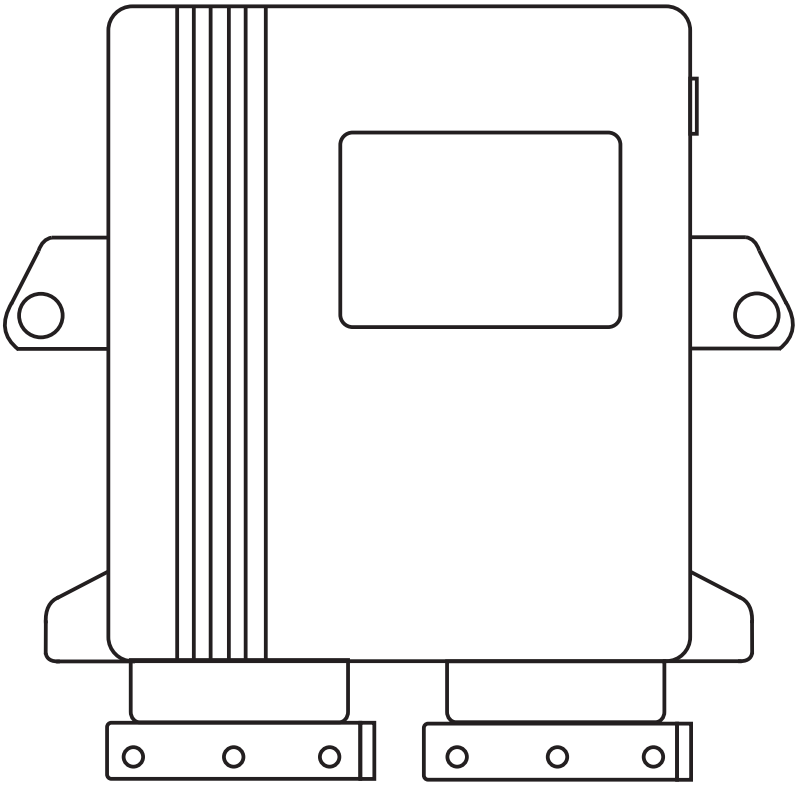
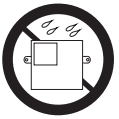
Injection System 2005



Fitting Instructions and Warranty Work



Where to mount the Feedback System:

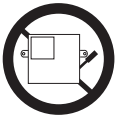
-AWAY from possible **WATER INFILTRATION.**

-AWAY from **EXCESSIVE HEAT SOURCES**(i.e. exhaust manifolds).

-AWAY from **IGNITION WIRE.**

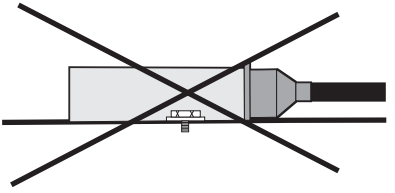
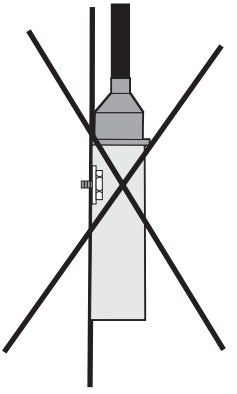
Perform good electrical connections and avoid the use of wire splicers.
The best electrical connection is properly isolated soldering.

Inform the customer that if the GAS system fuse blows, the Control unit restores the System on PETROL mode.



In order to avoid irreparable damage, do not for any reason open the box of the Control unit, especially when the engine is rotating or the ignition key is on.
L.A.E. srl is not responsible for damages to persons or things resulting from the tampering of its products by unqualified personnel. Where such tampering occurs, THE WARRANTY IS VOID.

Mounting the E.C.U.

INCORRECT INSTALLATION	INCORRECT INSTALLATION	CORRECT INSTALLATION
		

WIRING WITH BLACK CONNECTOR

1) BROWN Wire (covered by a small black sheath) -It is used to read the engine RPM. It can be connected to the RPM wire or directly to the negative side both of a signal coil and of a dual coil. It will be then necessary to set the software of the central unit according to the connection that was carried out.

2) WHITE and GREEN wires -They are to read the fuel (L.P.G. or C.N.G.) quantity that the tank contain. According to the type of used sensor, the wire connection (see diagram) and the central unit programming can change.

3) Wire with 2-contact connector (Blue and Black wires) -They control the pressure regulator solenoid valve.

4) Wiring with 2-contact connector (Orange and Black wires) -There are used to read the temperature of the reduction unit. Connect it to the temperature sensor located under the reduction unit.

5) PURPLE and GREY wires -Arrangement for the oxygen sensor. **Connect if necessary.**

6) Wiring with RED BUS BAR and 2-contact connector (Orange-Black and Black wires)-They are used to read the GAS temperature.
Connect to the GAS temperature that is located on the GAS injector rail.

7)RED-BLACK and BLACK wires -They are the power supply and the central unit ground. Connect them directly to the battery. Put the supplied fuse on the RED-BLACK wire.

