

MAINTENANCE AND USER MANUAL

 **Stargas**[®]

ALTERNATIVE FUEL SYSTEMS



POLAR *System*
Injection



**MAINTENANCE AND USER MANUAL
“POLÀRIS” LPG SYSTEM**

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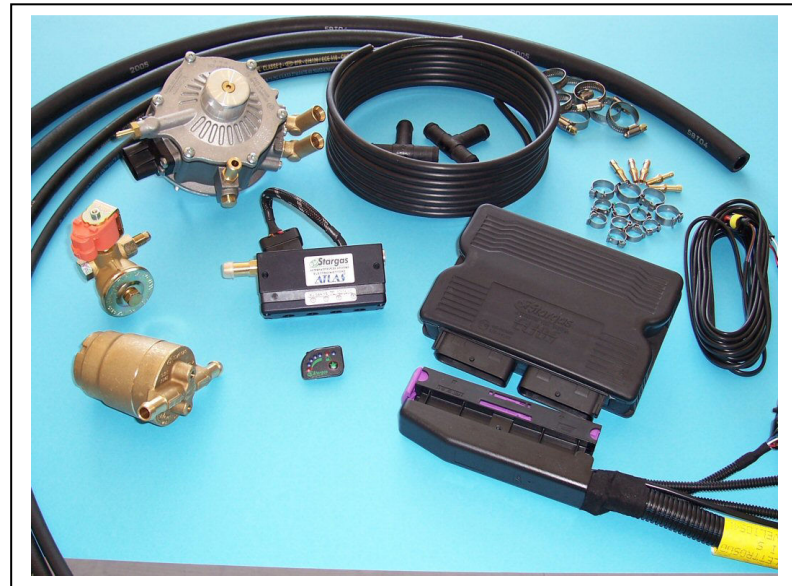


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1. THANKS AND PRESENTATION

Dear User,

STARGAS would like to thank and congratulate you for choosing its newest product, the advanced **Polàris** LPG system with electronic injection in the gaseous state, type-approved according to the ONU ECE R67-01 regulation.

A tradition of high quality and experience achieved over the years allows us to offer a LPG system that enables you to drive while keeping maximum performances, giving you more usability of the vehicle, while using a fuel that is efficient for the engine and clean for the environment.

The modern LPG control unit of the **Polàris** system imitates the functioning (master/slave) of the petrol control unit which allows only the right amount of fuel to be delivered to the engine at any instant (the same as the petrol control unit. This leads to a substantial reduction in the useless and often unnecessary enrichment of the mixture. The master/slave functioning includes the cut-off phases of the fuel supply with subsequent interruption of the LPG flow. This guarantees a significant reduction in LPG consumption in respect to older retrofit systems. However, this LPG consumption (in litres/km) is always higher than the corresponding petrol consumption, since the calorific power of the LPG is lower than that of petrol. This higher consumption, in respect to the petrol consumption percentage, varies based on the LPG composition distributed, and can be estimated indicatively at no higher than 20%

In any case, the use of the **Polàris** system leads to a considerable saving on fuel costs due to the lower cost of LPG compared to petrol.

2. AIM AND CONTENTS

This manual aims at providing the end user with general information and descriptions on the use, maintenance and guarantee of the **Polàris** LPG system installed on the vehicle.

For a correct use of the LPG system and to maintain the reliability and efficiency of the vehicle over time, the user must remember and respect the information/recommendations reported in this manual.

This manual must be kept in a safe place by the user for future reference. It must be used for the correct use of the guarantee offered on the products. For this reason, it contains the "equipment data sheet" and the "maintenance coupons" which must be shown when making a request for maintenance.



3. GENERAL SAFETY MEASURES

3.1. OPERATING CONDITIONS

The system is designed to function at temperatures between -10°C and +50°C.

3.2. REPAIR OR MAINTENANCE OF THE VEHICLE

If the vehicle requires re-painting in an oven, it is necessary to first remove the LPG tank and disconnect the gas intake/delivery tubes of the vapouriser.

