHECK POINT DEFAULT TIME	min. 10
FLUSHING DEFAULT TIME	sec. 30
REPLACEMENT FILTER MAX WEIGHT	hg. 1500
REPLACEMENT OIL PUMP MAX TIME	min. 5400
RESTART COMPRESSOR THRESHOLD	mbar. 1600
LEAK TEST THRESHOLD	mbar. 120
NOT ENOUGH VACUUM THRESHOLD	mbar. 50
UV/NEW OIL PHASE THRESHOLD	mbar. 400
BOTTLE CHECK MODE	2
FAN CHECK MODE	1
VACUOMETER OFFSET	mbar. 0
DEBUG ON SD CARD 0=OFF, 1=ON	0

Table 4.11 – List of the public parameters for Konfort 760R Bus

#### 4.7.6 List of the public parameters for Konfort 780R BiGas

PARAMETRO	VALORE PREDEFINITO
VESSEL TARE MAIN TANK	gr. 11300
VESSEL TARE SECOND TANK	gr. 13300
MAX RELATIVE WEIGHT MAIN TANK	gr. 12000
MAX RELATIVE WEIGHT SECOND TANK	gr. 12000
NEW OIL TARE	gr. 310
UV TARE	gr. 310
USED OIL TARE	gr. 270
USED OIL MAX WEIGHT AT START	gr. 200
USED OIL MAX WEIGHT	gr. 250
AIR EVACUATION TIME FOR GAS ANALYZER	msec. 500
GAS HEATING VACUUM MINIMUM TIME	min. 10
VESSEL RECHARGE OFFSET WEIGHT	gr. 300
STOP COMPRESSOR THRESHOLD	mbar. 840
USED OIL PHASE THRESHOLD	mbar. 850
FILLING PHASE DEFAULT WEIGHT	gr. 700
VACUUM DEFAULT TIME	min. 20
LEAK TEST DEFAULT TIME	min. 4
ADJUST HP TUBE LENGTH	gr. 30
ADJUST LP TUBE LENGTH	gr. 0
ADJUST LP-HP TUBE LENGTH	gr. 30
PRESSURE TRANSDUCER OFFSET	mbar. 30
PRESSURE CONTROL DEFAULT TIME	min. 2
GAS HEATING TIME (0=AUTO)	sec. 0
OIL DEFAULT QUANTITY	ml. 10
UV DEFAULT QUANTITY	ml. 5
VACUUM TIME STANDARD	min. 20
VACUUM CHECK POINT DEFAULT TIME	min. 10
FLUSHING DEFAULT TIME	sec. 30
REPLACEMENT FILTER MAX WEIGHT	hg. 1500
REPLACEMENT OIL PUMP MAX TIME	min. 5400
RESTART COMPRESSOR THRESHOLD	mbar. 1600
LEAK TEST THRESHOLD	mbar. 120
NOT ENOUGH VACUUM THRESHOLD	mbar. 50
UV/NEW OIL PHASE THRESHOLD	mbar. 400
BOTTLE CHECK MODE	2
FAN CHECK MODE	1
VACUOMETER OFFSET	mbar. 0
DEBUG ON SD CARD 0=OFF, 1=ON	0

Table 4.12 – List of the public parameters for Konfort 780R BiGas

#### 4.8 “CALIBRATION STATUS” function on Konfort 700R units

The **Calibration status** function, available from the **Service** menu, allows user to get a quick overview of the status of the calibration of each sensor of the equipment.

By accessing this function, the following screenshot will be displayed:

C	a	l	i	b	r	a	t	i	o	n	s	t	a	t	u	s		
P	R	D	I	U	H	L												
1	1	1	1	1	1	1												

Image 4.87 – The **Calibration status** function on Konfort 705R, 710R and 720R

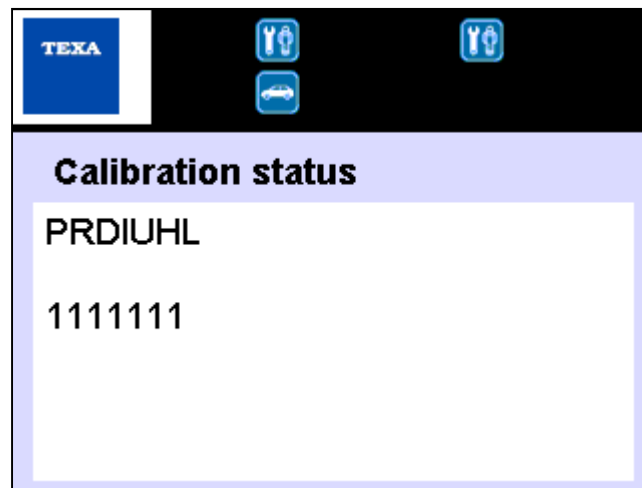


Image 4.88 – The **Calibration status** function on Konfort 760R, 760R Bus and 780R BiGas

In this page, the initial letter of each sensor of the Konfort unit will be reported:

- **P** = Main pressure sensor;
- **R** = Refrigerant load cell;
- **D** = Load cell (not used on K705R, K710R and K720R) for the discharged oil;
- **I** = Load cell (not used on K705R, K710R and K720R) for the oil injection;
- **U** = Load cell (not used on K705R, K710R and K720R) for the UV injection;
- **H** = Auxiliary **HP** pressure sensor<sup>11</sup>;
- **L** = Auxiliary **LP** pressure sensor<sup>12</sup>.

<sup>11</sup> This sensor can be installed as an accessory on the equipment (for example, in case of use of the VDC device)

<sup>12</sup> This sensor can be installed as an accessory on the equipment

For each sensor, on the line just below, the unit reports the status of the corresponding calibration:

- **1** = the sensor is correctly calibrated;
- **0** = the sensor is not calibrated, it is necessary to check its proper functioning.

#### 4.9 "SELECT REFRIGERANT" function on Konfort 700R units

The **Select Refrigerant** function, available from the **Service** menu with the dealer password, allows to select the type of refrigerant with which the user would like to make the unit to operate. The options available are:

- **R134a** : by choosing this option, the **GAS** light on the top panel of the unit will be colored in **ORANGE**;
- **R1234yf** : by choosing this option, the **GAS** light on the top panel of the unit will be colored in **GREEN**.

This function has to be used on Konfort 720R, 760R and 760R Bus units for changing the type of refrigerant to be employed by the unit, for example after the retrofit operation from R134a to R1234yf.

#### 4.10 "STORED ERRORS" function on Konfort 700R units

The **Stored errors** function, available from the **Service** menu both with the user password **1236** and with the dealer one (provided every year by TEXA S.p.A), allows to display the history of the functioning faults of the unit:



Image 4.89 – Example of the **Stored errors** function on Konfort 700R units

While the access to this function with the user level password allows uniquely to display the stored errors, by accessing the function with the dealer password the unit gives also the chance to delete the stored errors (of course, after solved the problem which caused the storing of the error).

In order to delete an error, the user has to select it:

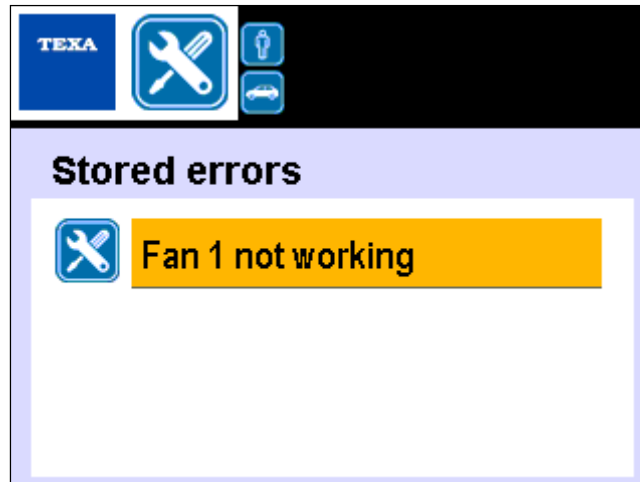


Image 4.90 – Selection of a stored error

press the blue **CANCEL** button on the keyboard of the unit:



and then confirm the deletion of the stored error by pressing the **ENTER** button:



Image 4.91 – Request for stored error deletion by pressing the **ENTER** button

The unit will confirm the deletion of the stored error by displaying the following screenshot:



Image 4.92 – Confirmation of the stored error deletion.  
Press the **ENTER** button for quitting the page

#### 4.11 "DEFAULT PARAMETERS" function on Konfort 700R units

The **Default parameters** function, available from the **Service** menu both with the user password **1236** and with the dealer one, allows the user to restore the default values to the working parameters of the unit.

By selecting this option, the unit will ask to confirm the restore of the default values of the parameters, by showing the following screenshot:

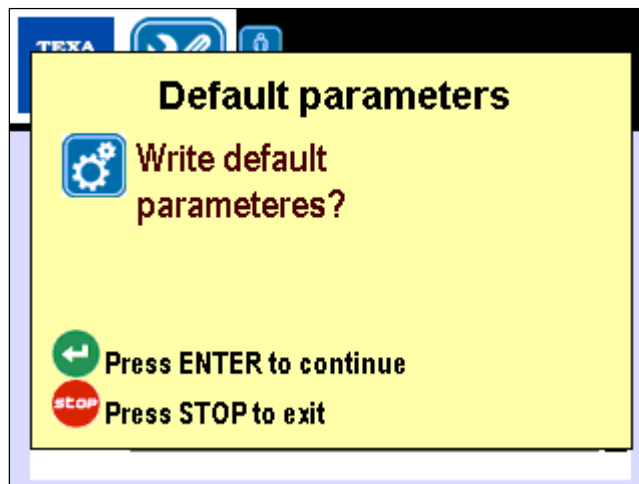


Image 4.93 – Request for restoring the default values of the working parameters of the unit

By pressing the **ENTER** button, the restore operation will be completed:

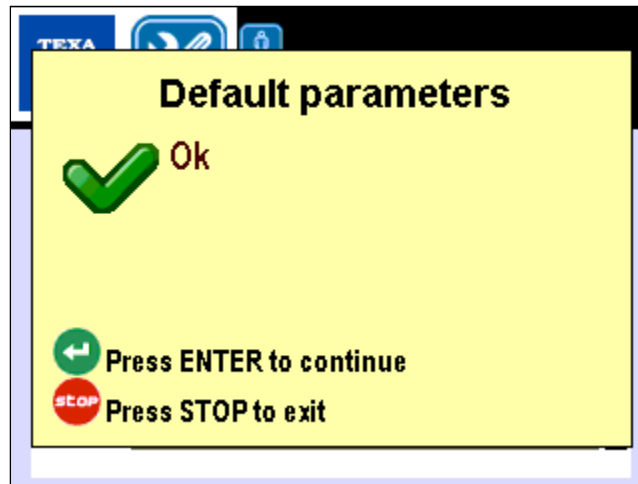


Image 4.94 – Confirmation of the restore of the default values of the parameters. Press the **ENTER** button for quitting the page

#### 4.12 “CUSTOMISED SERVICE” function on Konfort 700R units

The **Customised service** function, available from the **Service** menu only with the dealer password, will allow the technician to perform some customized settings on the AC maintenance working mode of the Konfort unit under specific request of the final user. By choosing this function, the following options will be displayed:

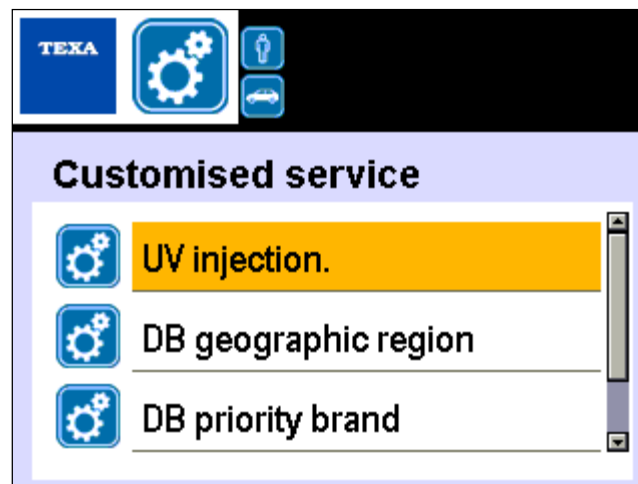


Image 4.95 – Options available in the **Customised service** function of the Konfort 700R units

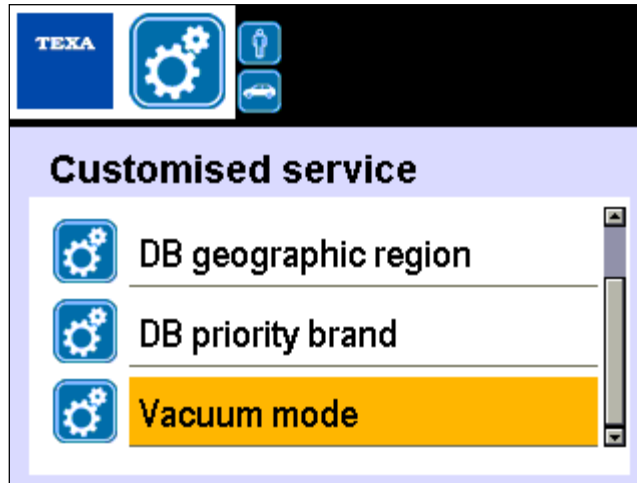


Image 4.95 (Continue) – Options available in the **Customised service** function of the Konfort 700R units

Here below a detailed description of each function of this menu will be reported:

- **UV injection** : This function will allow to enable/disable the UV injection in the AC maintenance working modes of the unit. This function is necessary in order to set up the functioning of the unit according to the requirements of some car manufacturers:

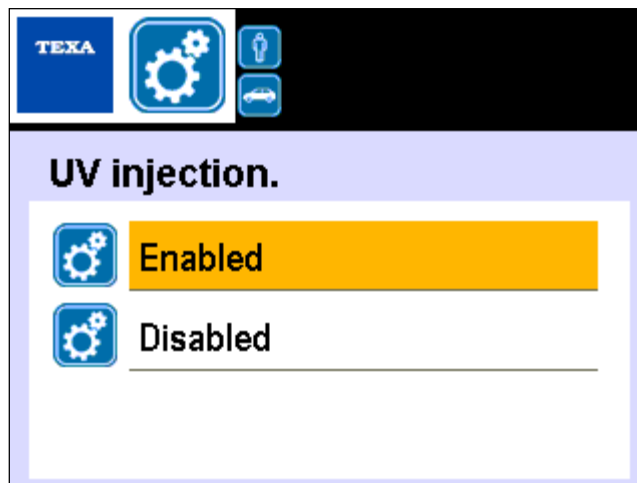


Image 4.96 – Possibility to enable or disable the UV injection in the Konfort 700R units



- **DB geographic region** : This function will allow, according to the geographic location of the user owning the Konfort unit, to display only the vehicles belonging to his geographic area. The default geographic area is **Europe**:

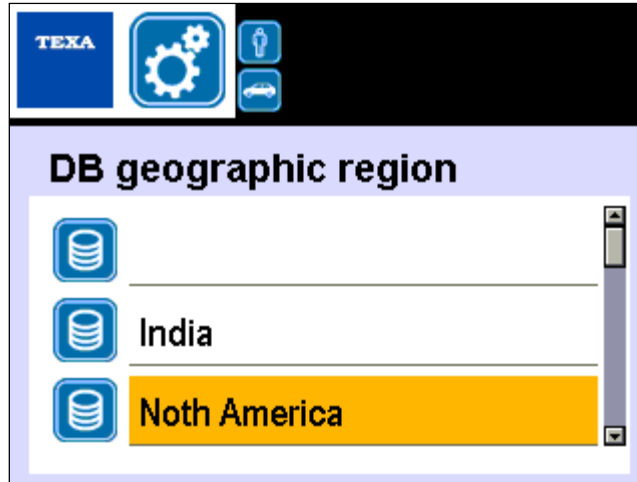


Image 4.97 – Possibility to specify the geographic area for the vehicle database displaying in the Konfort 700R units

By selecting, in particular, the first option (without description), the database will display the vehicles belonging to all the geographic areas.

- **DB priority brand** : This function will allow to select/deselect a vehicle make in order to give it the priority in the displaying in the internal database of the Konfort unit. This function is necessary in order to set up the functioning of the unit according to the requirements of some car manufacturers:

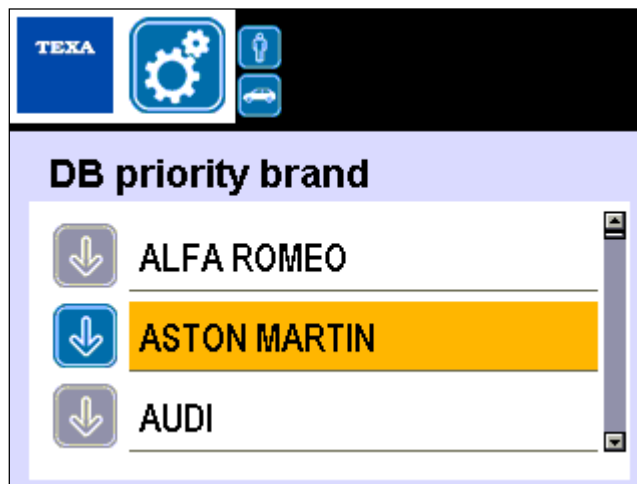


Image 4.98 – Selection of a priority brand for the vehicle database (by pressing the **ENTER** button on it the priority brand will be marked with a blue symbol)



Image 4.99 – The selected make will be displayed as first in the vehicle database. It will be enough to click on **Others** in order to display all the other vehicles

- **Vacuum mode** : This function, available only on Konfort 760R Bus units, allows to select the execution mode for the vacuum phase, by opting between two possible alternatives:

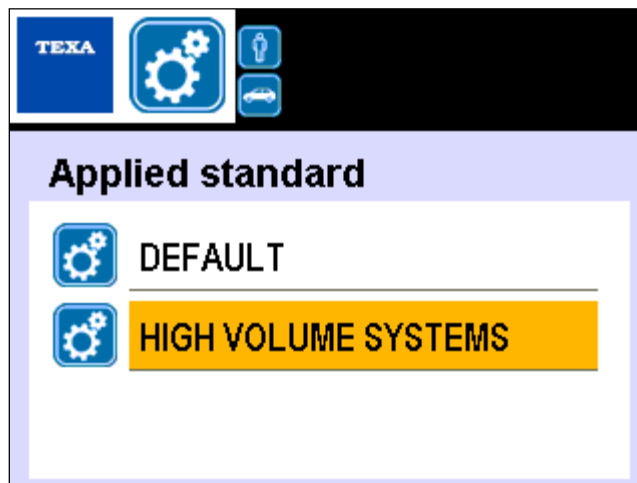


Image 4.100 – Available modes for the vacuum phase execution on Konfort 760R Bus units

- **DEFAULT** : Default selection. The Konfort unit performs the vacuum phase in the classic mode.
- **HIGH VOLUME SYSTEMS** : This mode is optimized for the high volume A/C systems. The countdown of the vacuum time starts only if the pressure will decrease under 50mBars absolute. In case, once the countdown has started, the pressure would increase over 50mBars, the countdown will be reset to the initial time value and it will remain blocked until the pressure will come again under the above mentioned threshold.

## CHAPTER 5 – ORDINARY MAINTENANCE

This chapter will describe the main operations needed for performing the ordinary maintenance on a Konfort series 700R unit.

Basically, the ordinary maintenance consists in the periodical replacement of the **main filter** and of the **oil of the vacuum pump** of the unit.

The unit will automatically inform the user about the need of these maintenance operations, by means of proper messages which will be shown on the display every time the usage limits set by the firmware of the unit will be overcome.

### 5.1. Main Filter Replacement

The main filter replacement has to be performed **when it will be automatically requested by the unit**. The Konfort unit will start to advice about the imminent need to replace the main filter once the 80% of its total consumption will be reached:



Image 5.1 – Warning message about the imminent exhaustion of the main filter

**WARNING: Once the 100% of the consumption of the main filter will be reached (i.e. 150Kg of recovered refrigerant), the unit will block and will not allow anymore to perform any other AC maintenance service.**



Image 5.2 – The main filter is completely exhausted. The unit cannot proceed with further recovery phases

In order to perform main filter replacement, it is needed to proceed as follows:

- Select the option named **Reset counters** from the **Additional functions** menu, then select the option named **Replace filter**.
- The unit will show the following message on the display:

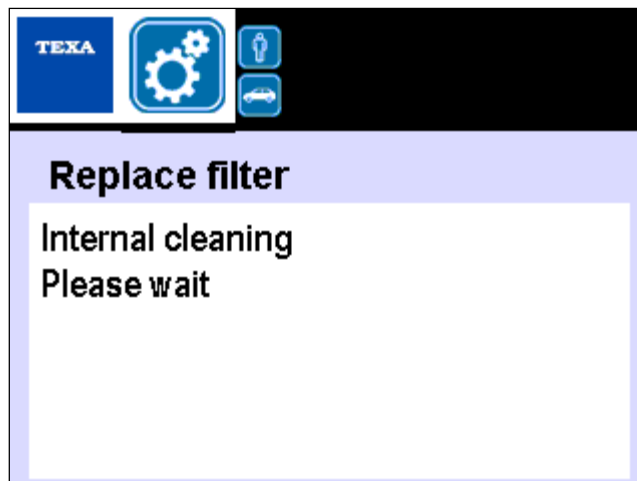


Image 5.3 – Preliminary internal cleaning in order to depressurize the internal hydraulic circuit before the filter removal

During this phase, the unit will perform an automatic depressurization of its internal hydraulic circuit, in order to allow the removal of the main filter in safety conditions.