In case of repairs to mechanical and electrical parts of the vehicle body, the car repairer is responsible for evaluating the need to remove or shift parts of the LPG system.

Attention! For safety purposes, parts or the entire LPG system must only be moved or removed by a STARGAS authorised installer.

3.3. IN CASE OF ACCIDENT

After an accident that causes the unintentional arrest of the engine, even with the panel inserted, the tank is automatically isolated from the activation of the “Safety Car” function which is controlled by the LPG control unit.

Conditions permitting, it is recommended to close the taps located on the fuel tank manually.

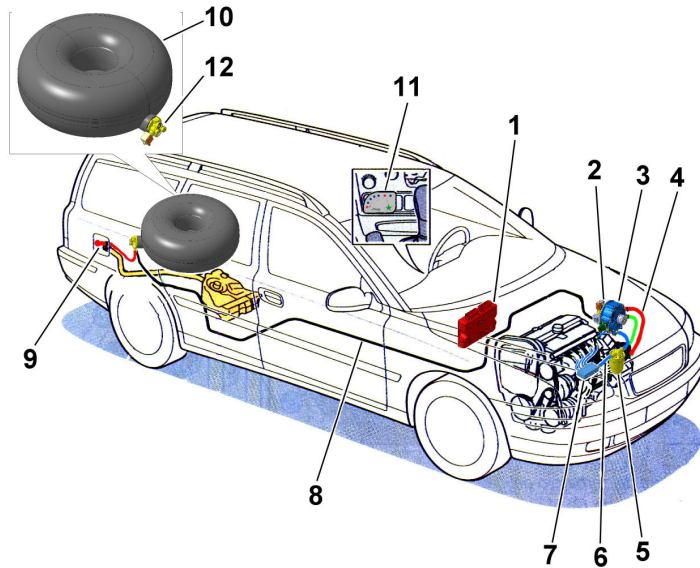
After an accident, the condition of the system must be checked by an authorised STARGAS installer.

4. OPERATING PRINCIPLE

Polàris is an innovative system made with the most up-to-date design and production technologies in the sector. The performances of the modern Èlios LPG control unit allow the “master/slave” management of the LPG electronic injection in gaseous phase, thus also allowing the ***phased sequential electronic injection*** of the LPG in the gaseous phase in spark ignition engines.

In the “master/slave” functioning, the LPG control unit (slave) processes the injection signals coming from the original petrol control unit (master) of the vehicle and commands the functioning of the LPG injectors. As a result, the functioning strategy of the LPG fuel supply imitates the strategy of the petrol functioning (phased sequential, semi-sequential, full-group, etc). This functioning strategy is made possible by the LPG electro-injectors which can have opening/closing times the same as those of the corresponding petrol injectors.

5. GENERAL DESCRIPTION OF SYSTEM PARTS

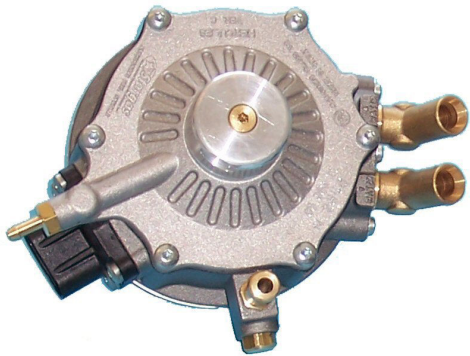


LEGEND OF MAIN COMPONENTS OF THE "POLARIS" LPG SYSTEM	
POS.	DESCRIPTION
1	ELECTRONIC CONTROL UNIT
2	ENGINE COMPARTMENT LPG SOLENOID VALVE
3	TYPE C HERCULES VAPORISER / GASIFIER
4	VAPORISER WATER HEATING TUBES
5	GASEOUS PHASE LPG FILTER
6	GASEOUS LPG FEEDING TUBE TO ELECTRO-INJECTORS (LOW PRESSURE)
7	ELECTRO-INJECTORS
8	LPG FEEDING TUBE TO VAPORISER (HIGH PRESSURE)
9	FILLING UNIT
10	FUEL TANK
11	CHANGEOVER SWITCH
12	MULTI-VALVE

HERCULES - VAPORISER / GASIFIER

This is the device where the liquid LPG passes to the gaseous state with subsequent reduction of the pressure. Heat taken from the engine's cooling liquid is necessary for the complete transformation.