- Once this operation will be completed, the unit will show one of the following messages:

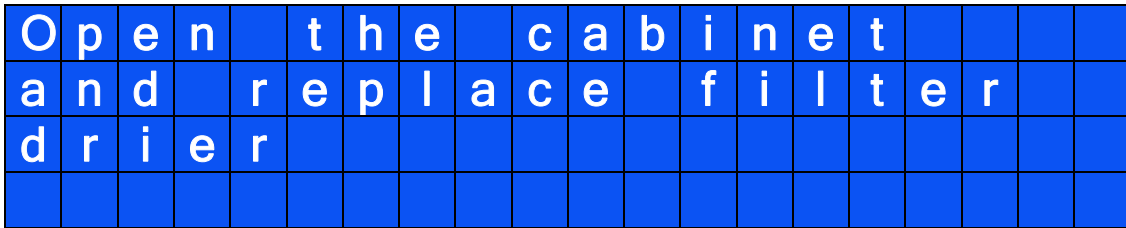


Image 5.4 – Request to open the front panel on Konfort 705R in order to replace the main filter



Image 5.5 – Request to open the back compartment in order to replace the main filter

- In case of **Konfort 705R**, remove the red front panel of the unit in order to be able to access the main filter location.
- In case of **Konfort 710R**, remove the protection cover for the main filter from the back side of the unit. Use a 3mm Allen wrench in order to remove the four screws:



Image 5.6 – Opening the back compartment on Konfort 710R

- In case of **all the other models of Konfort 700R**, open the service door located on the back of the unit, by rotating its handle clockwise:



Image 5.7 – Opening of the service door located on the back of the Konfort unit

- In case of **Konfort 705R**, the main filter is located vertically inside the unit (see Image 5.8, element **c**):

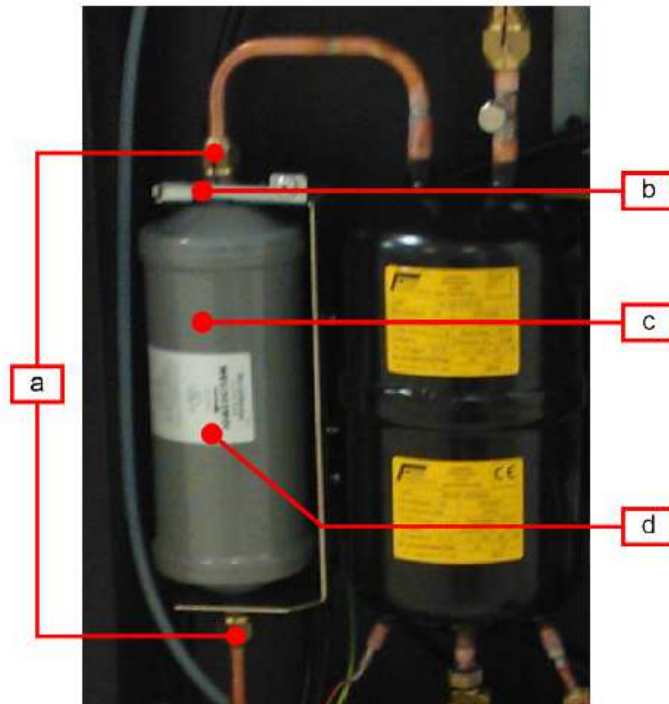


Image 5.8 – Location of the main filter on Konfort 705R

In all the other models of Konfort 700R, the main filter is located horizontally on the upper part of the recovery group (see Image 5.9, element **c**):

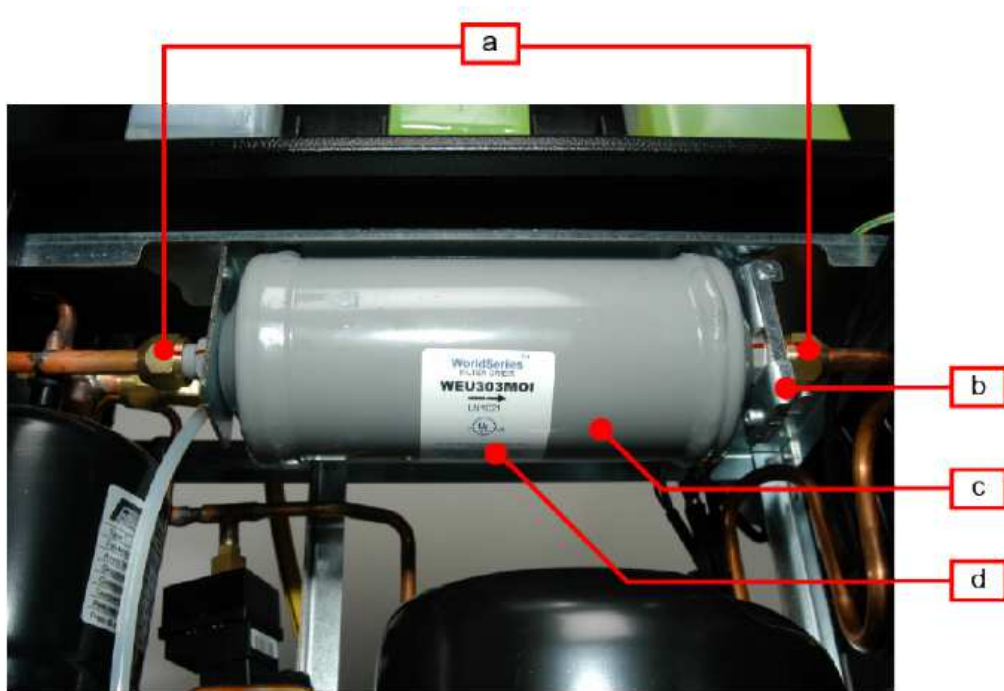


Image 5.9 – Location of the main filter on the Konfort 710R, 720R, 760R, 760R Bus, 780R BiGas units

- Unscrew, with the help of a 19-millimeters wrench, the two bolts which connect the filter to the rest of the recovery group (see Images 5.8 and 5.9, elements **a**).
- Remove the old filter.
- Place the new filter, and replace a couple of new o-rings at the two ends of the filter, before screwing the two bolts (these two o-rings will have to be preventively lubricated by means of PAG oil).

**WARNING: On Konfort 705R the new filter will have to be installed so that the arrow depicted on the label will point to the bottom** (see Image 5.8, element **d**).

**WARNING: On all the other models of Konfort 700R, the new filter will have to be installed so that the arrow depicted on the label will point to the right** (see Image 5.9, element **d**).

- Screw the two bolts of the filter.

- Press the **ENTER** button in correspondence to the message reported on Images 5.4 and 5.5. The unit will display one of the following messages:

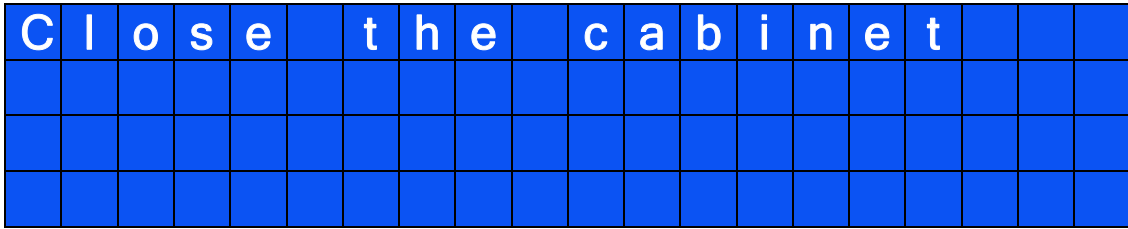


Image 5.10 – Request to close the front panel on Konfort 705R

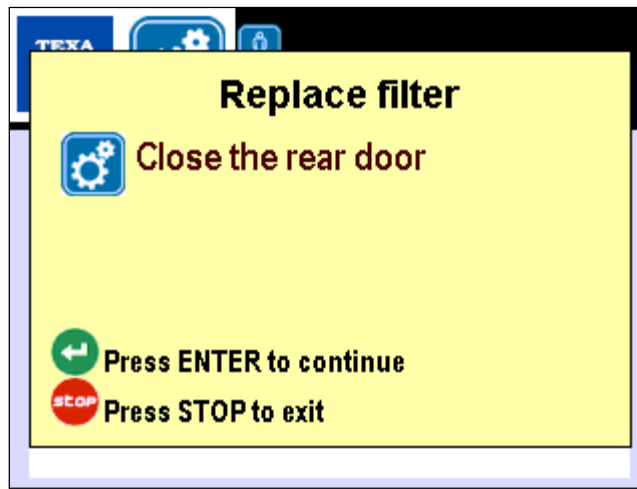


Image 5.11 – Request to close the back compartment of the unit

In case of **Konfort 705R**, re-install the red front cover of the unit.

In case of **Konfort 710R**, re-install the metal cover on the back side of the unit.

For **all the other models of Konfort 700R**, close the back door of the unit.

Then, press the **ENTER** button to continue.



- The unit will perform a small refrigerant filling into its own internal hydraulic circuit, in order to check the possible presence of leakages related to the filter replacement. In this situation, the display of the unit will show the following message:

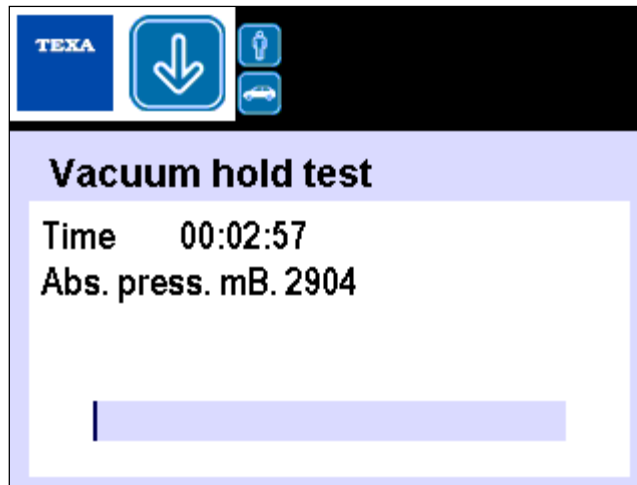


Image 5.12 – Request to close the back compartment of the unit

At the end of this leak check, the counter related to the filter replacement will be automatically reset and the maintenance will be completed.

## 5.2. Vacuum Pump Oil Replacement

The vacuum pump oil replacement has to be performed **when it will be automatically requested by the unit** (i.e., once the pump will reach **90 hours of functioning**):

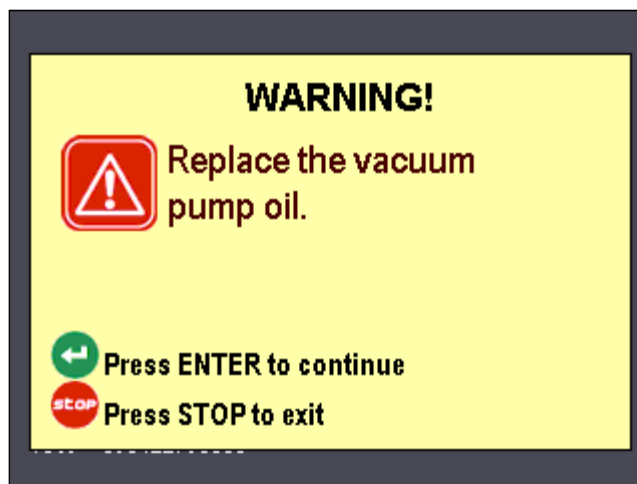


Image 5.13 – Request to replace the vacuum pump oil

It is needed to proceed as follows:

- Switch the unit off and disconnect the power supply cable from the plug of the power supply network.
- In case of **Konfort 705R**,
- Open the service door located on the back of the unit, by rotating its handle clockwise (see Image 5.1).
- Identify the vacuum pump (see Image 5.3, element **1**):

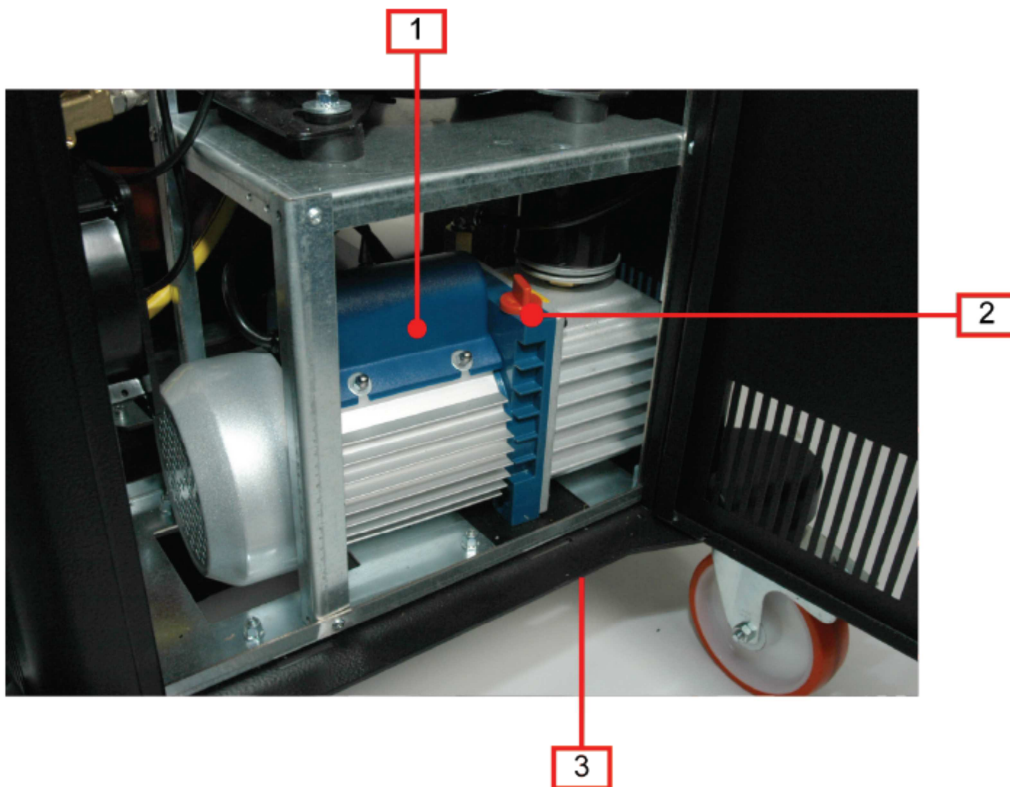


Image 5.3 – Location of the vacuum pump in the Konfort K700R units

- Place a lowered-edge container under the Konfort unit in order to easily collect the oil which will come out from the pump.
- Open the cap of the pump for the oil discharge, which is located under the unit (see Image 5.3, element **3**). Wait until all the oil will be come out from the pump.
- Once the oil will be completely come out, replace the o-ring on the cap of the pump for the oil discharge; then, replace it by paying attention not to screw it too tight, otherwise it could come out from its location.

- Unscrew the red cap for the oil charge located on the upper part of the pump (see Image 5.3, element **2**).
- Insert the new oil into the pump.

**WARNING: The correct oil level inside the pump corresponds approximately to the middle of the window for the oil level check on the pump. The total oil capacity which has to be inserted is approximately equal to 370ml.**

- Screw again the red cap for the oil charge.
- Restart the Konfort unit.
- Access the **Reset counters** function from the **Additional functions** menu of the unit, then proceed with the erase of the **Pump Working Time** counter.

## CHAPTER 6 – SOFTWARE UPDATE

Unlike the TEXA old-generation air conditioning equipments, in the new **Konfort 700R** units all the software updates (firmware, vehicles database and language pack) will be performed **uniquely by means of the SD card.**

This new approach will make the update process easier and more immediate for the operator.

The latest version of the various software update packages for Konfort 700R units are available into the Service Code website under the section:

**Download → Software Release → Air Conditioning → Konfort Series 700R**

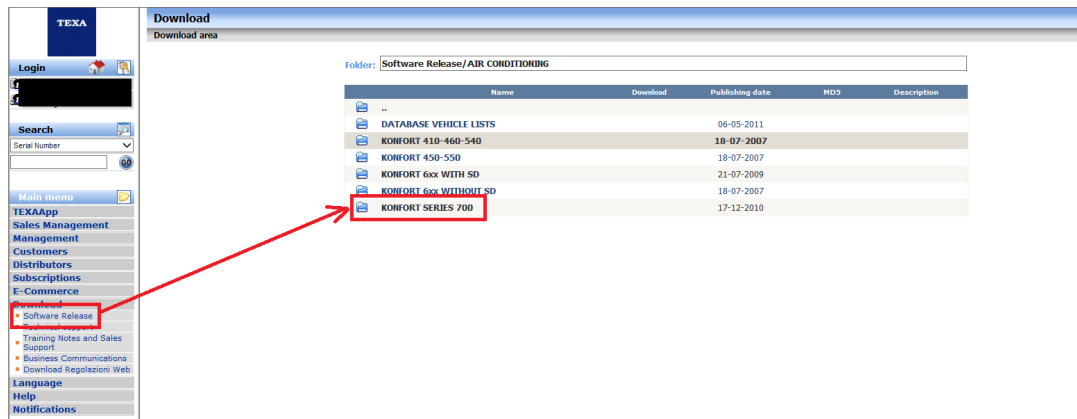


Image 6.1 – The Service Code section from which the software resources for Konfort 700R units can be downloaded

Inside the section named **KONFORT SERIES 700** three subsections are available:

- **Firmware:** from this folder the zip archive containing the latest firmware release for the Konfort 700R series units can be downloaded. This archive will allow to carry out the manual update of the Konfort units.
- **Database:** from this folder the zip archive containing the database version for which the user owning a Konfort 700R series unit has right for can be downloaded.
- **Konfort 700 Updater:** from this folder the PC setup package for the *Konfort 700 Updater* program can be downloaded. The program allows to automatically download from the Internet and install the software packages for the Konfort 700R series units.

## 6.1 Manual update of the software packages in the SD card

A first approach for the update consists in the manual extractions of the packages which have been downloaded from the **Firmware** and **Database** sections of the Service Code website directly to the SD card of the Konfort unit.

Each desired software resource will be downloaded in the form of a **zip** archive:



Image 6.2 – The downloaded zip archive containing the software update

In order to proceed with the update, the operator has first of all to switch off the unit, to remove the SD card from the equipment's reader:



Image 6.3 – SD card removal from the Konfort 700R

insert it into the TEXA SD card reader (provided together with the Konfort unit) and to connect the card reader to the PC:

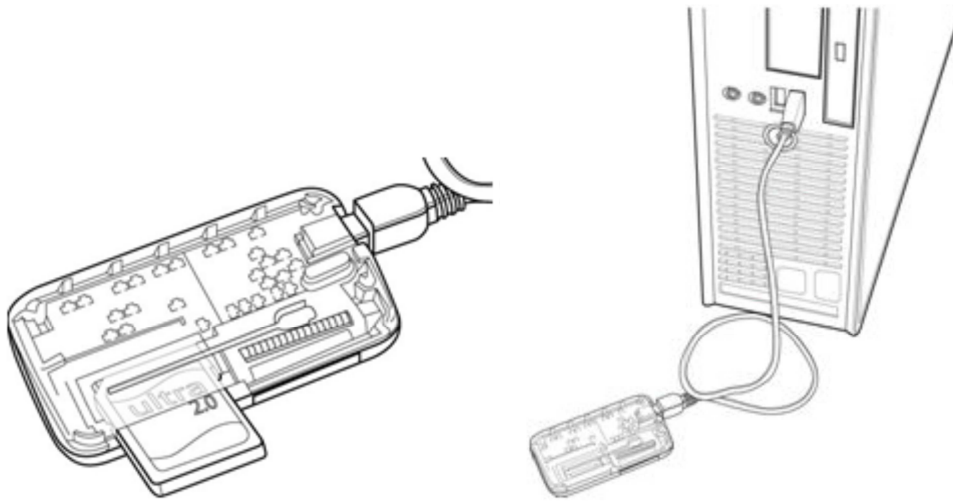


Image 6.4 – SD card insertion into TEXA card reader and connection of the reader to the PC

At this point, in order to start the upgrade it will be enough to:

- open the content of the SD card from the PC;
- open the zip archive and select all the files and folders inside it;
- copy the content of the zip file to the SD card, **by overwriting the existing files inside the SD card**:

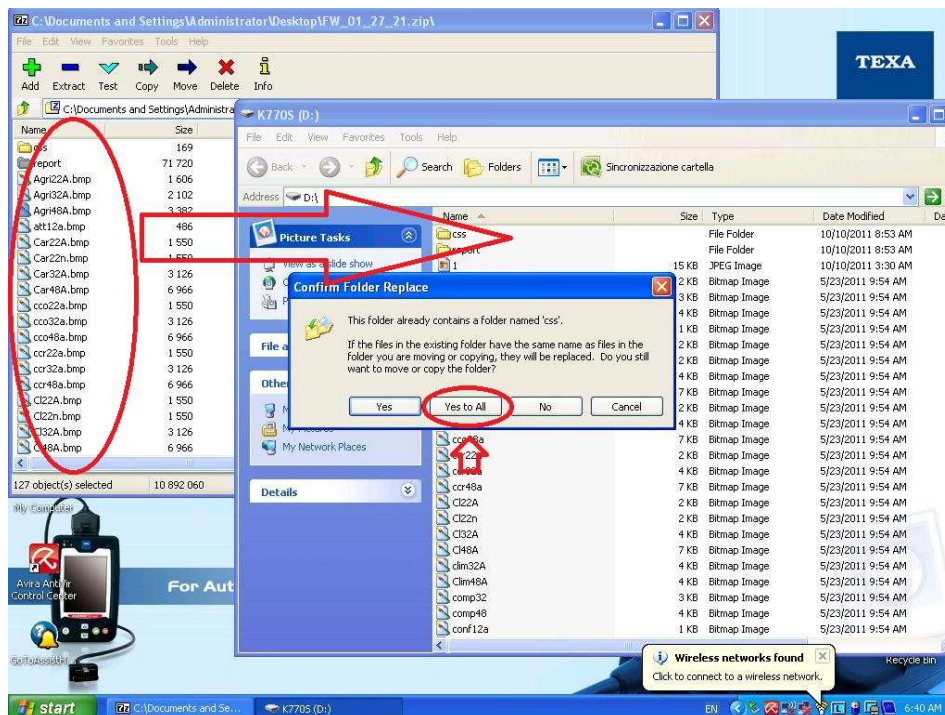


Image 6.5 – Starting the update process of the SD card

Once the copy of the files will be completed, remove the SD card from the PC and re-insert it into the card reader of the Konfort 700R unit.

Once the Konfort unit will be restarted, it automatically will start up the software update process.

In case the firmware update would have been performed, the **green REC led** located on the upper part of the Konfort unit **will flash** irregularly:



Image 6.6 – Flashing green **REC** led during the firmware update of the unit

The update process will last few seconds; once finished, the unit will normally start up, by showing the initial page of its menu.

## 6.2 Automatic update by means of Konfort 700 Updater

As an alternative to the manual procedure described in the previous paragraph, the software of a Konfort 700R series unit can be updated by using the *Konfort 700 Updater* program.

The installation package of this program can be downloaded from the **Konfort 700 Updater** folder of the Service Code website (as previously described).