The single-stage vaporiser comes with a heat exchanger, compensation device for the outgoing pressure as well as pressure and temperature sensors that allow identifying with precision the physical conditions of the LPG.



ELIOS—LPG ELECTRONIC CONTROL UNIT

The *Élios* LPG control unit is the electronic device that supervises all the control and management functions of the main components of the LPG system.

The LPG control unit manages the engine's fuel supply during the LPG functioning. It is completely deactivated during the petrol

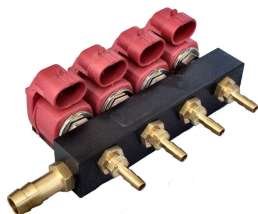
functioning. The main functions are described below in more detail:

- Controls the functioning of the LPG electro-injectors by adopting a functioning strategy similar to that adopted by the vehicle's petrol control unit for the petrol injectors (the LPG electronic control unit has a master/slave behaviour in respect to the petrol electronic control unit).
- Controls the closing of the LPG safety solenoid valves (in less than 5 seconds) in case of accidental arrest of the engine **even with the panel inserted.** <T

The LPG electronic control unit is made using high quality components specifically designed for the automotive sector guaranteeing full electromagnetic compatibility and is type-approved according to the ONU ECE R67/01 and R10/02 standards.

ELECTRO-INJECTOR UNIT

The electro-injector unit is an electromechanical device directly controlled by the LPG. It is in charge of the gas dosage coming from the vaporiser and directed towards each cylinder.



This is an electro-mechanical device that intercepts the flow of LPG liquid coming from the tank and directed to the vaporiser. It also comes with a cartridge filter that holds any solid impurities present in the liquid LPG, which are harmful for the correct functioning of the system.



CHANGEOVER SWITCH



The changeover switch is the electronic device that normally allows the user to command the changeover between the two fuel systems. It also displays the system's various operating conditions. It comes with a modern and basic design and is

very compact which makes it easy to mount on the dashboard. It also has the function of indicating the amount of LPG in the fuel tank. This quantity is displayed on the level quadrant of the changeover switch (see paragraph "Use of the system")

ENGINE COMPARTMENT SOLENOID VALVE

GASEOUS PHASE LPG FILTER

It is a mechanical device which filters the LPG coming out of the vaporiser and directed towards the electro-injector. This filter has the function of holding any solid impurities present in the liquid LPG providing more protection to the correct functioning of the electro-injectors.



- pressure relief valve,
- thermal fuse (if provided for by tank approval).
- level indicating sensor,
- LPG filling unit,
- watertight chamber (only if the accessories are located in the vehicle's passenger compartment).

Some of the above accessories are often grouped together in a single multi-functional component called the “multi-valve, which is mounted on a special ring on the tank.

FUEL TANK AND RELATIVE ACCESSORIES

The tank stores the LPG in the liquid state. The tank is filled at a fuel distributor via a special attachment fastened on the body of the vehicle called the “filling inlet.” The nozzle is applied to this filling inlet. Two types of tanks can be installed on the vehicle: a cylindrical tank and a toroidal tank. The cylindrical tank has a higher storing capacity with equal amount of space occupied in respect to the toroidal tank. Instead, the toroidal tank has the added advantage of being able to be installed in the spare-tyre compartment, thus allowing more use of the luggage compartment. For operating and safety reasons, the tank comes with the following accessories:

- a filling limit device on the tank,
- excess flow valve,
- shut-off solenoid valve,

6. SAFETY DEVICES

The current LPG systems meet safety standards above those of older systems, both during normal use and in case of accidents. To ensure above high safety standards, established by European homologation rules ONU ECE R67-01, the equipment includes the devices described below.