As an alternative, the program can also be installed from any end user: actually, the same installation package is also available inside the CD labelled "**KONFORT SERIE 700R - MANUAL**", available inside the package of the A/C machine:

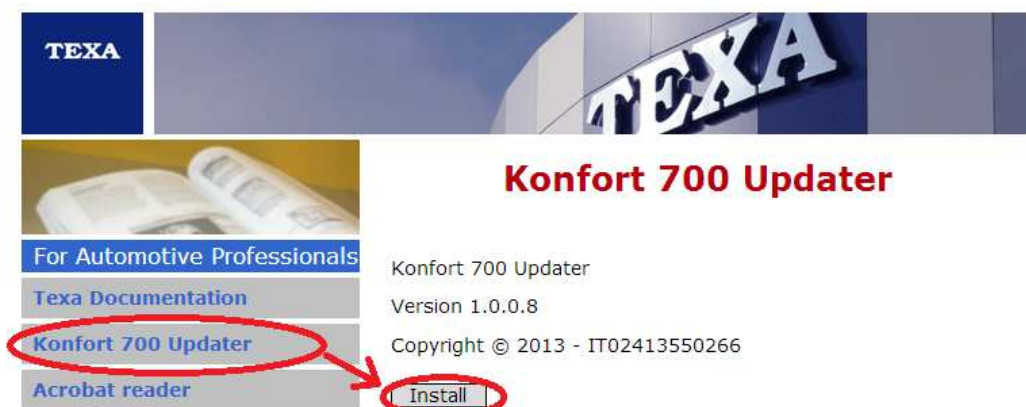


Image 6.7 – Installation procedure of the Konfort 700 Updater program from the CD "**KONFORT SERIE 700R - MANUALS**" of the Konfort package

Once the program will be installed, it will be enough to click on the **Konfort 700 Updater** icon on the desktop of the PC to start it up:

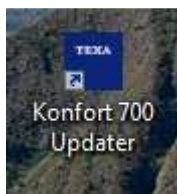


Image 6.8 – Double click on the Konfort 700 Updater icon located on the desktop in order to start the update program



The following screenshot will be displayed:

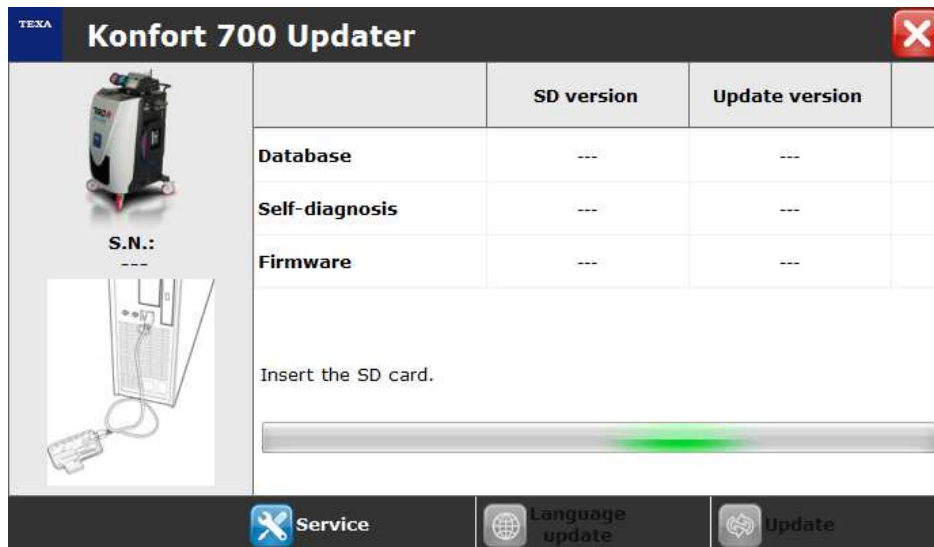


Image 6.9 – Main screenshot of the **Konfort 700 Updater** program

In order to proceed with the update, the operator has first of all to switch off the unit, to remove the SD card from the equipment's reader:



Image 6.10 – SD card removal from the Konfort 700R

insert it into the TEXA SD card reader (provided together with the Konfort unit) and to connect the card reader to the PC:

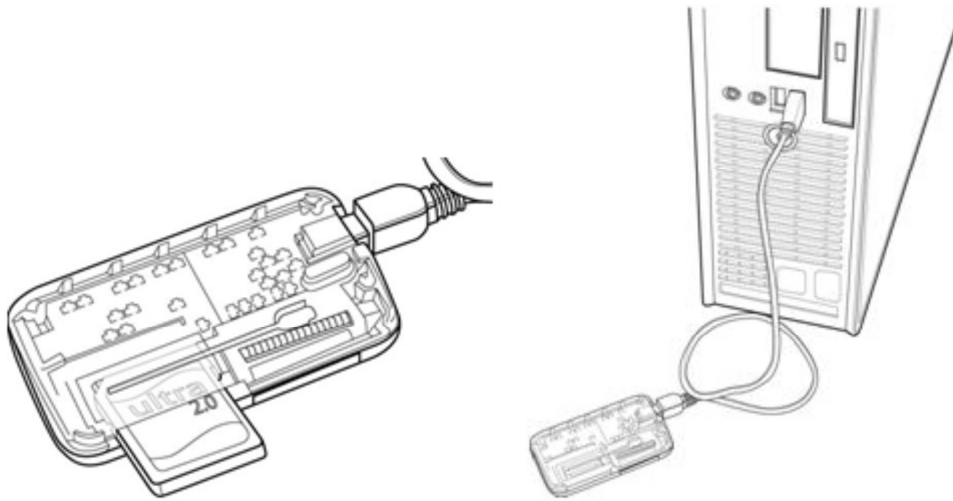


Image 6.11 - SD card insertion into TEXA card reader and connection of the reader to the PC

When the SD card will be detected, the program will automatically ask to specify the serial number of the Konfort unit:

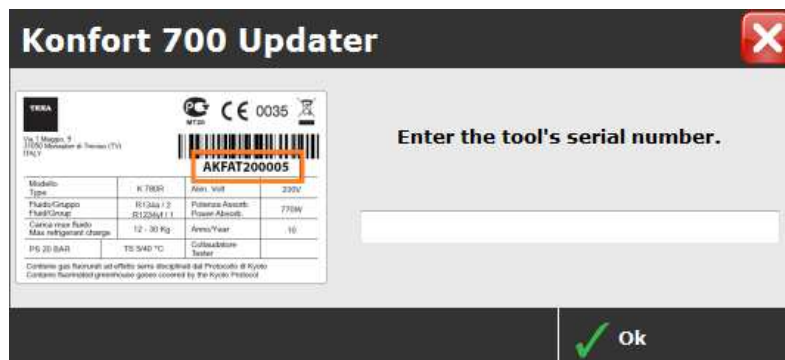


Image 6.12 - Request to enter the serial number of the Konfort unit

Edit the serial number of the Konfort unit on which the update is going to be performed, then press the **OK** button to confirm.

At this point, the program will search for the possible updates available for the specific Konfort unit with the specified serial number. In case an update would be available for the specified unit, the following screenshot will be displayed:



Image 6.13 – Notification of the availability of new software updates for the Konfort unit with the specified serial number

It will be enough to press the **UPDATE** button to start the update of the SD card.

Once the update will be completed, the following confirmation message will be displayed:

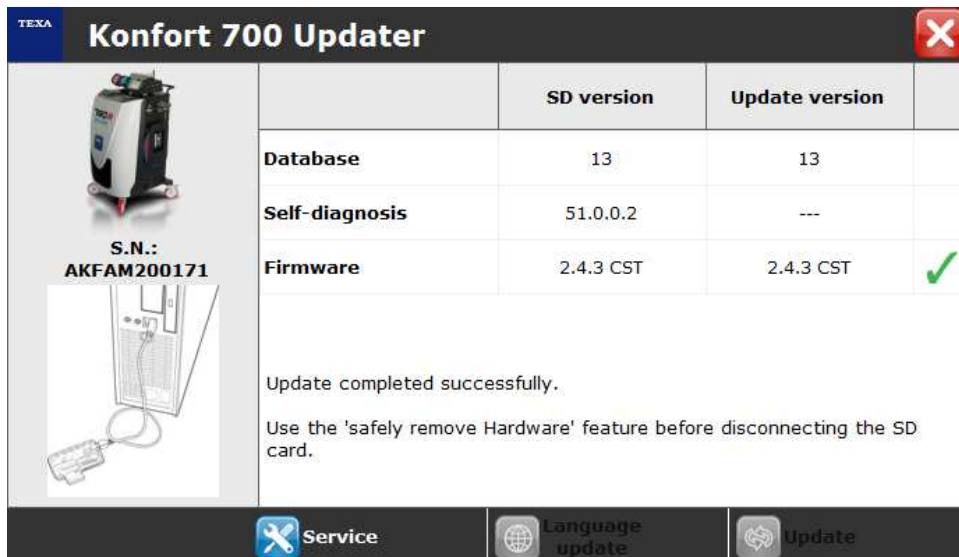


Image 6.14 – Confirmation of the completion of the update.  
It is possible to remove the SD card from the PC

At this point, it will be enough to close the program, remove the SD card from the PC and re-insert it into the card reader of the Konfort 700R unit.

Once the Konfort unit will be restarted, it automatically will start up the software update process.

In case the firmware update would have been performed, the **green REC led** located on the upper part of the Konfort unit **will flash** irregularly:



Image 6.15 – Flashing green **REC** led during the firmware update of the unit

The update process will last few seconds; once finished, the unit will normally start up, by showing the initial page of its menu.

## CHAPTER 7 – TROUBLE SHOOTING

### 7.1 Introduction

The general working principle of any Konfort equipment is essentially based on the information (physical quantities) which come from the sensors, the load cells and the pressure transducers.

The most efficient method for diagnosing any potential failure of the equipment is determined by a good knowledge of the tool and by a careful analysis of the different phases of its operation: these two prerequisites are fundamental in order to be able to isolate the possible cause of the problem.

For example, if the equipment is showing a problem related to an inaccurate measurement of the quantity of refrigerant during the charge phase, the replacement of the pressure transducer is never recommended; conversely, if the Konfort equipment never ends the recovery phase, the carry out of a calibration of the main load cell is not strictly necessary.

In order to determine whether, during a certain phase, the sensors involved in it are faulty or inaccurate, the correctness of their measured quantities should be checked, by comparing these quantities to appropriate sample quantities, which must be known and which can be taken as a reference.

In this regard, a useful aid is provided by the equipment's **Service** menu, in particular by the **Power outputs** function.

In the next paragraphs, some of the most common problems, which might be encountered during the maintenance of Konfort 700R equipments, will be listed. For each individual critical situation, all the steps needed for the quick identification of the cause of the problem and for its correct solution will be described.

## 7.2 The equipment does not switch on

- If the equipment is connected to an extension cable, remove it.
- Check the voltage of the network power supply plug ( $\sim 230V - 50Hz$ ) of the place where the equipment is operating.
- Open the cap of the network filter (use a 2-millimeters Allen wrench, press the two plastic tongues above and below the cap and pull it out) and, with the switch of the unit set in "**ON**" position, check the voltage ( $\sim 230V - 50Hz$ ) by placing the probes of a multimeter on the blue and brown wires:



Image 7.1 – Removal of the cap of the network filter on Konfort 720R, 760R, 760R Bus and 780R BiGas

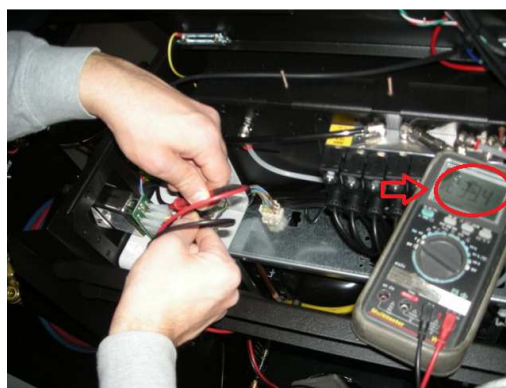


Image 7.2 – Check the voltage ( $\sim 230V - 50Hz$ ) between the blue and the brown wires

- Ensure that the main fuses, located inside the cover above the power supply switch, will not be interrupted (lever slightly with the help of a screwdriver to remove the cover):

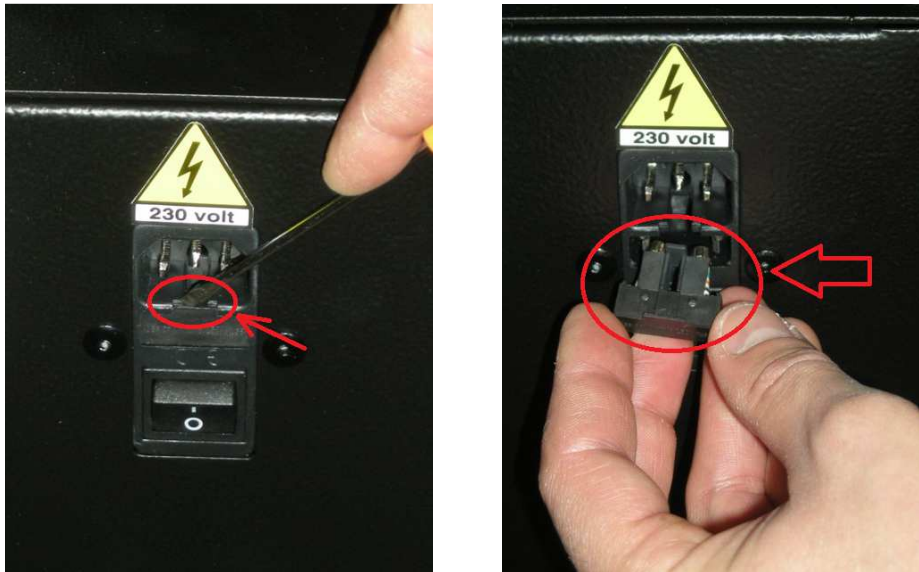


Image 7.3 – Removal of the cover containing the two main fuses of Konfort 700R equipments

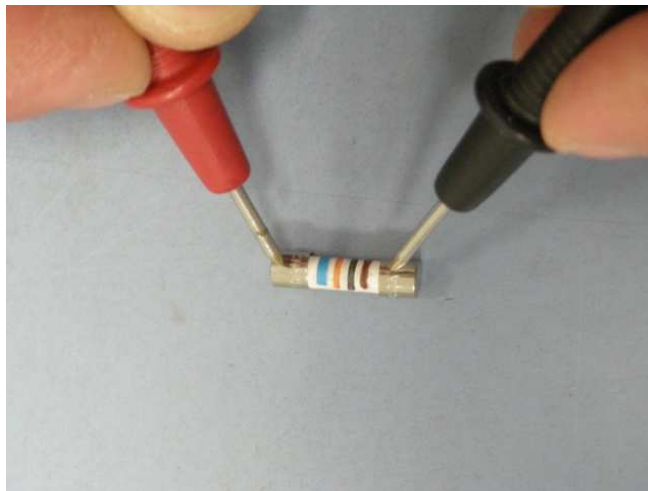


Image 7.4 – With the help of a multimeter in diode test mode, check the continuity of each of the two fuses

In the case that one of the two fuses would be interrupted, replace it with a new one with proper value (250V - T10A).

- Disconnect the cable coming from the **J2** connector of the ACE Micro board:

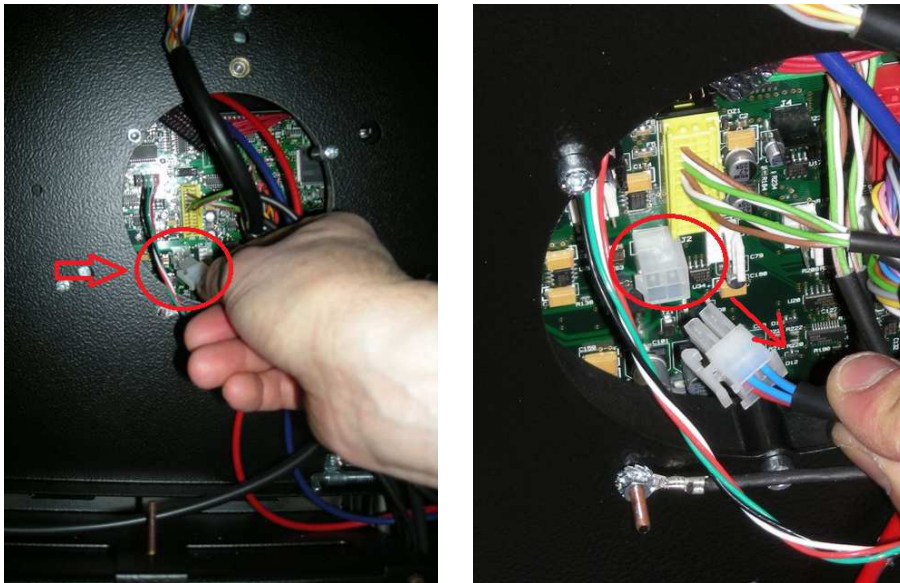


Image 7.5 – Removal of the cable coming from the **J2** connector of the ACE Micro board of a Konfort 700R

and check the correctness of the AC voltage first between the two red wires (about 14V AC) and then between the two blue wires (about 15,5 V AC) of the cable:

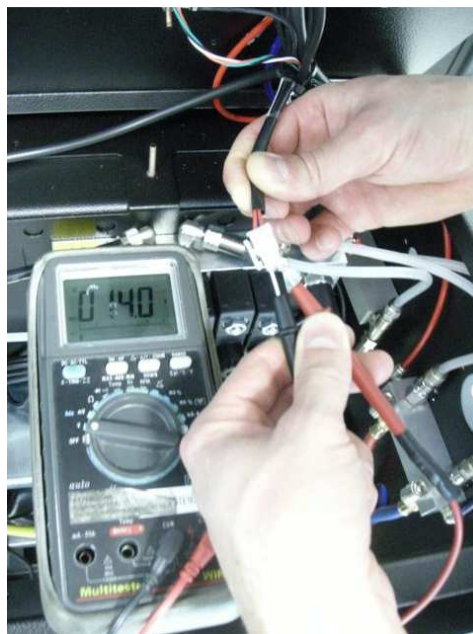


Image 7.6 – Between the two red wires of the cable there must be an alternate voltage of about **14V**





Image 7.7 - Between the two blue wires of the cable there must be an alternate voltage of about **15,5V**

In case, try to check the continuity of the cable up to the transformer. In absence of continuity, replace the entire cable.

Instead, if the cable would be provided with continuity, replace the transformer of the Konfort unit.

### 7.3 The display of the Konfort unit does not visualize correctly

- If the equipment is connected to an extension cable, remove it.
- If, while powering the unit up, no “beeps” are emitted and the display shows one of the following situations:



Image 7.8 - Request for SD insertion and no “beep” while starting up a Konfort 705R, 710R or 720R unit



Image 7.9 – Request for SD insertion and no “beep” while starting up a Konfort 760R, 760R Bus or 780R BiGas unit

then it could be that the SD card would not be properly inserted into the slot of the equipment. Try to turn the unit off, to connect the SD card and to restart the equipment.

The same behavior could also be due to the lack of software inside the SD card. In this case, try to reload the software by using the procedure described in Chapter 6.

- If, while powering up a Konfort 720R unit, a “beeps” is emitted, but the backlight of the display stays off:



Image 7.10 - Backlight off accompanied by a “beep” while starting up a Konfort 720R

it could be that the pin **J1** on the ACE Micro board would be mistakenly short-circuited by a jumper. In this case, remove the jumper from the pin:

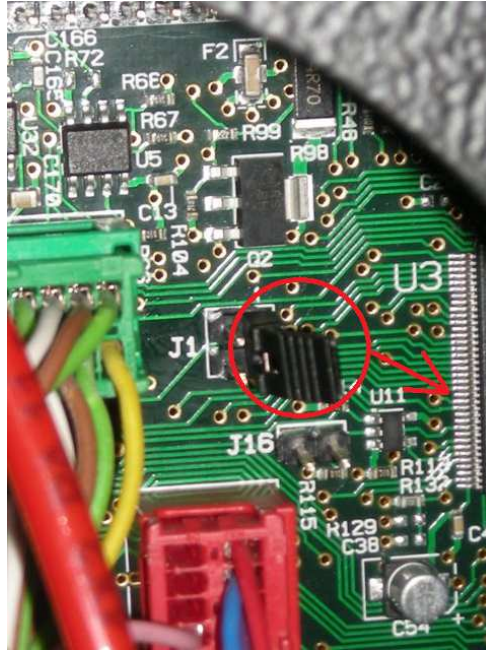


Image 7.11 – Removal of the jumper from the **J1** pin of the ACE Micro board on Konfort 720R (if present)

**NOTE:** In the **Konfort 705R** and **Konfort 710R** models, on which the structure of the ACE Micro board has been simplified for price reasons, the **J1** pin is not available.

- If, while switching on a Konfort 760R, 760R Bus or 780R BiGas unit, a “beep” is emitted, but the display remains black:



Image 7.12 – Black display accompanied by a “beep” while starting up a Konfort 760R, 760R Bus or 780R BiGas

it could be that the pin **J1** on the ACE Micro board would **not** be short-circuited by a jumper.

In this case, insert the jumper on pin **J1**:

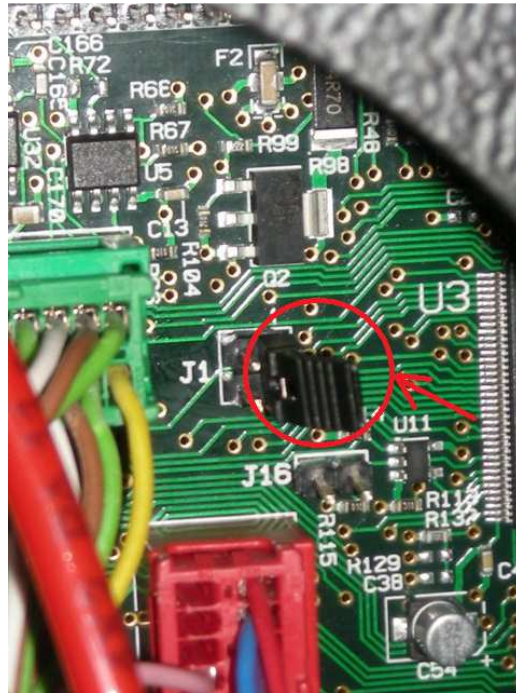


Image 7.13 – Insertion of the jumper on pin **J1** of the ACE Micro board of a Konfort 760R, 760R Bus or 780R BiGas (if not present)

- In case, on a Konfort 705R, 710R or 720R, the display would be completely white, just with the backlight switched on:

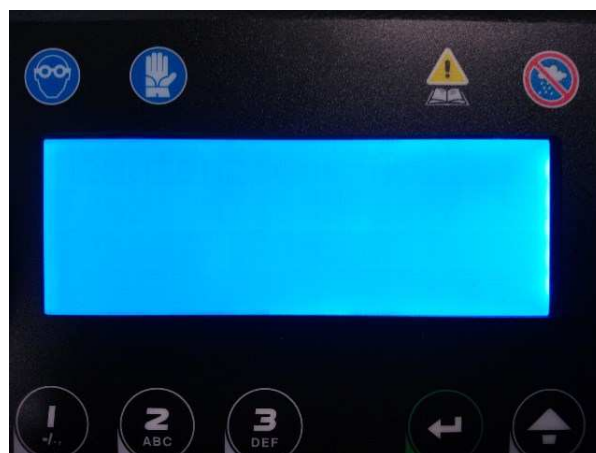


Image 7.14 – Display completely white (only backlight) on Konfort 705R, 710R or 720R

try to adjust again the backlight of the display, by keeping the orange **INFO** button pressed and by adjusting the brightness with the **UP** and **DOWN** buttons.