6.1. SHUT-OFF SOLENOID VALVE

The LPG system comes with two LPG shut-off solenoid valves:

- Solenoid valve located on the tank
- Engine compartment solenoid valve located upstream of the vaporiser

Both have the function of automatically isolating the tank from the rest of the system. The "normally closed" valves are automatically closed in the following cases:

- with the engine off;
- during petrol functioning;
- during LPG functioning in phase of cut-off;
- In case of intervention to the "Safety Car" function (see paragraph on "LPG electronic control unit").

6.2. EXCESS FLOW VALVE

This is a mechanical shut-off valve which interrupts the LPG coming from the tank. If the LPG supply tube from the tank to the vaporiser should break, the valve is automatically activated and the tank is isolated from the rest of the system, thus preventing any LPG leakage.

6.3. FILLING LIMIT FOR LPG TANK

The tank comes with a valve that, during the filling of LPG, automatically limits the LPG filling to 80% of the volume available in the tank. This means that, for example, a tank with a capacity of 40 litres can hold a maximum of 32 litres of LPG. The volume of liquid LPG tends to increase with the temperature. If the tank was filled at 100%, following an increase in the temperature, the volume of liquid LPG would increase with the consequent increase of pressure. The limiting at 80% of the filling stops this from happening. In any case, if the pressure in the tank should exceed 27 bar, the pressure relief valve would intervene to restore the safety conditions.

6.4. THERMAL FUSE

Safety device located on the tank. If the car is involved in a fire, this device is activated and eliminates the risk of explosion of the tank.

Some types of tanks do not come with a thermal fuse. For these tanks, a suitably dimensioned pressure relief valve has the same safety function as the thermal fuse.

6.5. PRESSURE RELIEF VALVE

Safety device located on the tank that is activated if the pressure inside the tank exceeds 27 bar. The activation causes a temporary and controlled discharge of LPG which only lasts for the time needed for the pressure value inside the tank to fall below the threshold value.

7. USE OF THE SYSTEM

The LPG *Polàris* system is activated/deactivated by simply pressing the special switch located on the changeover panel.

The changeover switch mainly allows choosing to supply the engine with petrol or gas and therefore to execute the switch between the two fuel systems (from gas to petrol or from petrol to gas). To use the changeover switch simply press the changeover button according to the instructions below.

In order to understand the correct use of the changeover switch, it is important that the user knows some basic information/recommendations ("Display of the changeover switch" and "procedure to select the fuel") on the functioning of the gas system installed on the vehicle.



The user can give two main commands, which are:

1. changeover to petrol
2. changeover to LPG.

The first command allows changing the engine fuel supply from LPG to petrol.

The second command allows changing the engine's fuel supply from petrol to LPG. This command is managed by the LPG electronic control unit that executes it on condition that the temperature of the vaporiser is higher than a pre-set value.

The LPG electronic control unit memorises the fuel mode set by the user with the changeover switch. The last fuel mode set is kept even after the engine is switched off. It will be proposed on the next start-up. In any case, the start-up of the engine **always** occurs in the petrol mode.

Warnings



The changeover of the fuel supply from petrol to LPG after a cold start-up of the engine is not instantaneous, but requires a certain amount of time depending mainly on the weather conditions. This interval relates to the time necessary for the vaporiser to reach the changeover temperature.

There must always be petrol in the tank, because the engine automatically starts in the petrol mode.

It is recommended to fuel the engine with petrol every now and again to protect the efficiency of the car's original fuel system.

The engine can be started in LPG mode only in special emergencies and when it is absolutely necessary. This can be done by activating the "gas emergency start-up" (see paragraph "Fuel selection procedure"). The manufacturer does not recommend the indiscriminate use of the "gas emergency start-up" and assumes no responsibility for any damage and malfunctioning it may cause.

7.1. DISPLAY OF THE CHANGEOVER SWITCH

The display of the changeover switch provides useful information according to the different configurations of the LEDs.

The display of the changeover switch is divided into three main areas, called quadrants, as shown in the figure below.