- In case, on a Konfort 760R, 760R Bus or 780R BiGas, the display would result in to be not enough bright:



Image 7.15 – Display not enough bright (low backlight)  
on Konfort 760R, 760R Bus or 780R BiGas

try to adjust again the backlight of the display, by keeping the orange **INFO** button pressed and by adjusting the brightness with the **UP** and **DOWN** buttons.

- If the display would show meaningless inscriptions or question marks, update the software package on the SD card, as described in Chapter 6. In case, replace the SD card.

## 7.4 The unit does not recover refrigerant

### A. The compressor starts

- Check that the service hoses will be properly connected to the A/C system of the vehicle and that the two fittings will be open.
- Check that both the **HP** and **LP** valves, located on the upper or side panel of the equipment, will be opened (only in Konfort 705R, 710R and 720R).
- Ensure that there would be pressure inside the A/C system of the vehicle (if not, there could not be any refrigerant to be recovered from the system itself).
- Check that, during the recovery phase, there will be correspondence between the value measured by the pressure sensor (pressure value shown on the display) and the one reported by the gauges (especially by the LP gauge, which can better make the user appreciate the low values of relative pressure). If the difference of the two values would

be large ( $\approx 500$  mBars), proceed with the calibration of the main pressure sensor, as described in paragraphs 4.4.4 and 4.5.6.

- Ensure that the dryer filter will not be obstructed. If necessary, replace it.
- Ensure that the mechanic filter will not be obstructed. If necessary, replace it.
- Ensure that the **HP** and **LP** solenoid valves (on 760R, 760R Bus and 780R BiGas), the **EVREC** solenoid valve (on all models) and the **EVREF1** or **EVREF2** solenoid valves (only on 780R BiGas) will be active during the recovery phase. If necessary, check the wiring of each solenoid valve towards the ACE Power board.
- Ensure that no other valves than those mentioned on the previous point, will be active.
- Check the suction capacity of the compressor: in order to do that, remove the small transparent tube which connects the HP and LP hoses to the mechanic filter:



Image 7.16 – Removal of the small tube that leads the refrigerant from the HP/LP hoses to the mechanic filter



Image 7.17 - Small silicone tube coming from the HP/LP hoses disconnected from the mechanic filter

Connect that pipe to the inlet of a vacuum gauge:



Image 7.18 - Connection of the silicone tube coming from the HP/LP hoses to the inlet of a vacuum gauge

then, connect a new segment of silicone pipe between the inlet of the mechanic filter and the outlet of the vacuum gauge:

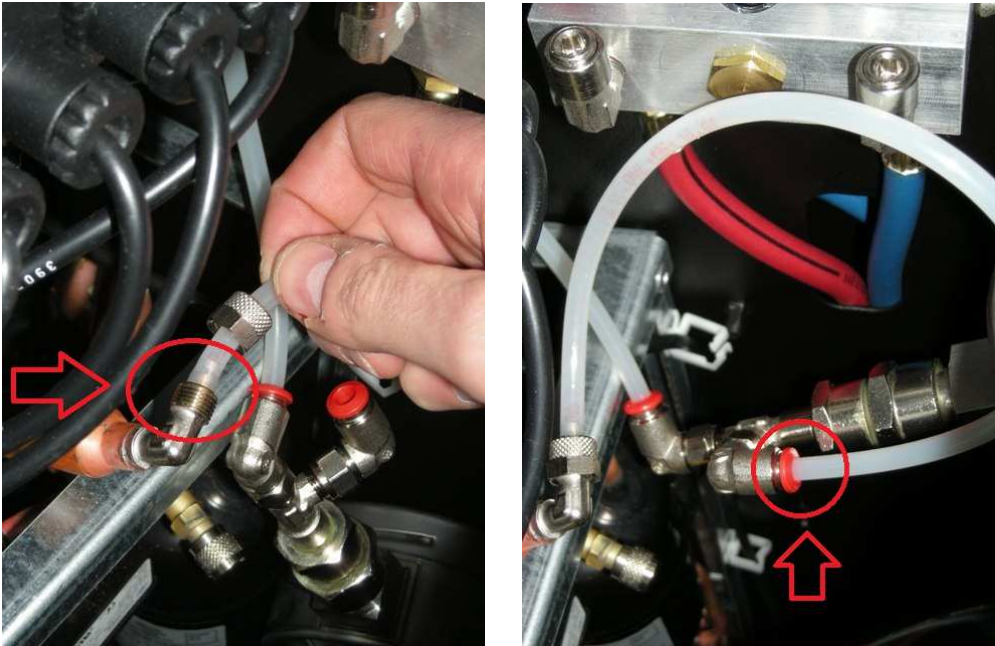


Image 7.19 – Connection of a segment of silicone tube between the inlet of the mechanic filter (left picture) and the outlet of the vacuum gauge (right picture)

At this point, from the **Customised service** function of the equipment, select a single recovery phase. Then check that the depression measured by the pointer of the vacuum gauge will be appropriate:



Image 7.20 – Depression level showing that the suction capability is appropriate



In case the suction power would not be enough:



Image 7.21 – Very low depression level showing a possible suction problem

try first to replace the mechanic filter. If the insufficient suction would persist, proceed with the replacement of the entire recovery group of the unit (or the only compressor on Konfort 705R).

B. After few minutes, the message "INTERNAL TANK PRESSURE TOO HIGH" appears

- Check that the **FR1** solenoid valve (also the **FR2** solenoid valve on Konfort 780R BiGas), for the automatic discharge of non-condensable gases from the tank, will work properly (this solenoid valve can be manually activated from the **Power outputs** function. This control is available on the Konfort 720R, 760R, 760R Bus and 780R BiGas models).
- Pull the manual valve with the ring located on the refrigerant tank of the unit for about 15-20 seconds in order to speed-up the non-condensable gases discharge.

- Check that the two inlet valves to the tank will be open (both the one on the yellow hose coming from the condenser (**1**), and the one over the tank (**2**), see Image 7.22; the latter can be opened with the help of a 7-mm wrench):

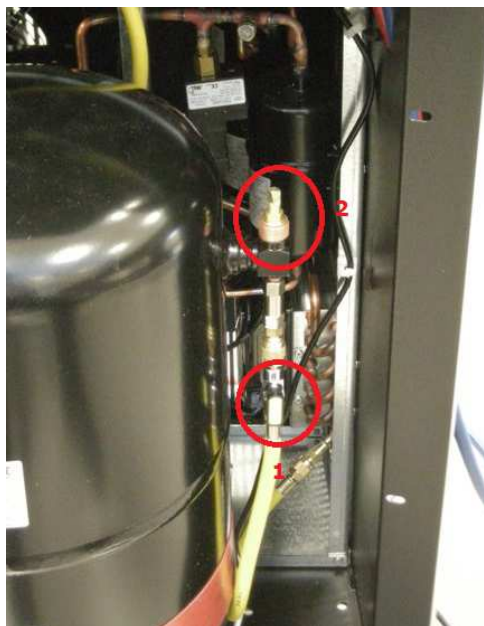


Image 7.22 – Check of the opening of the inlet valves to the tank

- Check, with the help of a multimeter, the continuity of pressure switch connected to **SP2** pins of the ACE Power board (see Appendix 2). In normal conditions, it should be closed. In case the pressure switch would result in open, proceed with its replacement.
- Ensure that all conductors of the cable **J1** of the ACE Power board (see Appendix 2) will be fully inserted into the corresponding connector. In case that the conductors insertion would be correct, proceed with the replacement of the complete ACE Power board.

### C. The compressor does not start

- Replace the capacitor and the starter of the compressor (cod. **4800022** and cod. **4800026**).
- Check, with the help of a multimeter, the continuity of thermal protection (overload, cod. **4800027**) inside the electrical connection box of the compressor. If the problem would persist, replace the complete recovery group (or the only compressor on Konfort 705R).
- Check the continuity of fuses **F1** and **F3** located on the ACE Power board (see Appendix 2). If they would be interrupted, replace them with two new ones with appropriate features (250V – T10A). If the problem would persist, replace the complete ACE Power board.
- Check that the plug of the power supply network will provide a correct voltage (~ 230V – 50Hz).
- Check that an alternate voltage of 230V will be present at input of the compressor. Check this value between pin **CO** and its corresponding neutral pin **N** on the ACE Power board (see Appendix 2).

## 7.5 The unit does not perform the vacuum

### A. The vacuum pump does not start

- Try to manually start the vacuum pump from the **Power outputs** function. If it would not start, check the presence of the power supply network voltage (~ 230V – 50Hz) between the pin **PO** and the neutral pin **N** of the ACE Power board (see Appendix 2). If the voltage would not be correct, replace the ACE Power board.
- If the pump starts for about 3 minutes and then stops, check the continuity of the thermal relay located into the box above the pump (which contains the electrical part of the pump itself). If the problem would persist, replace the thermal relay.
- Remove the power supply cable of the equipment from the power supply network plug, remove the protective cover of the fan of the vacuum pump and try to rotate the shaft with the hand, in order to check that it will be able to rotate freely. In case it would be blocked, proceed with the replacement of the vacuum pump.

B. The vacuum pump starts

- In case of Konfort 705R, 710R or 720R units, ensure that the **HP** and **LP** valves located on the side or on the top panel of the equipment will be open.
- In the of Konfort 760R, 760R Bus and 780R BiGas units, try to manually start the **HP** and **LP** solenoid valves from the **Power outputs** menu, in order to ensure that they will be able to open/close properly.
- Ensure that, during the vacuum phase, only the **EVPO1** and **EVPO2** solenoid valves will be open.

C. During the vacuum phase, the message "INSUFFICIENT VACUUM" appears

**WARNING:** Before performing any operation, ensure that the pressure value on the gauges of the unit will be zero.

- Check, from the **Power outputs** menu, the room pressure measure (about 1000 mBars) of the main pressure sensor. In order to check this, remove the rapid connectors from the **HP** and **LP** service hoses; then, in case of Konfort 705R, 710R or 720R units, open the two **HP** and **LP** valves on the side or upper panel of the unit:

S	E	N	S	O	R	S	(	M	E	A	S	U	R	E	)			
P	R					9	9	8		B	L			1	0	7	3	2
D	O							0		I	O							0
U	V							0		H	P						9	9

Image 7.23 – Correct room pressure value (marked in red)  
from the **Power outputs** menu of a Konfort 705R, 710R or 720R unit

On the other hand, in case of Konfort 760R, 760R Bus or 780R BiGas units, activate the **HP** and **LP** solenoid valves from the **Power outputs** menu, in order to open the two high and low pressure branches to the air flow:

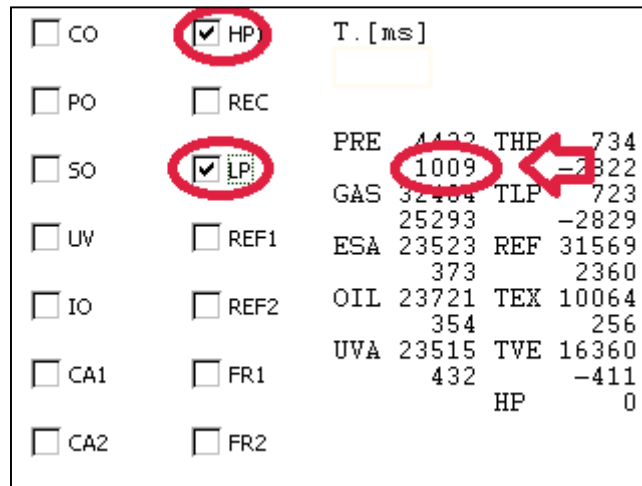


Image 7.24 – Correct room pressure value (marked in red) from the **Power outputs** menu of Konfort 760R, 760R Bus and 780R BiGas units

In case the measured pressure value would be different from the one of the room pressure, proceed with the calibration of the main pressure sensor.

If, despite the above calibration, the room pressure value would be incorrect and the punctual values (also available from the **Power outputs** menu) would differ much from the range **4300 – 5000**, proceed with the replacement of the main pressure sensor.

- Plug the rapid fittings to the brass connectors located on the side of the equipment, enter the **AC maintenance** menu, select the **Customised service** option, then select a single vacuum phase of 5 minutes, followed by a leak test of 3 minutes. In case that this vacuum phase would not detect any leak inside the equipment, check the A/C system of the vehicle. Otherwise, check the airtight of the **HP** and **LP** rapid fittings; if necessary, replace the o-rings inside the fittings, by using the appropriate removal kit (cod. **1003030**).
- In the case of Konfort 705R, 710R or 720R units, close the two **HP** and **LP** valves of the equipment and perform a single vacuum phase, as described at the previous point. If the message "INSUFFICIENT VACUUM" would occur, replace the two **HP** and **LP** valves.
- Check that the rubbers of the actuators of **EVPO1** and **EVPO2** solenoid valves will not be deformed or deteriorated. In case, replace the actuators of these electro-valves.

- Close the outlet valve of the tank:



Image 7.25 – Closure of the outlet valve of the tank

connect the **HP** and **LP** fittings to the brass connectors located on the side of the equipment, then start a single vacuum phase from the **Customised service** menu. In case that the vacuum would not be stable, replace the actuator of the **EVCA** charge solenoid valve.

- If the “INSUFFICIENT VACUUM” message appears during the oil injection and/or during injection of the UV additive, check the silicone tubes which connect the bottles group to the manifold:

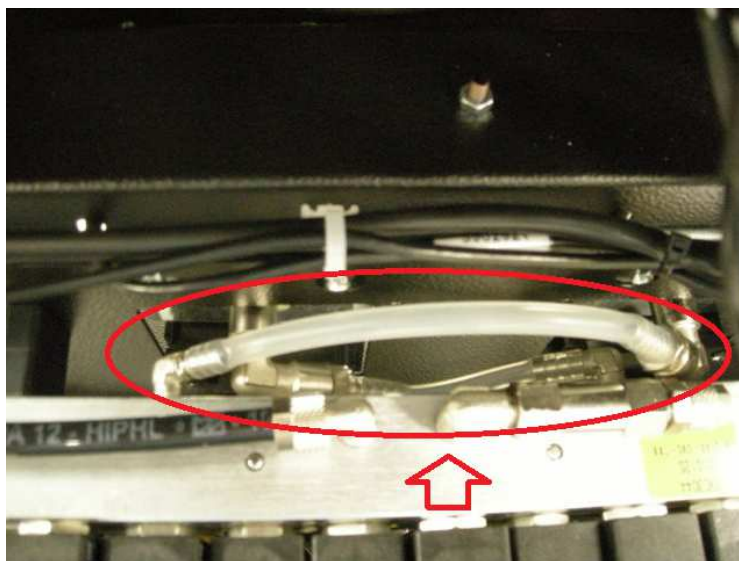


Image 7.26 – Silicone tubes which connect the oil and UV injection bottles to the manifold

- In case of Konfort 705R, 710R or 720R units, check that the liquid outlet of the oil and UV injection bottles will be present and that it will not suck air.
- In case of Konfort 760R, 760R Bus and 780R BiGas units, ensure that the inner membrane of the oil and UV injection bottles will not be damaged or punctured:



Image 7.27 – Check of the integrity of the inner membrane of the oil and UV injection bottles

## 7.6 The unit does not inject oil

- Check that the oil quantity inside the bottle will be sufficient.
- In case of Konfort 705R, 710R or 720R units, check that the liquid outlet of the bottle will be present and that it will be immersed into the oil.
- In case of Konfort 705R, 710R or 720R units, ensure that the liquid outlet of the oil bottle will not be obstructed.

- In case of Konfort 760R, 760R Bus and 780R BiGas units, check the airtight of the o-ring into the upper cap:



Image 7.28 – Check of the o-ring inside the upper cap of the injection oil bottle

and of the one located on the inner container with deformable membrane:



Image 7.29 – Check of the o-ring located on the upper part of the inner container with membrane

In case, replace the two o-rings above mentioned.

- In case of Konfort 760R, 760R Bus and 780R BiGas units, ensure that the black cap on the top of the bottle (removable in case of need to refill the bottle itself) will be intact and hermetic. In case, proceed with the replacement of the cap.
- In case of Konfort 760R, 760R Bus and 780R BiGas units, check, from the **Power outputs** menu, the linearity of the oil injection load cell. If necessary, proceed with the calibration of the load cell. In case that the calibration will not be successful, replace the load cell.



- In case of Konfort 760R, 760R Bus and 780R BiGas units, ensure that the quick connector of the oil bottle will not be obstructed:



Image 7.30 – Check that the quick connector on the oil injection bottle will not be obstructed

In case that the connector would be obstructed, replace the entire top part of the bottle.

- Check the path of the silicone tube which connects the bottle to the manifold of the equipment (see Image 7.26), and verify its integrity.
- Ensure that the **EVIO** solenoid valve, responsible of the oil injection, will work properly, by manually activating it from the **Power outputs** menu.
- In case of Konfort 705R, 710R or 720R units, ensure that the oil bottle will be fully connected. If necessary, replace the quick connector of the bottle itself.

## 7.7 The unit does not inject UV additive

- Check that the UV quantity inside the bottle will be sufficient.
- In case of Konfort 705R, 710R or 720R units, check that the liquid outlet of the bottle will be present and that it will be immersed into the UV additive.
- In case of Konfort 705R, 710R or 720R units, ensure that the liquid outlet of the UV bottle will not be obstructed.

- In case of Konfort 760R, 760R Bus and 780R BiGas units, check the airtight of the o-ring into the upper cap (see Image 7.28) and of the one located on the inner container with deformable membrane (see Image 7.29). In case, replace the two o-rings.
- In case of Konfort 760R, 760R Bus and 780R BiGas units, ensure that the black cap on the top of the bottle (removable in case of need to refill the bottle itself) will be intact and hermetic. In case, proceed with the replacement of the cap.
- In case of Konfort 760R, 760R Bus and 780R BiGas units, check, from the **Power outputs** menu, the linearity of the UV injection load cell. If necessary, proceed with the calibration of the load cell. In case that the calibration will not be successful, replace the load cell.
- In case of Konfort 760R, 760R Bus and 780R BiGas units, ensure that the quick connector of the oil bottle will not be obstructed (refer to Image 7.30). In case that the connector would be obstructed, replace the entire top part of the bottle.
- Check the path of the silicone tube which connects the bottle to the manifold of the equipment (see Image 7.26), and verify its integrity.
- Ensure that the **EVUV** solenoid valve, responsible of the UV injection, will work properly, by manually activating it from the **Power outputs** menu.
- In case of Konfort 710R or 720R units, ensure that the UV bottle will be fully connected. If necessary, replace the quick connector of the bottle itself.

## **7.8 Too much oil and/or UV additive is injected**

- Check that the tube which connects the bottle to the manifold will allow the free movement of the load cell (see Image 7.26). If necessary, restore its correct position.

- Check that the wirings coming from the rotating head of the equipment will not press on the silicone tube which connects the bottle to the manifold. If necessary, remove any possible abnormal contact:

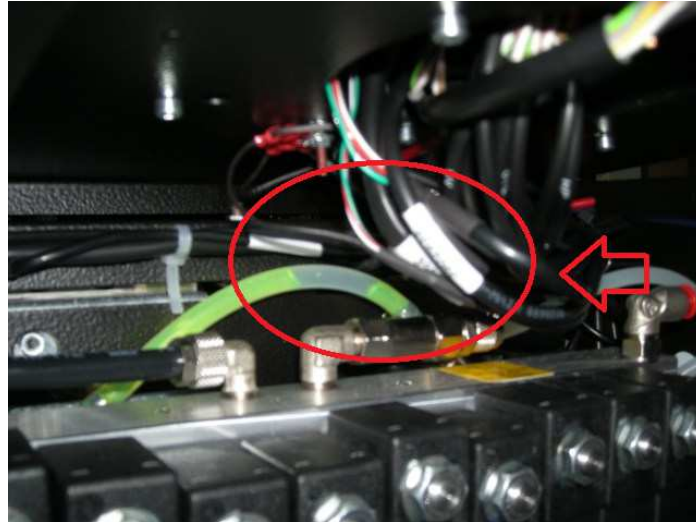


Image 7.31 – Possible contact between the cables coming from the rotating head and the silicone tube which connects the manifold to the bottle

- In case of Konfort 760R, 760R Bus and 780R BiGas units, ensure that the cable which comes to the bottle recognition connector will not affect the correct movement of the load cell:

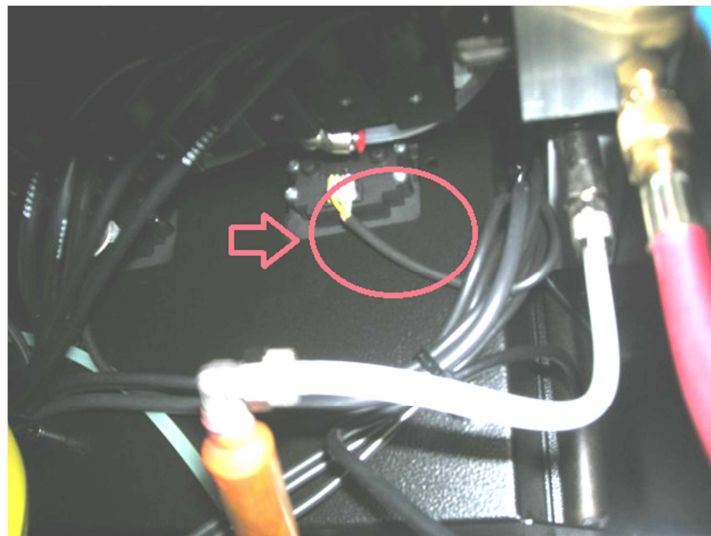


Image 7.32 – The cable which comes to the oil-injection bottle recognition connector (the same for the UV) could be too tight

<input type="checkbox"/> CO	<input type="checkbox"/> HP1	T. [ms]		
<input type="checkbox"/> PO	<input type="checkbox"/> REC			
<input type="checkbox"/> SO	<input type="checkbox"/> LP	PRE 6510	FAN1	1
<input type="checkbox"/> UW	<input type="checkbox"/> REF1	1491		1
<input type="checkbox"/> IO	<input type="checkbox"/> REF2	GAS 32410	FAN2	1
<input type="checkbox"/> CA1	<input type="checkbox"/> FR1	25301		1
<input type="checkbox"/> CA2	<input type="checkbox"/> FR2	ESA 23536	FAN3	1
		373		1
		OIL 17001	TK1	25301
		74		1300
		UVL 23510	TK2	0
		432		0
			DOOR	0

Image 7.33 – As a result of this excessive tightness, even though the bottle is removed, the load cell for the oil injection (the same for the UV) could provide a weight value that would wrongly let to think about a loss of linearity of the load cell

In order to check that the oil or UV load cell will have a linear behavior, connect a sample weight (for example, 400 grams) to it and check that the corresponding value on the **Power outputs** menu will vary from about **400** to about **0** by simply removing the sample weight from the cell:

<input type="checkbox"/> CO	<input type="checkbox"/> HP1	T. [ms]		
<input type="checkbox"/> PO	<input type="checkbox"/> REC			
<input type="checkbox"/> SO	<input type="checkbox"/> LP	PRE 6505	FAN1	1
<input type="checkbox"/> UW	<input type="checkbox"/> REF1	1489		1
<input type="checkbox"/> IO	<input type="checkbox"/> REF2	GAS 32412	FAN2	1
<input type="checkbox"/> CA1	<input type="checkbox"/> FR1	25303		1
<input type="checkbox"/> CA2	<input type="checkbox"/> FR2	ESA 23533	FAN3	1
		373		1
		OIL 24010	TK1	25303
		404		1303
		UVL 23510	TK2	0
		431		0
			DOOR	0

Image 7.34 (A) – See below

<input type="checkbox"/> CO	<input type="checkbox"/> HP1	T. [ms]		
<input type="checkbox"/> PO	<input type="checkbox"/> REC			
<input type="checkbox"/> SO	<input type="checkbox"/> LP	PRE 6540	FAN1	1
<input type="checkbox"/> UW	<input type="checkbox"/> REF1	1497		1
<input type="checkbox"/> IO	<input type="checkbox"/> REF2	GAS 32411	FAN2	1
<input type="checkbox"/> CA1	<input type="checkbox"/> FR1	25302		1
<input type="checkbox"/> CA2	<input type="checkbox"/> FR2	ESA 23538	FAN3	1
		373		1
		OIL 15300	TK1	25302
		0		1302
		UVA 23510	TK2	0
		432		0
			DOOR	0

Image 7.34 (B) – Weight value of the oil injection load cell with the sample weight (first image) and without sample weight (second image): the load cell has a linear behavior

If the auxiliary load cell would continue to show a non-linear behavior, proceed with its calibration. If, despite this process, the problem will persist, proceed with the replacement of the load cell.

## 7.9 The equipment does not inject refrigerant

- Ensure that the service pipes will be properly connected to the A/C system of the vehicle and that the two quick fittings will be open.
- In case of Konfort 705R, 710R and 720R units, ensure that both the **HP** and **LP** valves located on the side panel of the equipment will be open.

- Make sure that the valve on the tank and the one outgoing from the tank will be open:

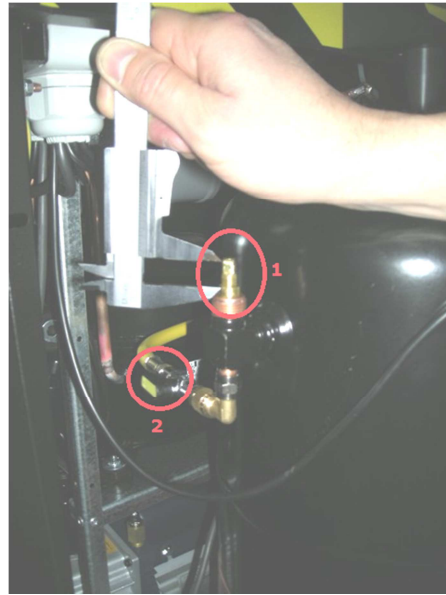


Image 7.35 – The valve on top of the tank (1) must be open (in this case, it must come out of about 1,4cm), as well as the outgoing valve (2)

- Check that inside the unit's tank **at least 3Kg** of refrigerant will be present in addition to the amount which has to be injected into the A/C system.
- Perform a calibration of the refrigerant load cell of the equipment by using a sample weight of **at least 1Kg**. In case that the calibration would give negative results, proceed with the replacement of the main load cell.
- Ensure that the refrigerant injection solenoid valve **CA<sup>13</sup>** will be activated. Otherwise, check the integrity of the corresponding wiring. Try also to manually activate the electro-valve from the **Power outputs** menu. In case of failure, replace the solenoid valve.
- Connect the **HP** service pipe to an external sampling cylinder (cod. **4800003**) and, from the **Customised service** option, select a single refrigerant injection phase.

<sup>13</sup> In case of Konfort 780R BiGas units, this check will have to be performed on the CA1 solenoid valves in case of R134a refrigerant injection, otherwise on the CA2 solenoid valves in case of R1234yf refrigerant injection

### 7.10 The unit injects a larger amount of refrigerant

- Check the refrigerant quantity set during the initial configuration of the A/C service on the unit's menu.
- Connect the **HP** pipe to an external sampling cylinder with regular volume (cod. **4800003**) and, from the **Customised service** option, select a single injection phase towards the cylinder. Once the injection will be completed, check the accuracy of the charged amount of refrigerant by using an external digital scale (cod. **4800004**).
- Check the correctness of the compensation value of the tubes length parameter (**ADJUST TUBE LENGTH**) from the **Public parameters** list of the equipment: in case of absence of any extension on the service pipes, the default value should be **30 grams**.
- Check that the rubber cone located on the safety bar will not touch against the tank:

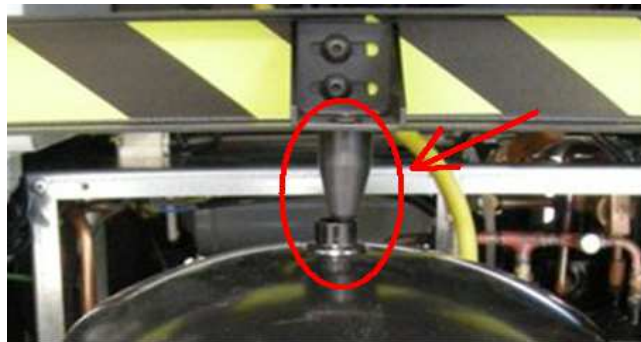


Image 7.36 – Abnormal contact between the rubber cone and the internal tank

In order to prevent this abnormal contact, loosen the two screws which block the safety bar and lift the bar completely:

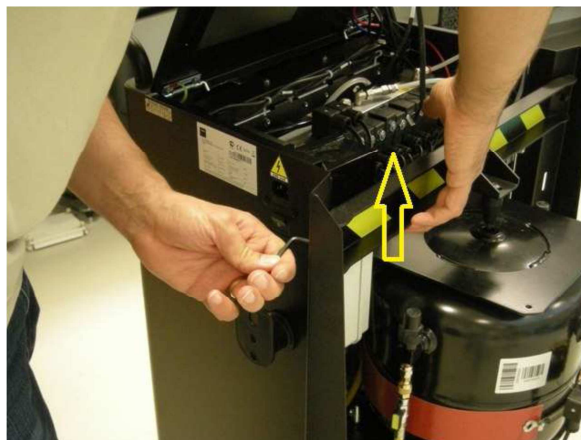


Image 7.37 – Lifting of the internal safety bar in order to prevent any abnormal contact between the cone and the tank(s)

- Lubricate the two cams located on the lock/unlock system of the unit by using grease or spray lubricant:

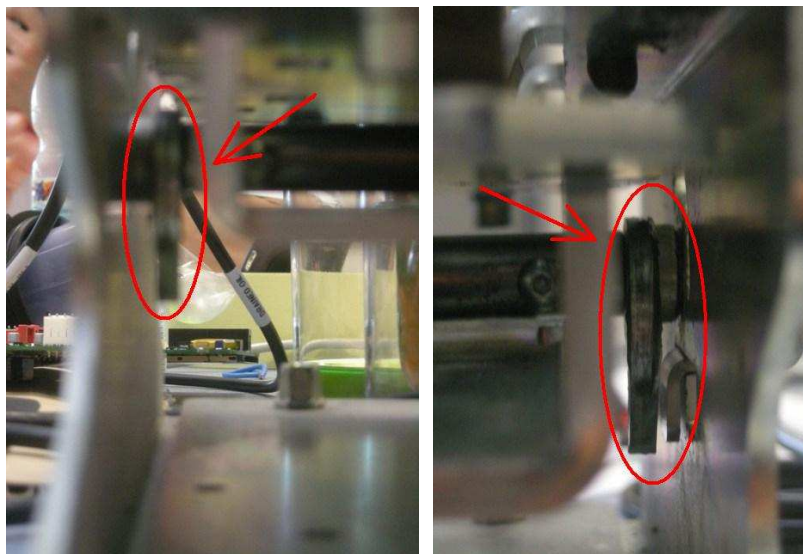


Image 7.38 – Location of the two cams of the lock/unlock system of the scale to be lubricated

- Check the alignment of the load cell compared to the mechanic structure of the scale. If necessary, loosen the screws of the load cell and proceed to its centering with the help of the holes positioned on the top and on the bottom sides of the mechanic structure:

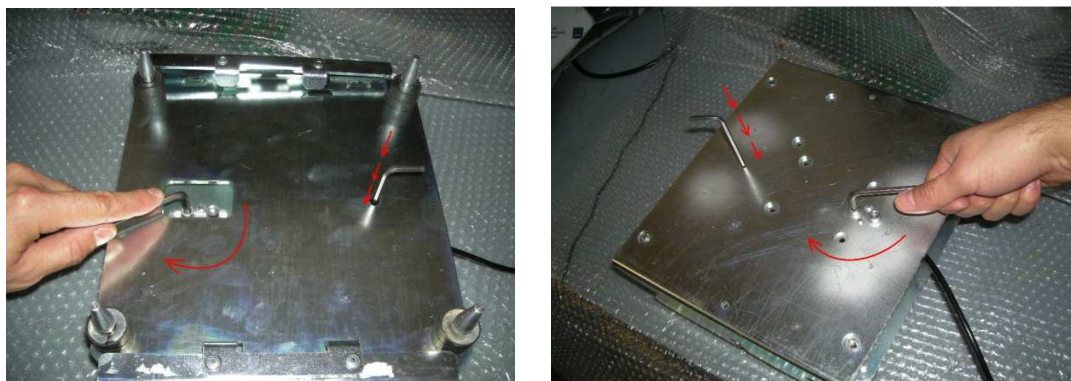


Image 7.39 – Use the holes on the top and on the bottom of the scale to center the load cell into the mechanic structure of the scale

If necessary, replace the mechanic structure of the scale.

- In case, proceed with the replacement of the main load cell.



### 7.11 The recovered oil is not discharged into the DRAIN bottle

- Ensure that the silicone tube that connects the **EVSO** electro-valve, located on the output of the main separator filter, to the oil drain connector will not be disconnected or obstructed:



Image 7.40 – Silicone tube for the oil drain properly connected to its junction (See red circle)

- Check that the quick connectors of the oil drain bottle will not be obstructed (in the case of Konfort 760R, 760R Bus and 780R BiGas units refer again to Image 7.30 as example):

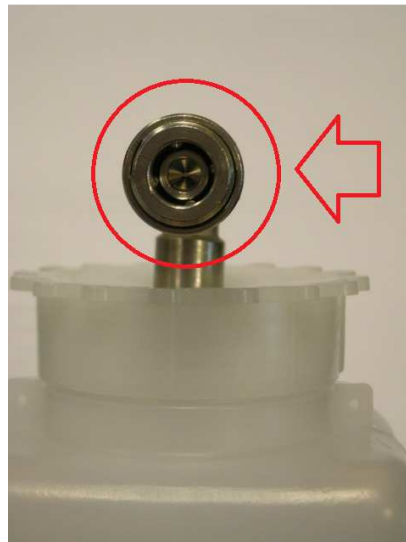


Image 7.41 – Checking of the quick connector on the oil drain bottle of a Konfort 705R, 710R or 720R

- Try, from the **Power outputs** menu, to manually activate the **EVSO** oil drain solenoid valve, in order to verify its functionality.

### 7.12 The main load cell is not properly calibrated

- Ensure that all the steps of the refrigerant scale calibration have been carefully followed (refer to the information reported in Chapter 4 regarding the calibration procedures for the different models of Konfort 700R units).
- If, during the calibration of the main load cell, the unit shows the following message:

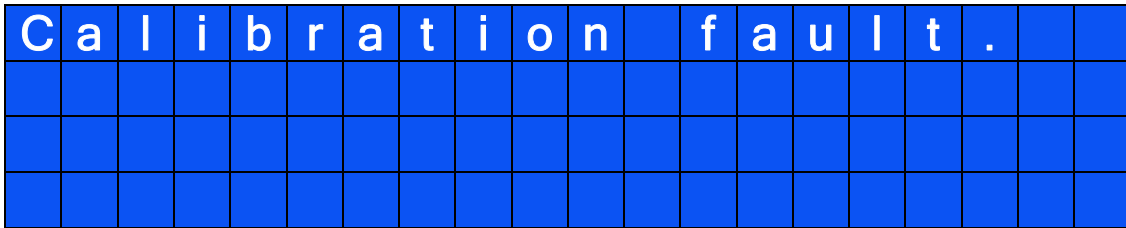


Image 7.42 – Message of a calibration fault in Konfort 705R, 710R or 720R

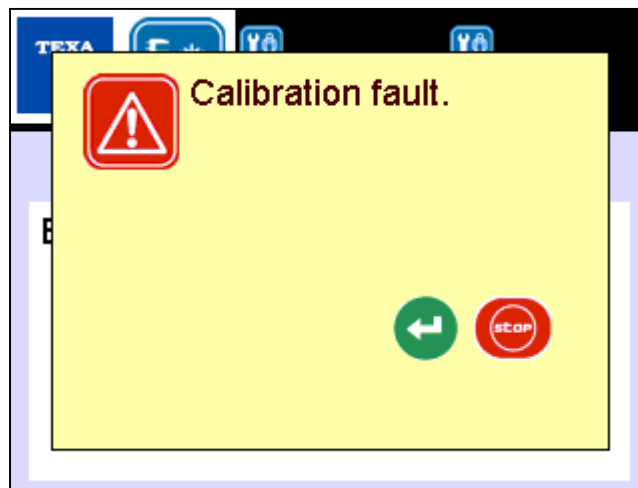


Image 7.43 – Message of a calibration fault in Konfort 760R, 760R Bus and 780R BiGas

try again the calibration process, by ensuring that all the steps of the procedure have been carefully followed (see Chapter 4). If the problem would persist, replace the main load cell.

- Ensure that the cable which connects the load cell to the ACE Micro board will not be damaged and that all its wires will be properly inserted into the corresponding connector.
- Remove the tank(s) from the plate, lock the scale by rotating the corresponding pin counterclockwise and, from the **Power outputs** menu, check if the corresponding weight value (not the punctual one) will be close to 0. Place a sample weight on the plate of the scale, unlock it by turning the pin clockwise and check whether the weight value on the **Power outputs** menu has increased. If, under these

conditions, the weight value would not change, replace the mechanic part of the scale.

### 7.13 The auxiliary load cells are not properly calibrated<sup>14</sup>

- Make sure that all the steps of the auxiliary load cells calibration have been carefully followed (refer to the information reported on Chapter 4 regarding these calibration processes).
- Use always the **400-grams** sample weight provided by TEXA S.p.A.
- Remove the bottle from the back of the equipment. Check from the **Power outputs** menu that, when the sample weight is inserted, the value of the corresponding load cell will be increased. If not, replace the corresponding auxiliary load cell.

### 7.14 The main pressure sensor is not properly calibrated

- Ensure that all the steps of the main pressure sensor calibration have been carefully followed (refer to the information reported in Chapter 4 for this calibration).
- Ensure that the cable which connects the pressure sensor to the ACE Micro board will not be damaged and that all its wires will be properly inserted into the corresponding connector.
- Remove the **HP** connector from the corresponding service pipe, open the **HP** valve (in the case of Konfort 705R, 710R or 720R) or the **HP** solenoid valves from the **Power outputs** menu (in case of Konfort 760R, 760R Bus and 780R BiGas unit). Blow, with compressed air, into the **HP** tube and ensure, from the **Power outputs** menu, that the pressure measured by the main sensor will increase. Otherwise, proceed with the replacement of the sensor.

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<sup>14</sup> Only on Konfort 760R, 760R Bus and 780R BiGas units

- If, during the calibration, the unit shows the following message:

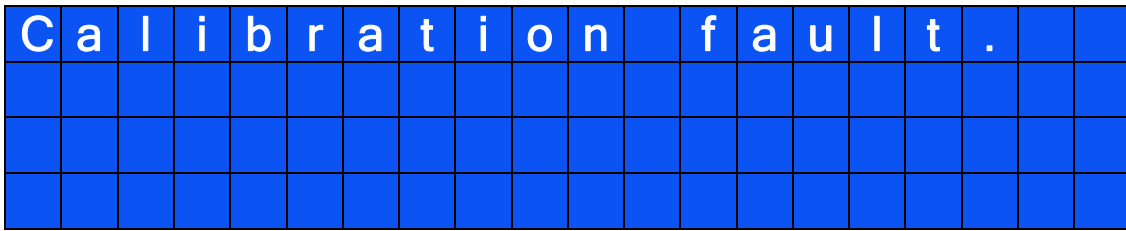


Image 7.44 – Message of a calibration fault in Konfort 705R, 710R and 720R

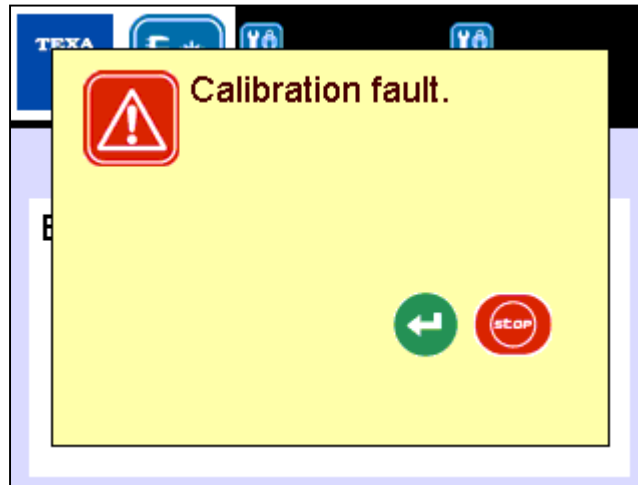
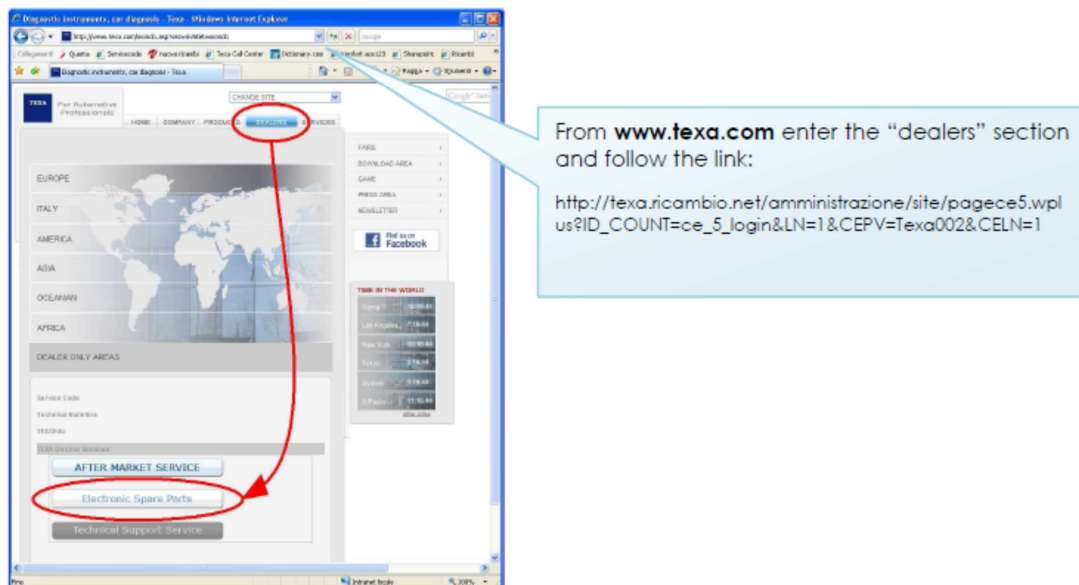


Image 7.45 – Message of a calibration fault in Konfort 760R, 760R Bus and 780R BiGas

try again to perform the calibration, by meticulously following the corresponding procedure. In case that the problem would persist, proceed with the replacement of the pressure sensor.

## APPENDIX 1 – SPARE PARTS PORTAL

In order to purchase any Konfort spare part, use the Electronic Spare Parts website:



From [www.texa.com](http://www.texa.com) enter the "dealers" section and follow the link:

[http://texa.ricambio.net/amministrazione/site/pagece5.wpl?us?ID\\_COUNT=ce\\_5\\_login&LN=1&CEPV=Texa002&CELN=1](http://texa.ricambio.net/amministrazione/site/pagece5.wpl?us?ID_COUNT=ce_5_login&LN=1&CEPV=Texa002&CELN=1)



After the selection of AIR CONDITIONING LINE, browse through the different section to find the spare part needed.