PROCEDURES FOR FUEL SELECTION

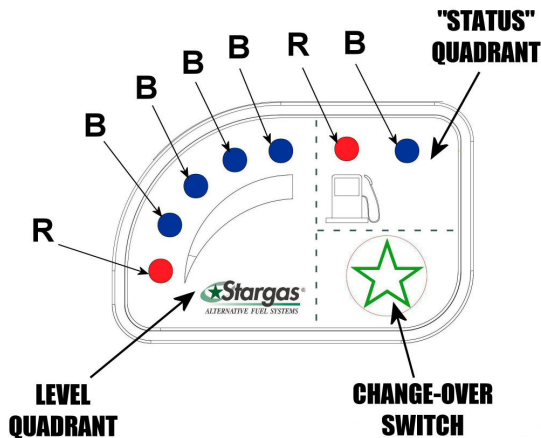
The automatic or commanded procedures for selecting the engine fuel are described below.

The LPG/petrol or petrol/LPG changeovers can occur in a controlled way by the user or automatically by the LPG ECU (LPG electronic control unit).

7.2.1. CHANGEOVER FROM PETROL TO LPG

AUTOMATIC CHANGEOVER TO LPG

The system memorises the last fuel mode set when the engine was switched off and proposes it on the next start-up. Take note: when starting the vehicle after switching-off the engine in LPG mode, the engine nevertheless starts in the petrol mode (as shown in Fig. 7.2.1-2) and then **automatically** changes over to LPG (as shown in Fig. 7.2.1-3). If the temperature of the vaporiser is higher or equal to the temperature of petrol/LPG changeover, the changeover to LPG occurs after a few seconds (Fig. 7.2.1-3). However, if the vaporiser temperature is lower than that of the petrol/LPG changeover, the engine continues to function temporarily in the petrol mode (as shown in Fig. 7.2.1-2) until the vaporiser reaches the changeover temperature. The changeover to LPG occurs once this temperature has been reached (Fig. 7.2.1-3). The lower the temperature of the vaporiser in respect to that of the petrol/LPG changeover, the longer the time interval.



B: blue LED

R: red LED




Five LEDs are present on the level quadrant (1 red and 4 blue) mainly indicating the level of LPG in the fuel tank.

The “status” quadrant contains the LEDs (1 red and 1 blue) which indicate the engine’s fuel state, that is, if it is being fuelled by gas or petrol.

A star is stamped on the quadrant of the changeover switch. Press this to execute the changeover of the LPG/petrol fuel supply or the pre-selection of the petrol/LPG changeover.

LPG CONTROLLED CHANGEOVER

If the engine is permanently fuelled by petrol (display Fig. 7.2.1-1), the changeover to LPG must be commanded by pressing the changeover switch. In this case, if the temperature of the vaporiser is higher or equal to the temperature of the petrol/LPG changeover, the changeover to LPG occurs instantaneously and the display instantly passes from the configuration in Fig. 7.2.1-1 to Fig. 7.2.1-3. However, if the vaporiser temperature is lower than that of the temperature of the petrol/LPG changeover, the fuel supply temporarily remains in the petrol mode (the display temporarily remains in the configuration shown in Fig. 7.2.1-2) until the vaporiser reaches the changeover temperature. The changeover to LPG occurs once this temperature has been reached (configuration shown in Fig. 7.2.1-3). The lower the temperature of the vaporiser in respect to that of the petrol/LPG changeover, the longer the time interval.

		
<ul style="list-style-type: none"> • The red LED on the state quadrant is on and steady. • All the LEDs of the level quadrant are off. 	<ul style="list-style-type: none"> • The red LED is steady and the blue LED flashes on the state quadrant. • All the LEDs of the level quadrant are off. 	<ul style="list-style-type: none"> • Only the blue LED on the status quadrant is on and steady. • At least one of the LEDs of the level quadrant is lit up.
Fig. 7.2.1-1	Fig. 7.2.1-2	Fig. 7.2.1-3

7.2.2. CHANGEOVER FROM LPG TO PETROL

PETROL COMMANDED CHANGEOVER




If the engine is permanently fuelled by LPG (display Fig. 7.2.1-3), the changeover to petrol must be commanded by pressing the changeover switch. The commanded changeover from LPG to petrol occurs almost instantaneously. The blue LED turns off and the red LED lights up on the status quadrant, and the LEDs on the level quadrant turn off (config. Shown in Fig. 7.2.1-1).

AUTOMATIC CHANGEOVER TO PETROL DUE TO LOW PRESSURE OF LPG SUPPLY

The automatic changeover as per the configuration in Fig. 7.2.2-1 appears when there is low LPG supply, generally when the LPG in the tank is used up, or for another reason as described in paragraph 4.3 "TROUBLESHOOTING". To stop the LEDs from flashing and therefore to cancel the signal, simply press the changeover switch.

AUTOMATIC CHANGEOVER TO PETROL DUE TO LOW TEMPERATURE OF THE GAS SUPPLY

The automatic gas/petrol changeover, as shown in Fig. 7.2.2-3 appears when the temperature of the vaporiser falls below the pre-set temperature of the automatic gas/petrol changeover, most likely due to one of the causes described in paragraph 4.3.

		
<ul style="list-style-type: none"> • The red LED on the status quadrant is on and steady. • All the LEDs of the level quadrant are lit up. 	<ul style="list-style-type: none"> • The red LED on the status quadrant is on and steady. • Only the red LED on the status quadrant is lit up and flashing. 	<ul style="list-style-type: none"> • The red LED is steady and the blue LED is slowly flashing on the status quadrant. • All the LEDs of the level quadrant are off.
<p>Fig. 7.2.2-1</p>	<p>Fig. 7.2.2-2</p>	<p>Fig. 7.2.2-3</p>

7.2.3. EMERGENCY GAS START-UP

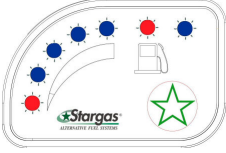


After activating the general control panel with the ignition key, all the LEDs on the changeover panel light up and start to flash simultaneously for about 2 seconds (Fig. 7.2.3-1). During this phase, keep the changeover switch pressed.

As soon as the blue LED of the status quadrant starts flashing **quickly** and the red LED is steady (Fig. 7.2.3-2) release the changeover switch and start the engine within 10 seconds.

If the procedure was executed correctly, the vehicle starts in gas mode and the display of the changeover switch appears as shown in **Fig. 7.2.3-3** (blue LED on the status quadrant lights up and at least one LED of the level quadrant). **In this case, the fuel supply cannot be changed to petrol by simply pressing the changeover switch. Turn off the ignition panel to restore the correct functioning of the changeover switch.**

If the procedure was not executed correctly, the vehicle attempts to start in the petrol mode. To repeat the procedure, turn off the general control panel and repeat the above steps from the beginning.

However, this may not work in particularly low temperatures.

		
<ul style="list-style-type: none"> • All the LEDs on the display are lit up and flashing. 	<ul style="list-style-type: none"> • The red LED is lit up and steady and the blue LED is quickly flashing on the status quadrant. • All the LEDs of the level quadrant are off. 	<ul style="list-style-type: none"> • Only the blue LED is lit up and steady on the status quadrant. • At least one of the LEDs of the level quadrant is lit up.
Fig. 7.2.3-1	Fig. 7.2.3-2	Fig. 7.2.3-3



In order to prevent an excessive accumulation of gas in the intake manifolds, like it would happen in case of repeated attempts of direct starts in gas mode, the system allows just three consecutive attempts of starts directly in gas mode. In case at the third consecutive attempt the engine doesn't start, then the ECU shows an error signal by a LED flashing, like in Fig. 7.2.2-2.

In such a case, after the working problem of the petrol system has been solved, it is necessary to contact an authorized workshop Stargas, to restore the gas ECU.

Only use this procedure if absolutely necessary, after verifying that it is impossible to start the engine in petrol mode.

The Stargas recommends to **DO NOT USE** the “gas emergency start” function if not necessary and assumes no responsibility for damage and malfunctioning that it may cause.

7.3. VARIATION OF THE LUMINOSITY OF THE LPG SWITCHOVER LED

At each start up of the panel, the LEDS of all the quadrants of the switchover panel will start flashing simultaneously.