## APPENDIX 2 – ELECTRICAL AND SIGNAL CONNECTIONS

### KONFORT 705R

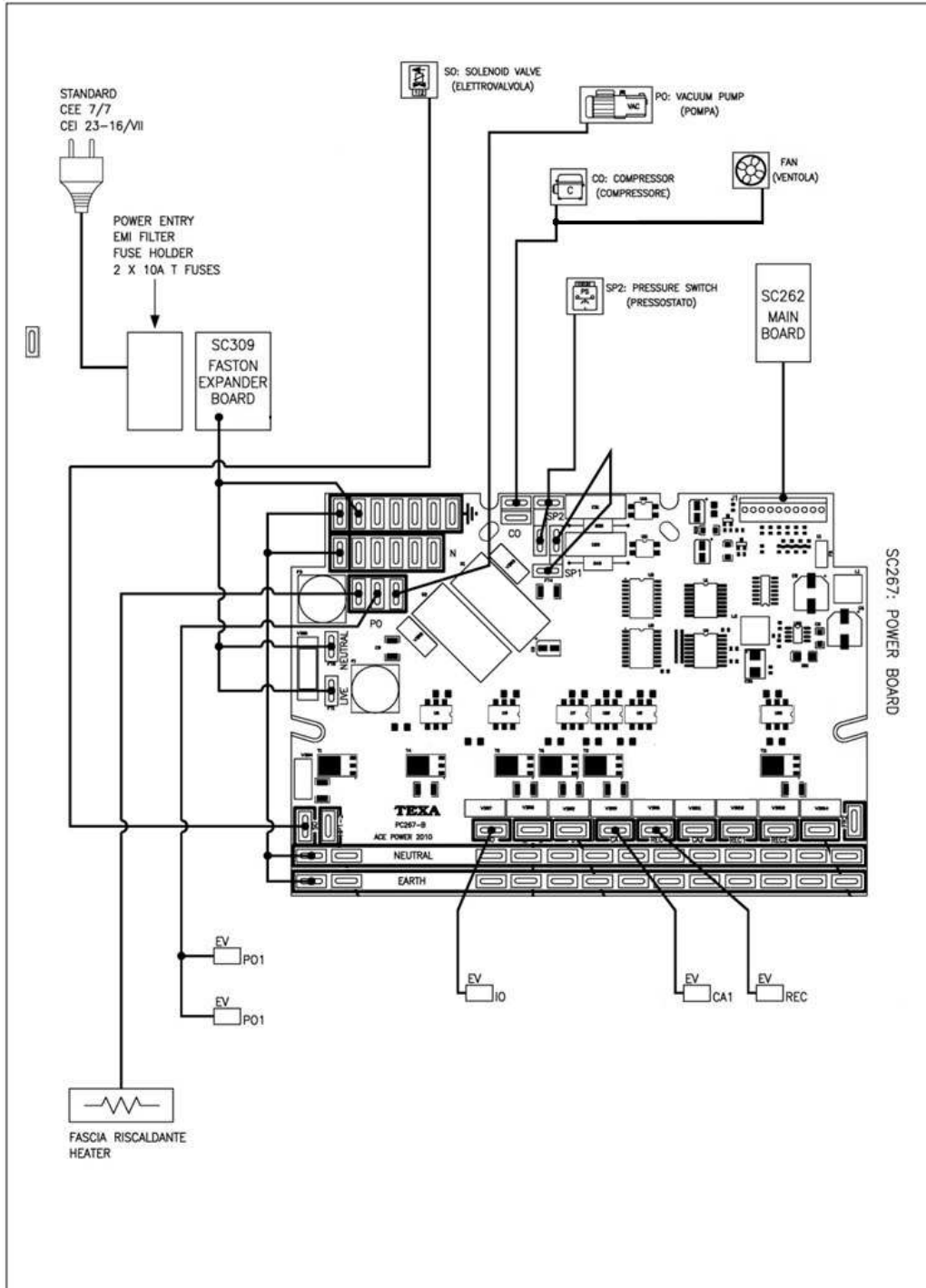


Image A2.1 – Actuators connection to the ACE Power board on **Konfort 705R**

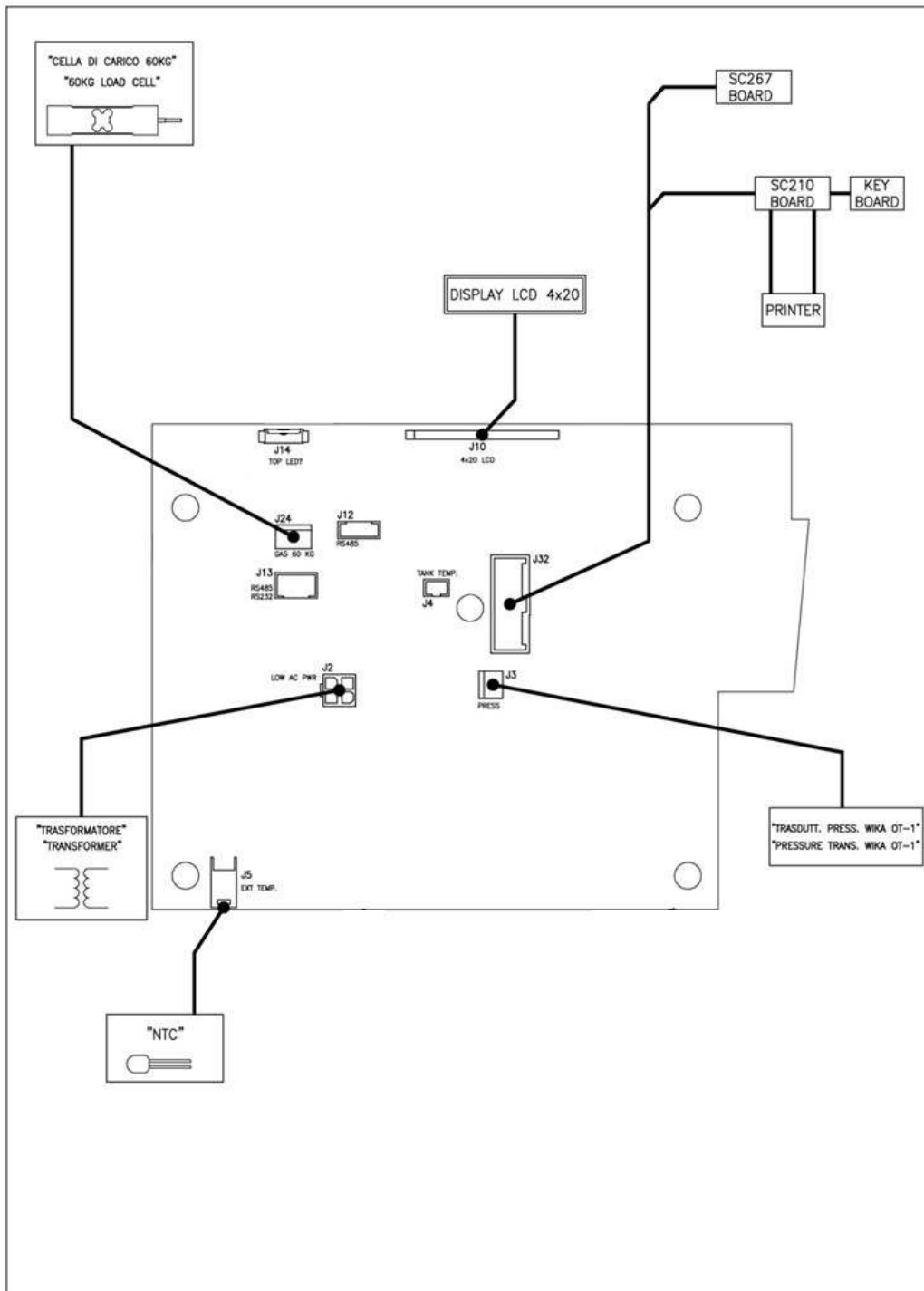


Image A2.2 – Sensors connection to the ACE Micro board on **Konfort 705R**

**KONFORT 710R**

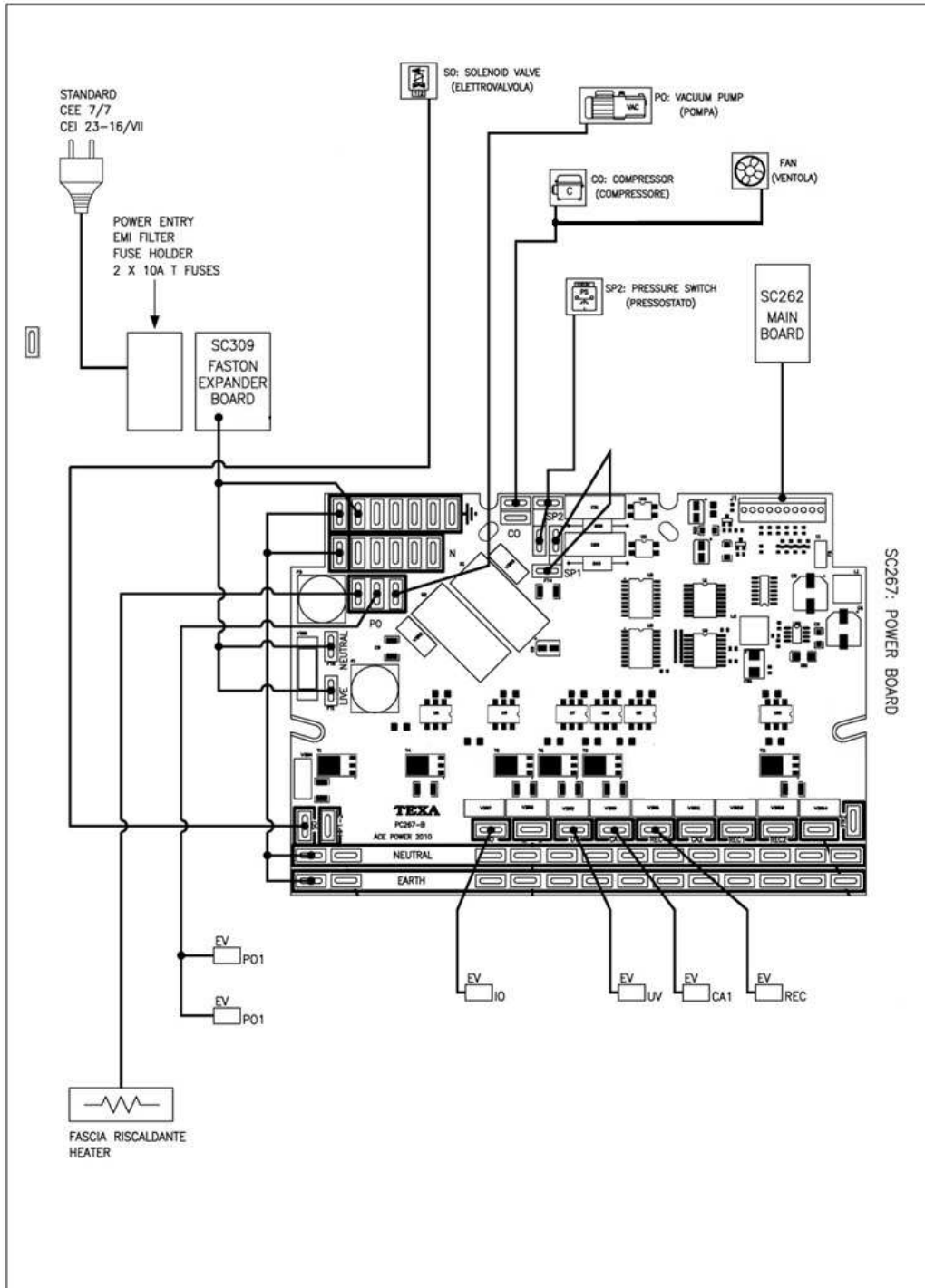


Image A2.3 – Actuators connection to the ACE Power board on **Konfort 710R**



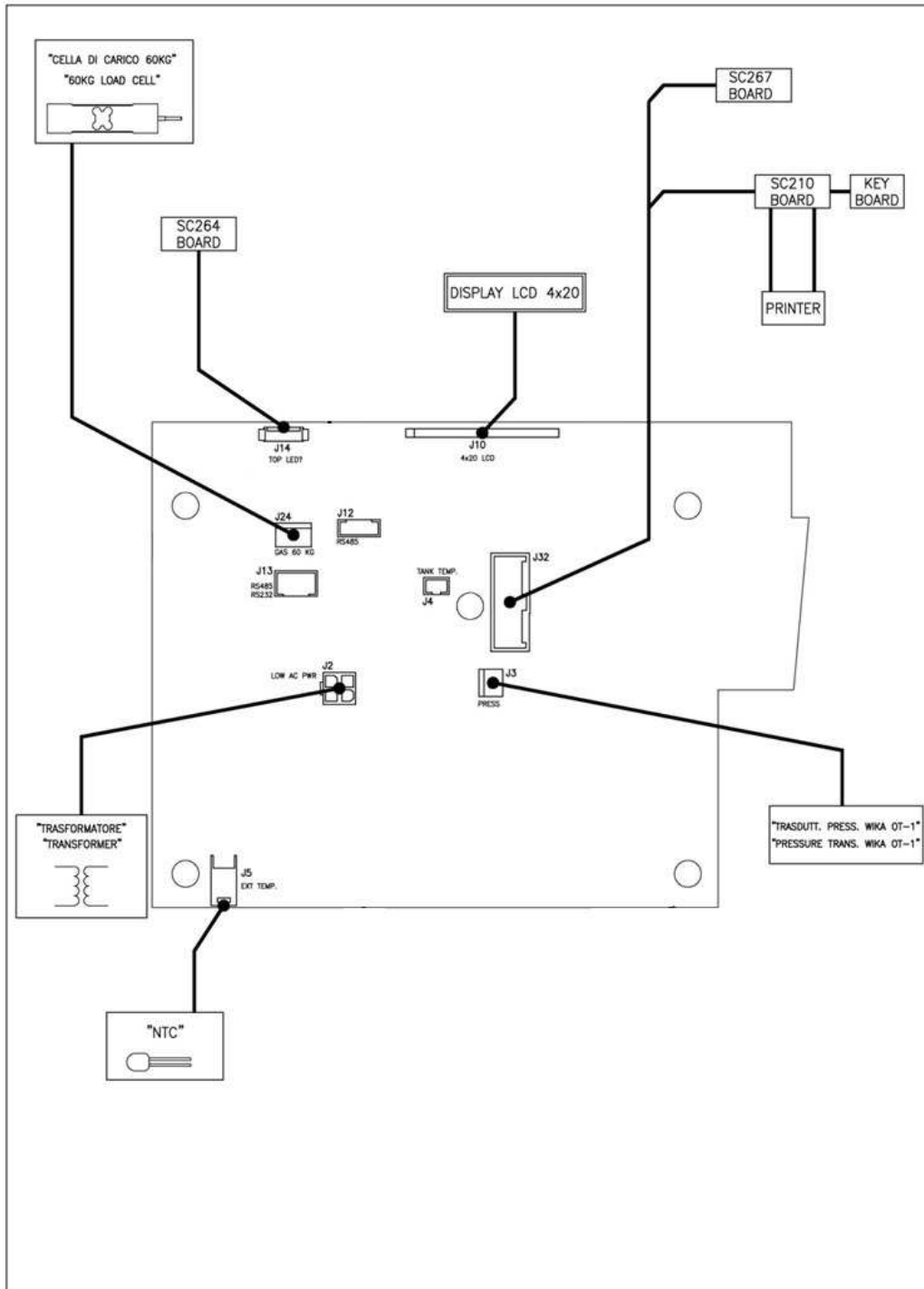


Image A2.4 – Sensors connection to the ACE Micro board on **Konfort 710R**

**KONFORT 720R**

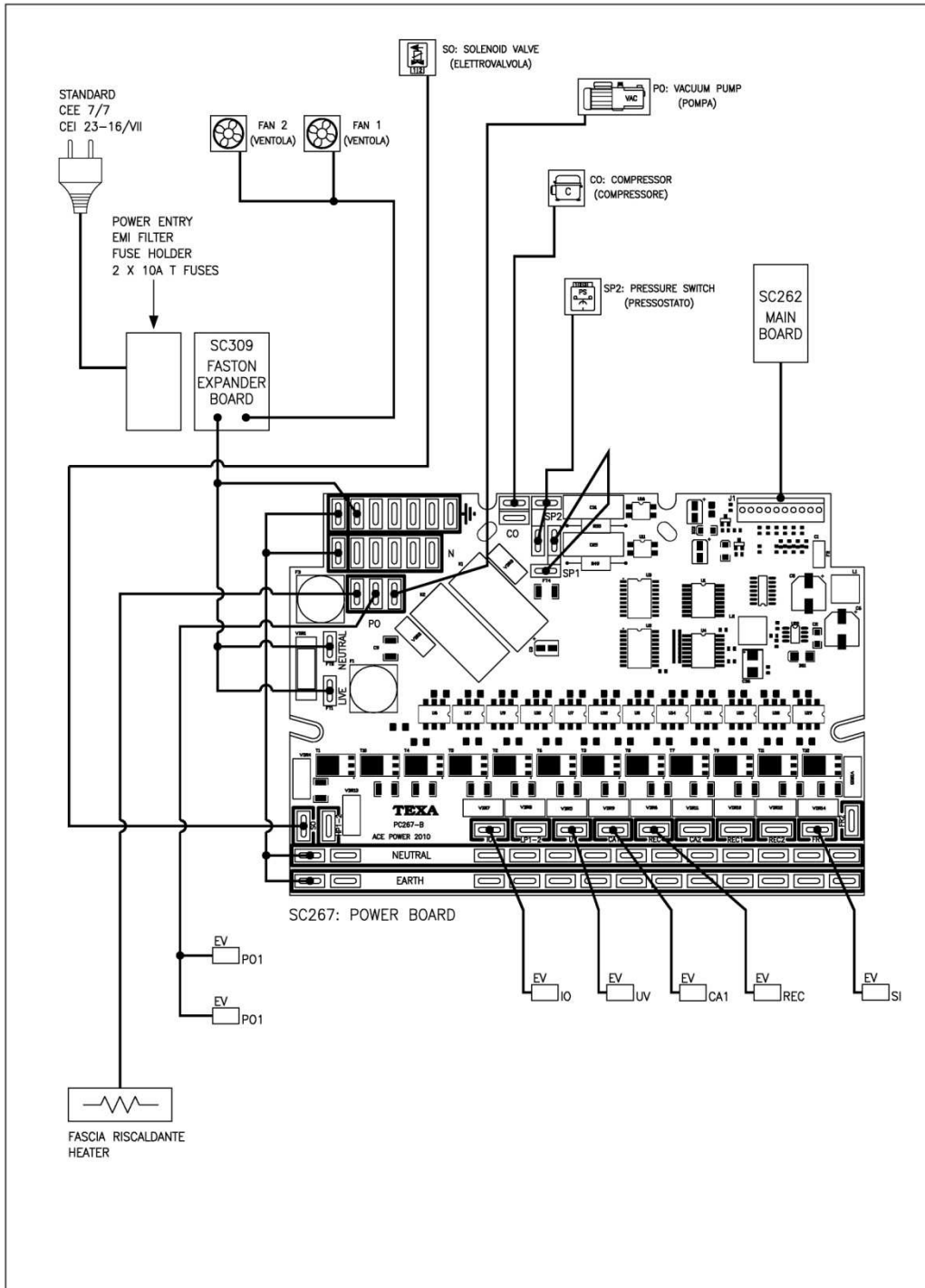


Image A2.5 – Actuators connection to the ACE Power board in **Konfort 720R**

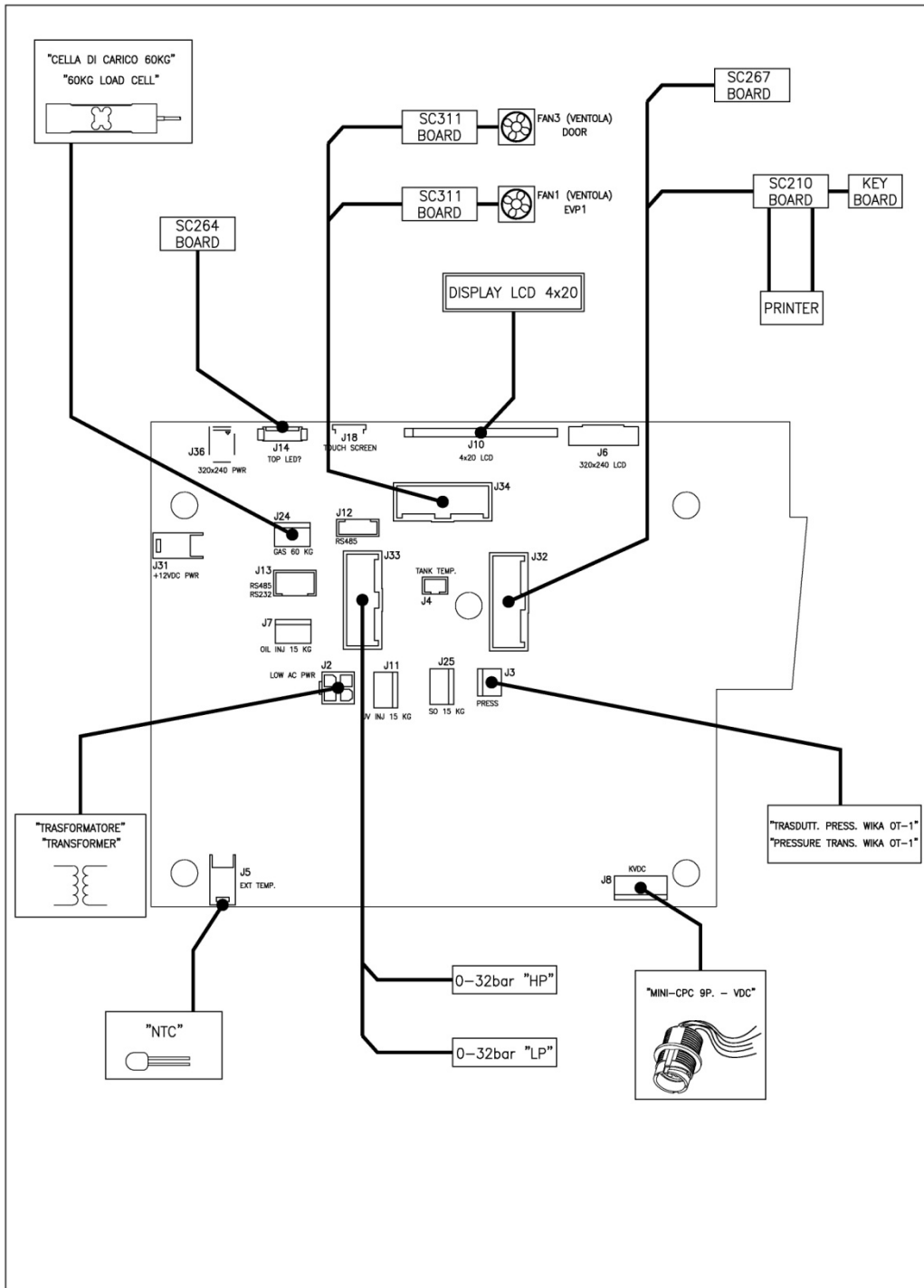


Image A2.6 – Sensors connection to the ACE Micro board in **Konfort 720R**

**KONFORT 760R AND 760R Bus**

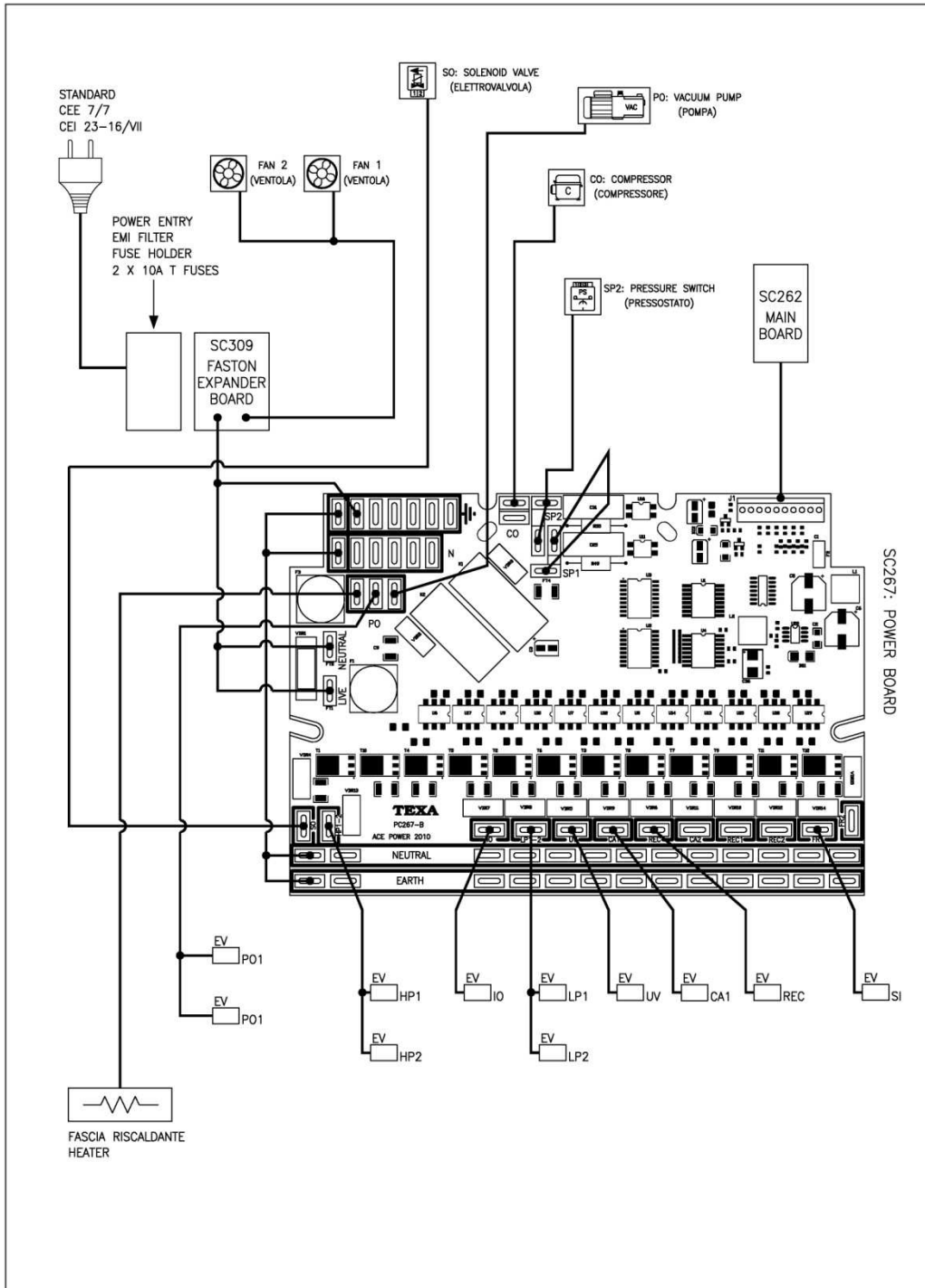


Image A2.7 – Actuators connection to the ACE Power board in **Konfort 760R and 760R Bus**

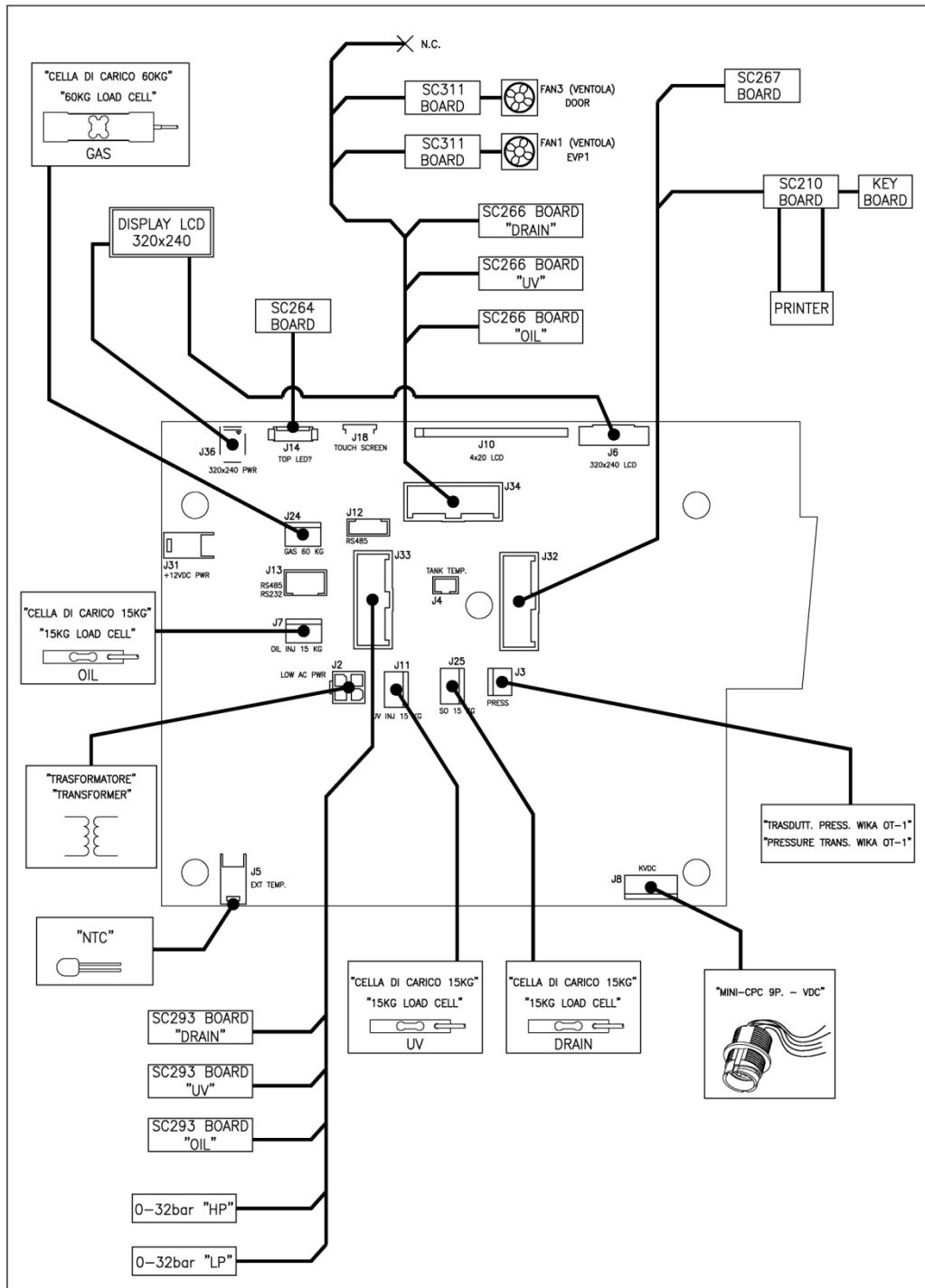


Image A2.8 – Sensors connection to the ACE Micro board in **Konfort 760R and 760R Bus**

**KONFORT 780R BiGas**

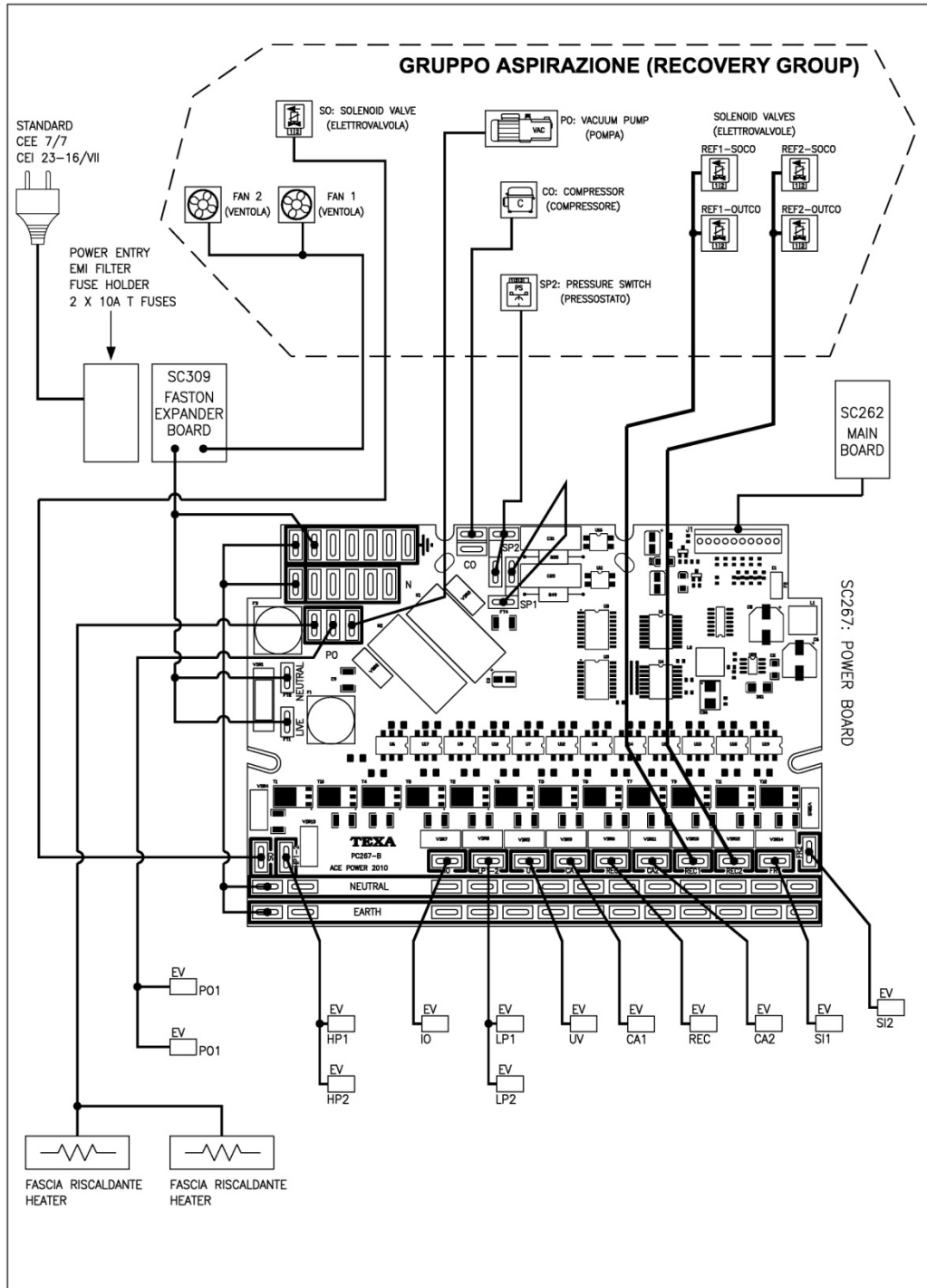


Image A2.9 – Actuators connection to the ACE Power board in **Konfort 780R BiGas**

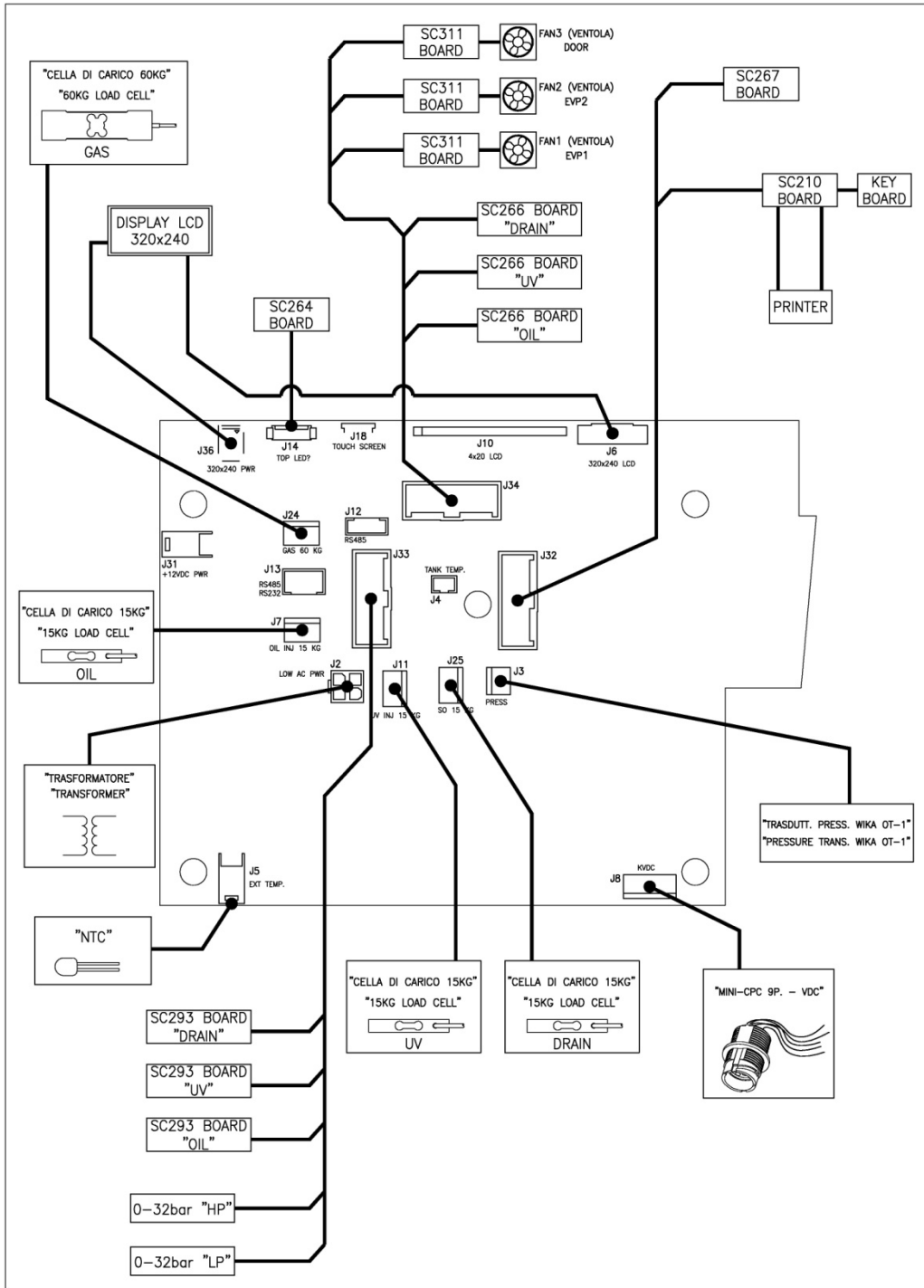


Image A2.10 – Sensors connection to the ACE Micro board in **Konfort 780R BiGas**