After a few seconds, all the LEDS of the switch will remain bright in fix way for a few seconds. At this point, press the switch key to vary the intensity of the brightness. You can choose among seven different intensity values.

On releasing the key, the control unit records the set intensity and returns to the normal state of "switchover pending".

If the operation is not successful, repeat the procedure from the beginning

8. MAINTENANCE

Maintenance of the components of the **Polaris** STARGAS LPG system, as well as other components of the vehicle, is essential to guarantee its efficient and safe functioning over time. Maintenance allows reducing the overall running costs of the vehicle. The specific maintenance costs for the gas system are normally very low in respect to the fuel cost savings coming from the use of LPG instead of petrol. Many maintenance interventions established by STARGAS for the LPG system (for example, replacement of air filter, replacement of sparkplugs, etc) are the same as those established by the vehicle's manufacturer in the ordinary maintenance schedule. Therefore, it is recommended to combine the two maintenance schedules to make sure the same type of maintenance is not executed within a short time of each other.

Warnings

The recording of the interventions on the maintenance coupon shown on the last pages of the “user and maintenance manual” is necessary for ensuring the validity of the guarantee.

Therefore, it is important for the user to have the maintenance coupons stamped and dated by the installer, otherwise the guarantee will not be valid.

8.1. MAINTENANCE SCHEDULE

The maintenance schedule established by Stargas provides for a series of maintenance interventions to be carried out at intervals of 20,000 km. The first maintenance service, instead, must be executed 1000 km after installation. This is executed free of charge by the STARGAS authorised garage that installed the system.



Replacement of LPG filters, revision of the electric-injectors, revision of the vaporisers, can be requested at shorter time intervals as those set out in the maintenance schedule. This may depend on the use of LPG with high levels of impurities (dirt, oily residuals, paraffin, etc.).

POLARIS SYSTEM MAINTENANCE SCHEDULE						
	SCHEDULED INTERVENTION					
	1 000	20 000	40 000	60 000	80 000	100 000
Sealing check	X	X	X	X	X	X
Gas and water tubes check	X	X	X	X	X	X
Electric connection check	X	X	X	X	X	X
Air filter efficiency check		X	X	X	X	X
Vaporiser pressure (bar) check	X	X	X	X	X	X
Carburation and calibration check	X	X	X	X	X	X
LPG filter replacement		X	X	X	X	X
Vaporiser revision				X ⁽¹⁾		
Gas electro-injector revision				X ⁽¹⁾		
Visual check of system	X	X	X	X	X	X

(1)the distance travelled is only a recommendation.

The maintenance coupon shows the list of maintenance to be executed, as provided for in the maintenance schedule.

9. STARGAS DEALERS IN ITALY AND ABROAD

For any problem, do not hesitate to contact your installer. If this is not possible (e.g. installer is too far away), you may contact the Stargas Srl sales office (+39 081 5267978). They will give you the name of the Stargas representative closest to you.

10. TROUBLESHOOTING

PROBLEMS	COMMON REMEDIES
The engine does not start in the petrol mode.	<ol style="list-style-type: none"> 1. Execute the “emergency gas start-up” procedure (described in chapter “FUEL SELECTION PROCEDURE”). Contact the vehicle’s service centre if it starts in the gas mode. 2. If the operation above did not work, or you do not want to implement it, electrically “isolate” the LPG system from the rest of the engine and try to start it in the petrol mode. Remove the following wires to isolate the system: <ul style="list-style-type: none"> • wire of the battery power supply unit • wire of the ignition unit <p>If the engine still does not start, then it does not involve a “malfunctioning” of the LPG system installed.</p> <p>However, if the engine starts regularly in petrol mode, contact the STARGAS service centre.</p>
The LEDs on the changeover panel do not turn on when the control panel is inserted.	<ol style="list-style-type: none"> 1. Check that the connector is inserted correctly to the changeover switch. 2. Check the integrity of the wiring of the ignition system.
The car does not changeover to LPG	Check the integrity of the wires of the LPG system
A strong smell of LPG is present in the passenger compartment and engine compartment	<ol style="list-style-type: none"> 1. Close the manual taps located on the fuel tank. 2. Immediately contact a STARGAS authorised installer for a check-up of the system.