## APPENDIX 3 – FLOW DIAGRAMS

### KONFORT 705R

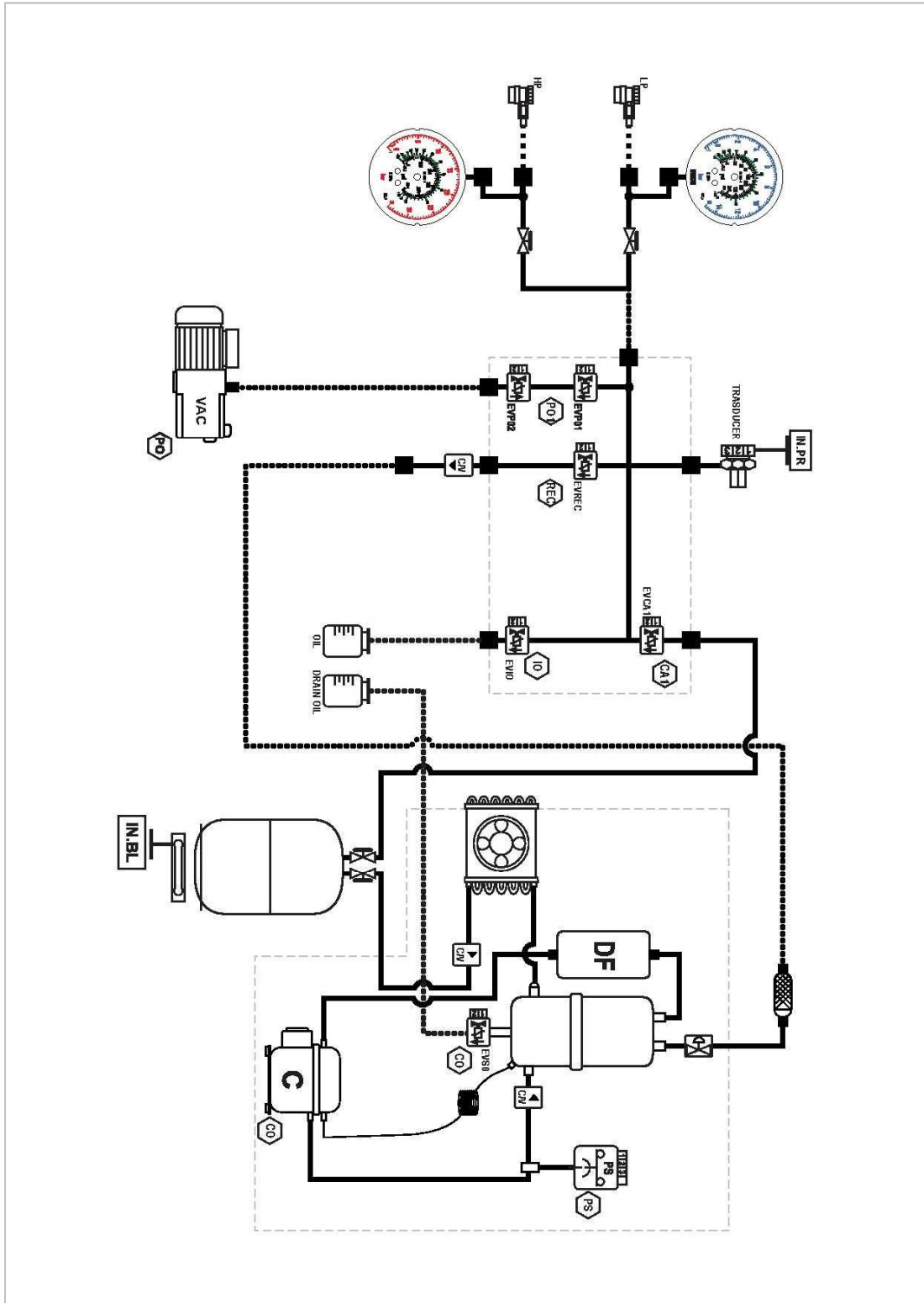


Image A3.1 – Flow diagram for the **Konfort 705R**



**KONFORT 710R AND 720R**

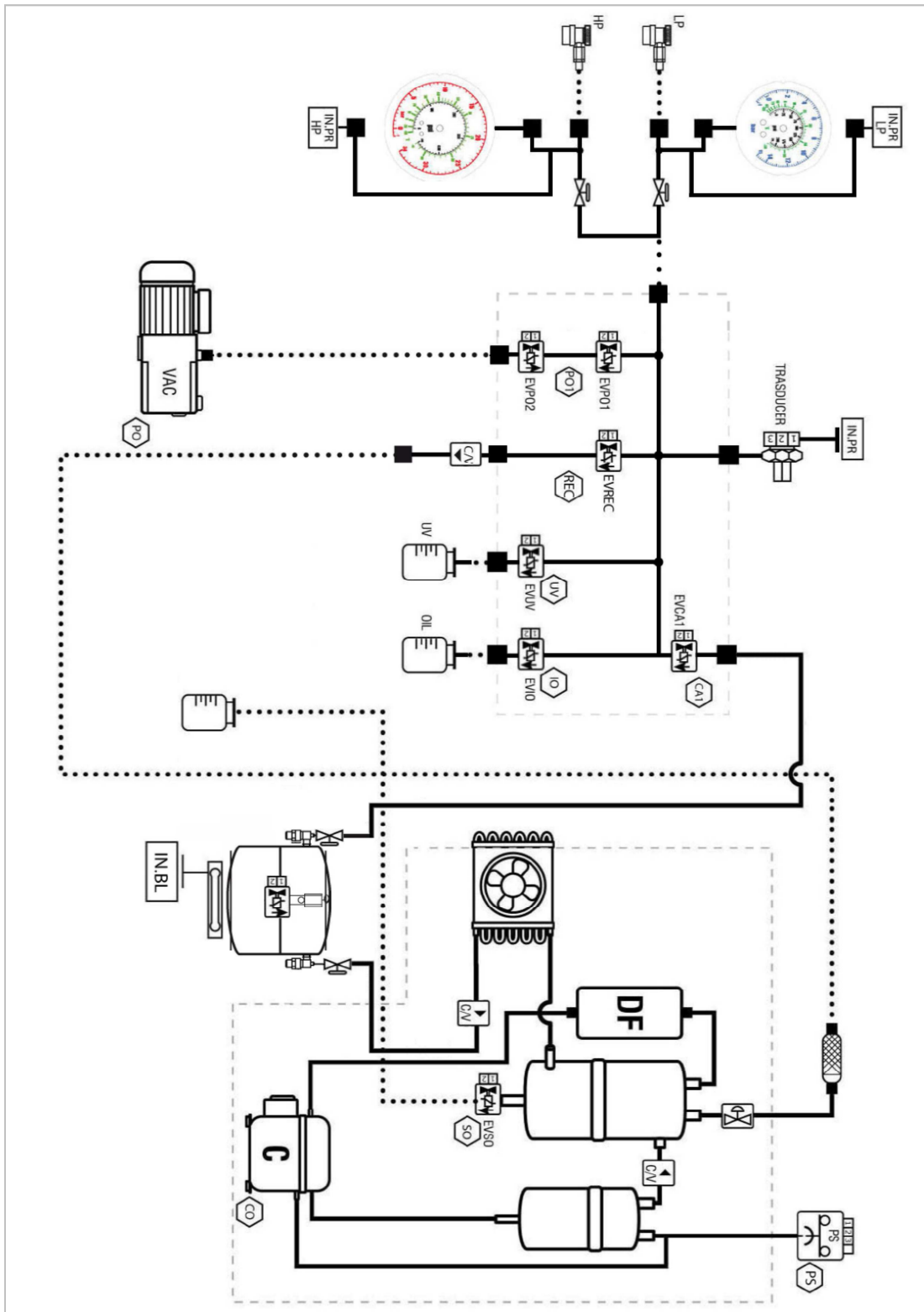


Image A3.2 – Flow diagram for the **Konfort 710R and 720R**

**KONFORT 760R AND 760R Bus**

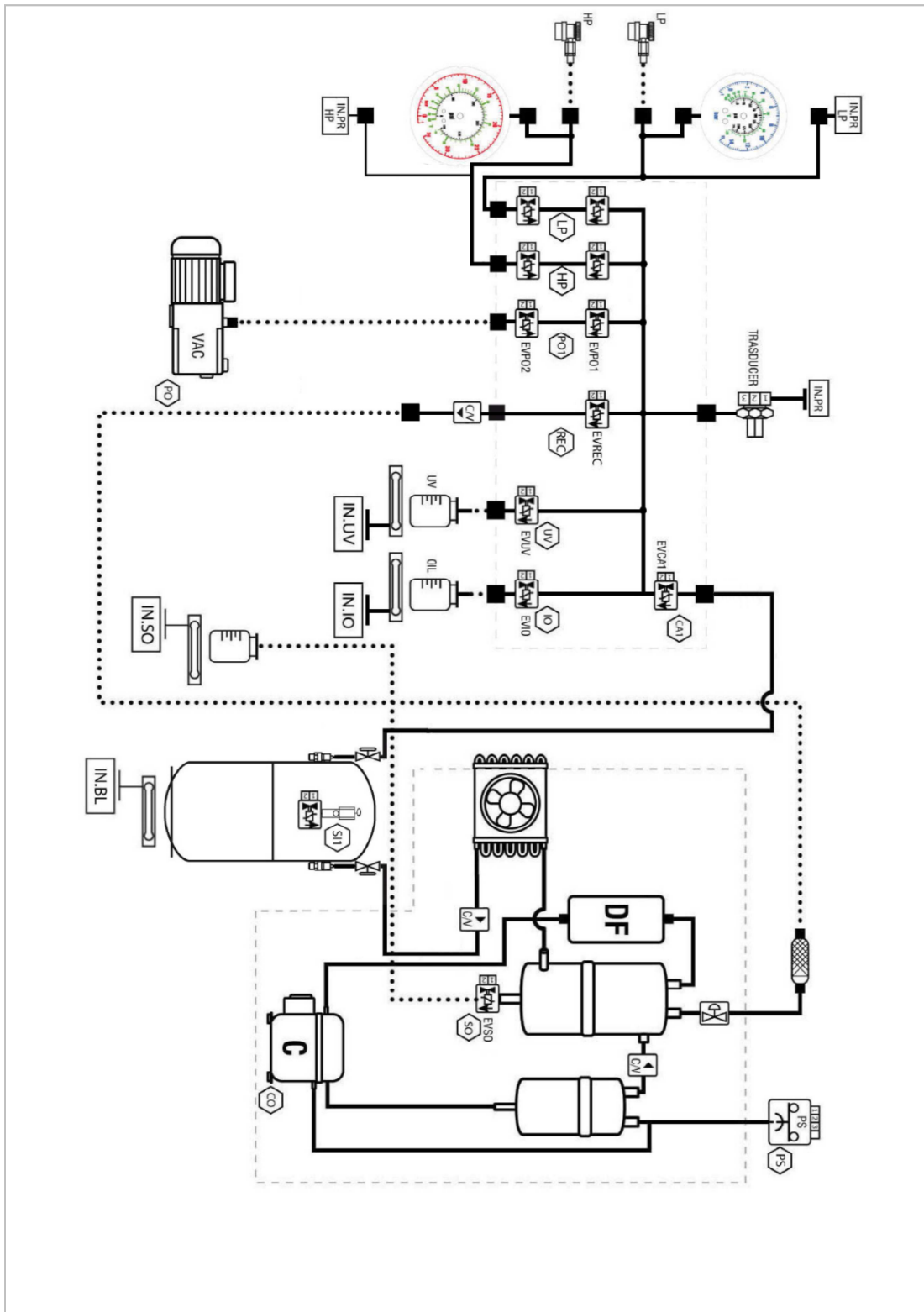


Image A3.3 – Flow diagram for the **Konfort 760R and 760R Bus**

**KONFORT 780R BiGas**

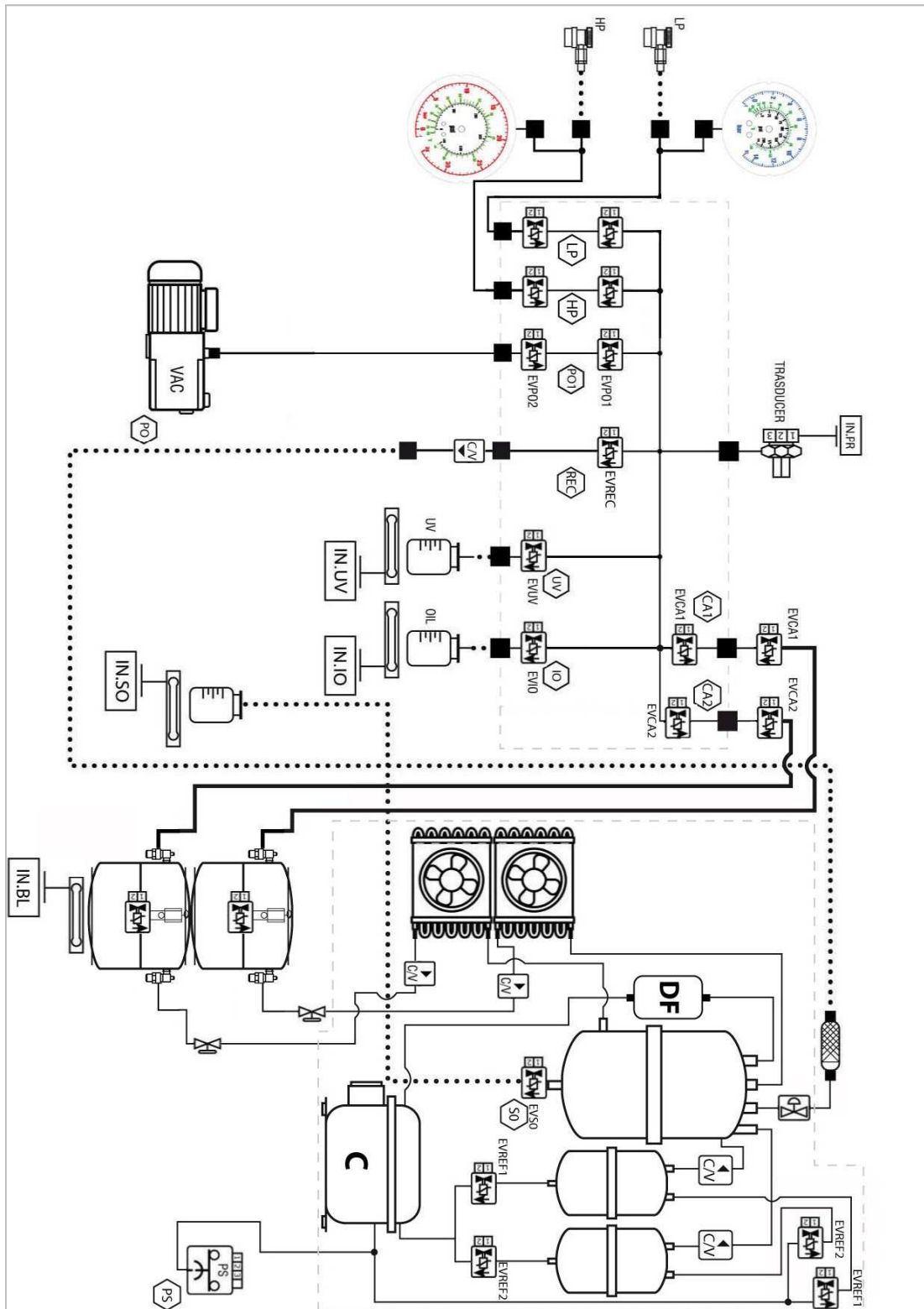


Image A3.4 – Flow diagram for the **Konfort 780R BiGas**

## APPENDIX 4 – SOLENOID VALVES LOCATION

### KONFORT 705R

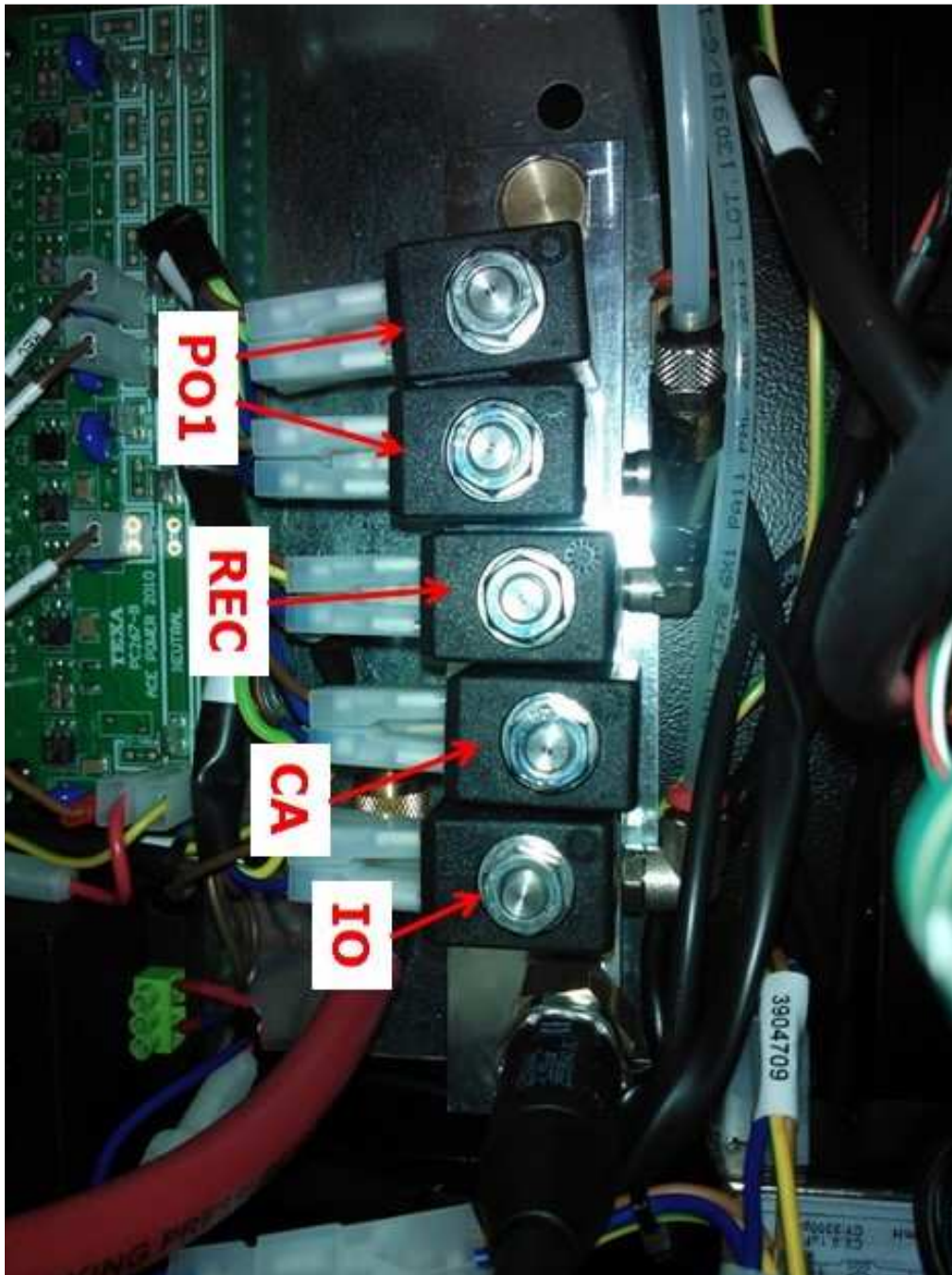


Image A4.1 – Solenoid valves location on **Konfort 705R**

**KONFORT 710R AND 720R**

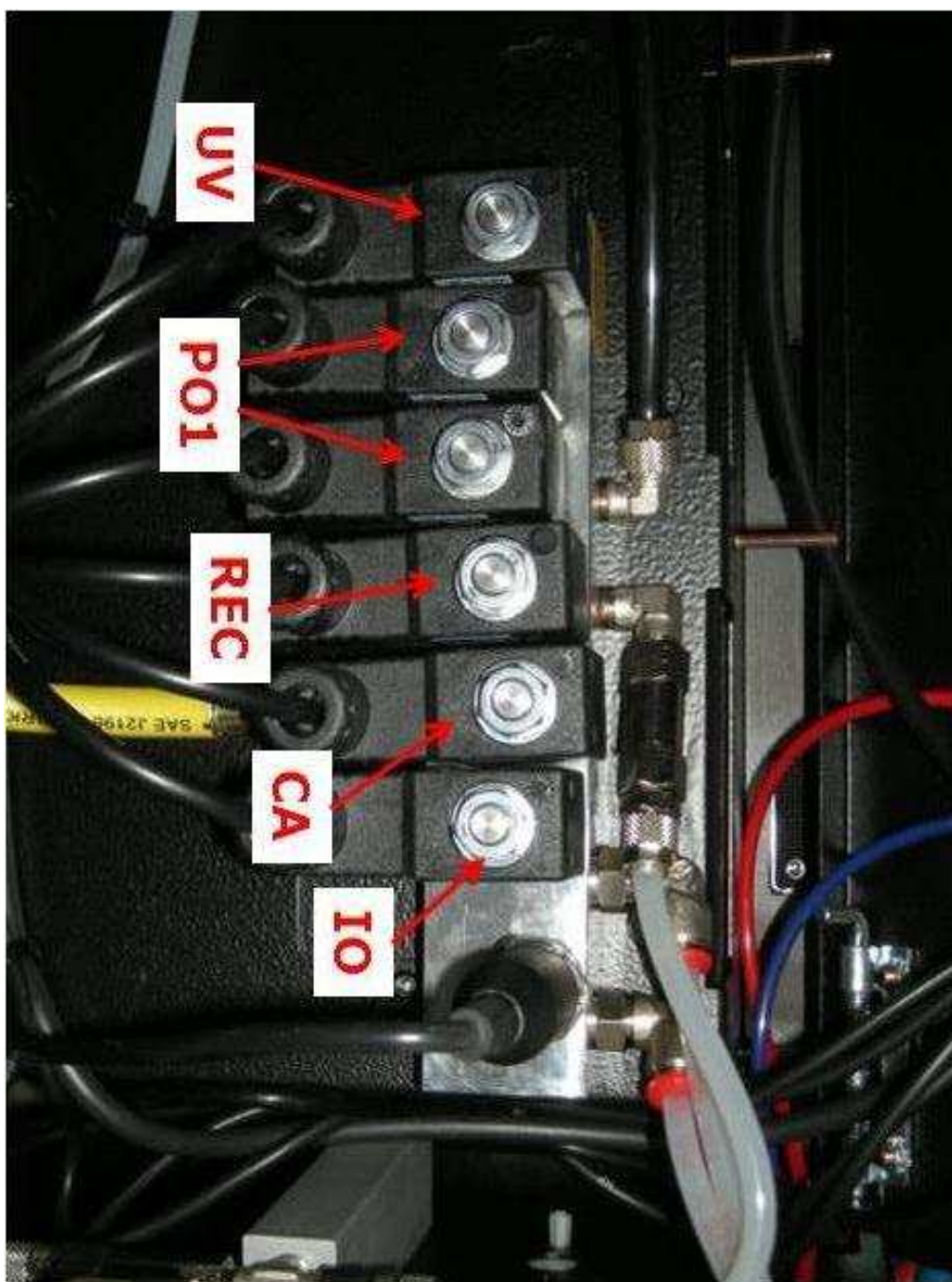


Image A4.2 – Solenoid valves location on **Konfort 710R and 720R**

### KONFORT 760R AND 760R Bus

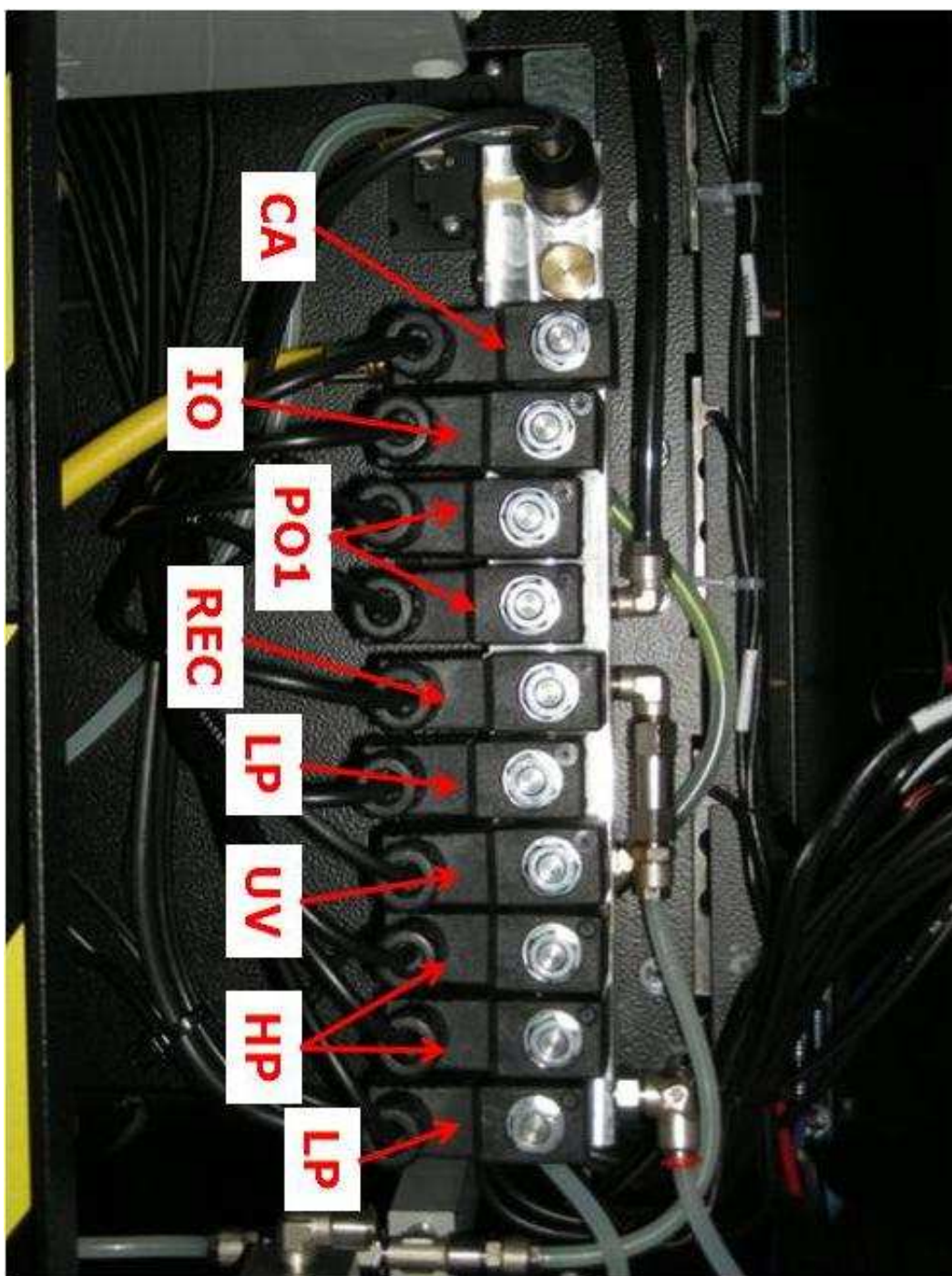


Image A4.3 - Solenoid valves location on **Konfort 760R and 760R Bus**

**KONFORT 780R BiGas**

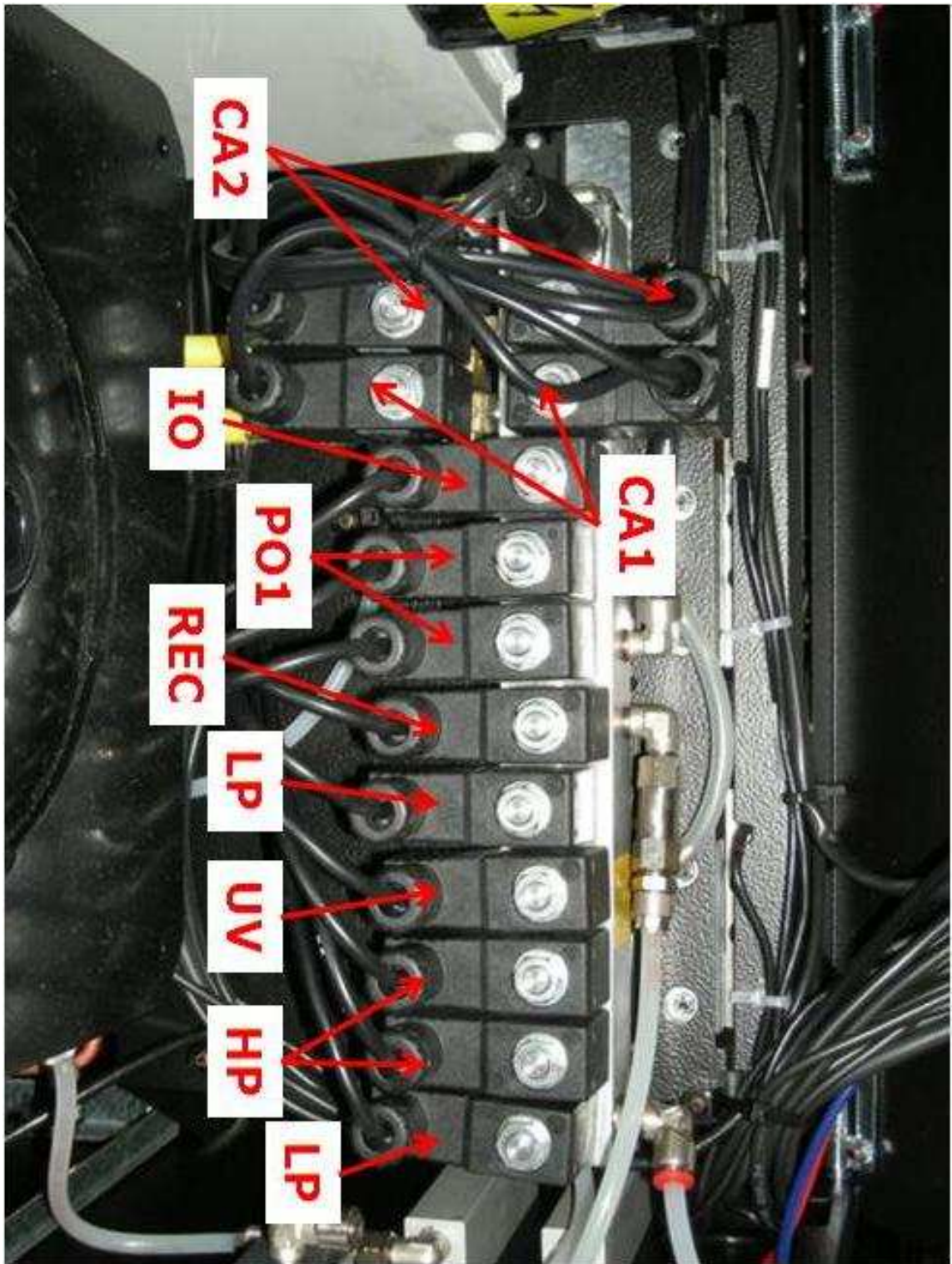


Image A4.4 – Solenoid valves location on **Konfort 780R BiGas**