11. EQUIPMENT DATA SHEET

Customer details

Last Name: _____

First
Name: _____

Address: _____

Postal
Code: _____ City: _____

Country: _____

Vehicle details

Make: _____

Model: _____

Number
plate: _____

HERCULES vaporiser

Year / Batch / Week: _____

Serial Number: _____

ELIOS control unit

Serial/Number: _____

Version : _____ Month/Year: _____

Electro-injectors

Type: _____

Model : _____ Serial Number: _____

Accessories installed:

Km travelled: _____

Installation date: _____

Stamp and signature of installer

12. MAINTENANCE REGISTRATION (COUPONS)

1st Maintenance coupon, free of charge
1,000 Km from installation

Scheduled maintenance	Tick
Sealing check	<input type="checkbox"/>
Water and gas tubes check	<input type="checkbox"/>
Electric connection check	<input type="checkbox"/>
Vaporiser pressure check (bar) <input style="width: 50px;" type="text"/>	<input type="checkbox"/>
Carburation and calibration check	<input type="checkbox"/>
Visual check of system	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>
Other interventions:	
_____ -	
_____ -	

Date _____

Stamp and signature _____

Km _____

2nd maintenance coupon
20,000 Km from installation

Scheduled maintenance	Tick
Sealing check	<input type="checkbox"/>
Water and gas tubes check	<input type="checkbox"/>
Electric connection check	<input type="checkbox"/>
Vaporiser pressure check (bar) <input style="width: 50px;" type="text"/>	<input type="checkbox"/>
Vaporiser pressure check (bar) <input style="width: 50px;" type="text"/>	<input type="checkbox"/>
Carburation and calibration check	<input type="checkbox"/>
LPG filter replacement	<input type="checkbox"/>
Visual check of system	<input type="checkbox"/>
Other interventions:	
_____ -	
_____ -	

Date _____

Stamp and signature _____

Km _____

**3rd maintenance coupon
40,000 Km from installation**

Scheduled maintenance	Tick
Sealing check	
Water and gas tubes check	
Electric connection check	
Air filter efficiency check	
Vaporiser pressure check (bar)	
Carburation and calibration check	
LPG filter replacement	
Visual check of system	
Other interventions:	
_____ -	
_____ -	
_____ -	

Date

Stamp and signature

Km _____

**4th maintenance coupon
60,000 Km from installation**

Scheduled maintenance	tick
Sealing check	
Water and LPG tubes check	
Electric connection check	
Air filter efficiency check	
Vaporiser pressure check (bar)	
Carburation and calibration check	
LPG filter replacement	
Vaporiser revision	
Gas electro-injector revision	
Visual check of system	
Other interventions:	

Date

Stampe and signature

Km _____

5th maintenance coupon
80,000 Km from installation

Scheduled maintenance	tick
Sealing check	<input type="checkbox"/>
Gas and water tube check	<input type="checkbox"/>
Electric connection check	<input type="checkbox"/>
Air filter efficiency check	<input type="checkbox"/>
Vaporiser pressure check (bar)	<input type="checkbox"/>
Carburation and calibration check	<input type="checkbox"/>
LPG filter replacement	<input type="checkbox"/>
Visual check of system	<input type="checkbox"/>
Other interventions:	
_____ -	
_____ -	
_____ -	

Date _____

Stamp and signature _____

Km _____

6th maintenance coupon
100,000 Km from installation

Scheduled interventions	tick
Sealing check	<input type="checkbox"/>
Gas and water tube check	<input type="checkbox"/>
Electric connection check	<input type="checkbox"/>
Air filter efficiency check	<input type="checkbox"/>
Vaporiser pressure check (bar)	<input type="checkbox"/>
Carburation and calibration check	<input type="checkbox"/>
LPG filter replacement	<input type="checkbox"/>
Visual check of system	<input type="checkbox"/>
Other interventions:	
_____ -	
_____ -	
_____ -	

Date _____

Stamp and signature _____

Km _____



STARGAS Srl

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