WIRING WITH GREY CONNECTOR

8) BLUE and BLACK wires -They control the GAS multivalve (in case of L.P.G. system) and other various gas devices (i.e. timing advance processor, etc.).
BLUE wiring supply, **BLACK** wiring ground.
WARNING: do not invert the polarities in particular with reference to solenoid valves with internal diode.

9) Wiring with 4-contact connector -Connect it to the pressure gauge supplied with the kit.

10)Wiring with wires marked A, B, C, D - These are the wires that control the GAS injectors. For the system correct operation, it is important that the wire marked **A** is connected to the cylinder corresponding to the PETROL injector on which the cut-injector marked **A** has been connected (see diagram).

11) Wiring with 10-contact connector -Connect it to the injector disconnector wiring (see pages10-11).

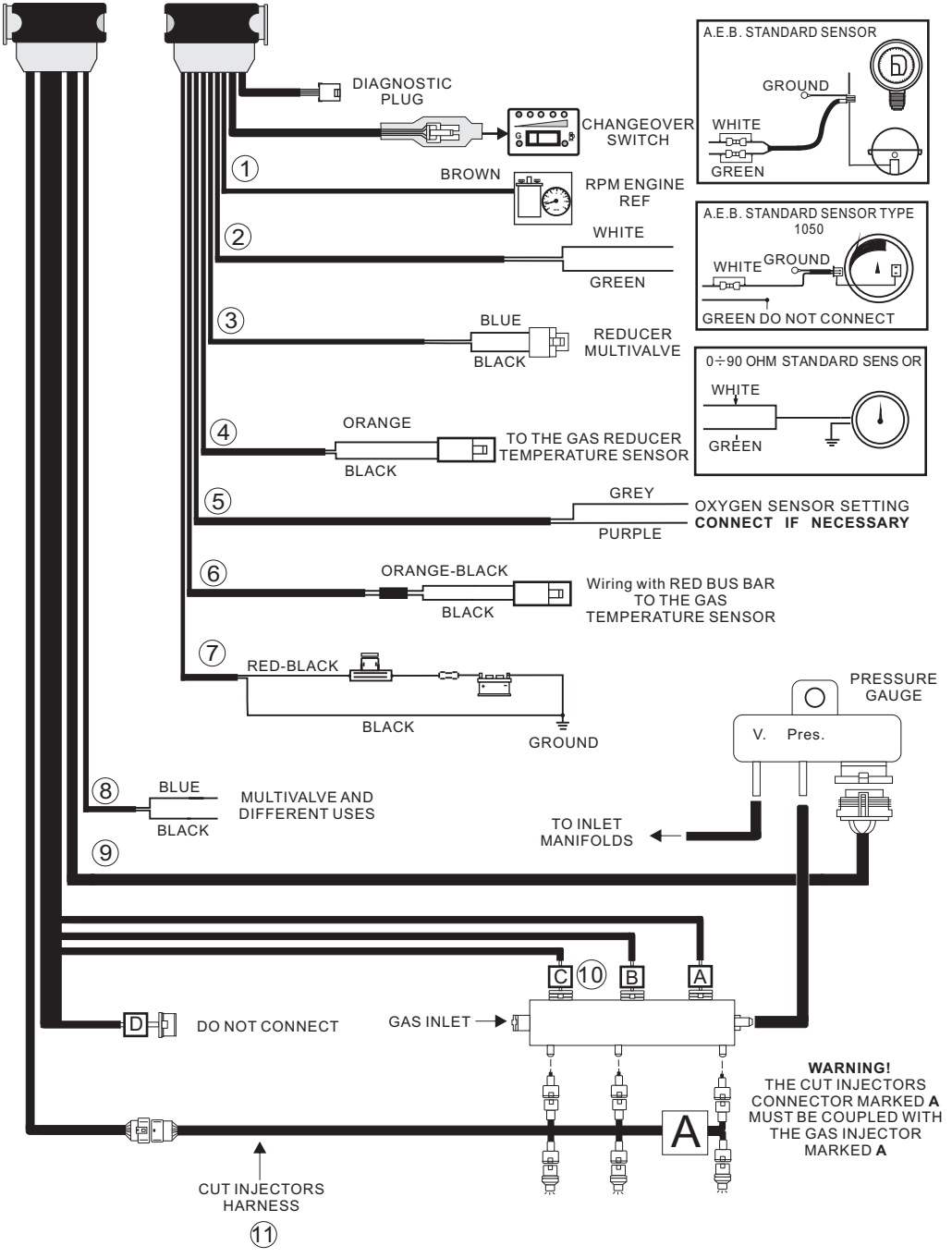
PRESSURE GAUGE

The pressure gauge informs the GAS central unit about the pressure difference that is present between the GAS injectors and the suction manifolds.
In the pressure gauge lower part you can find 2 nozzled identified by the word **Pres.** and **V.**

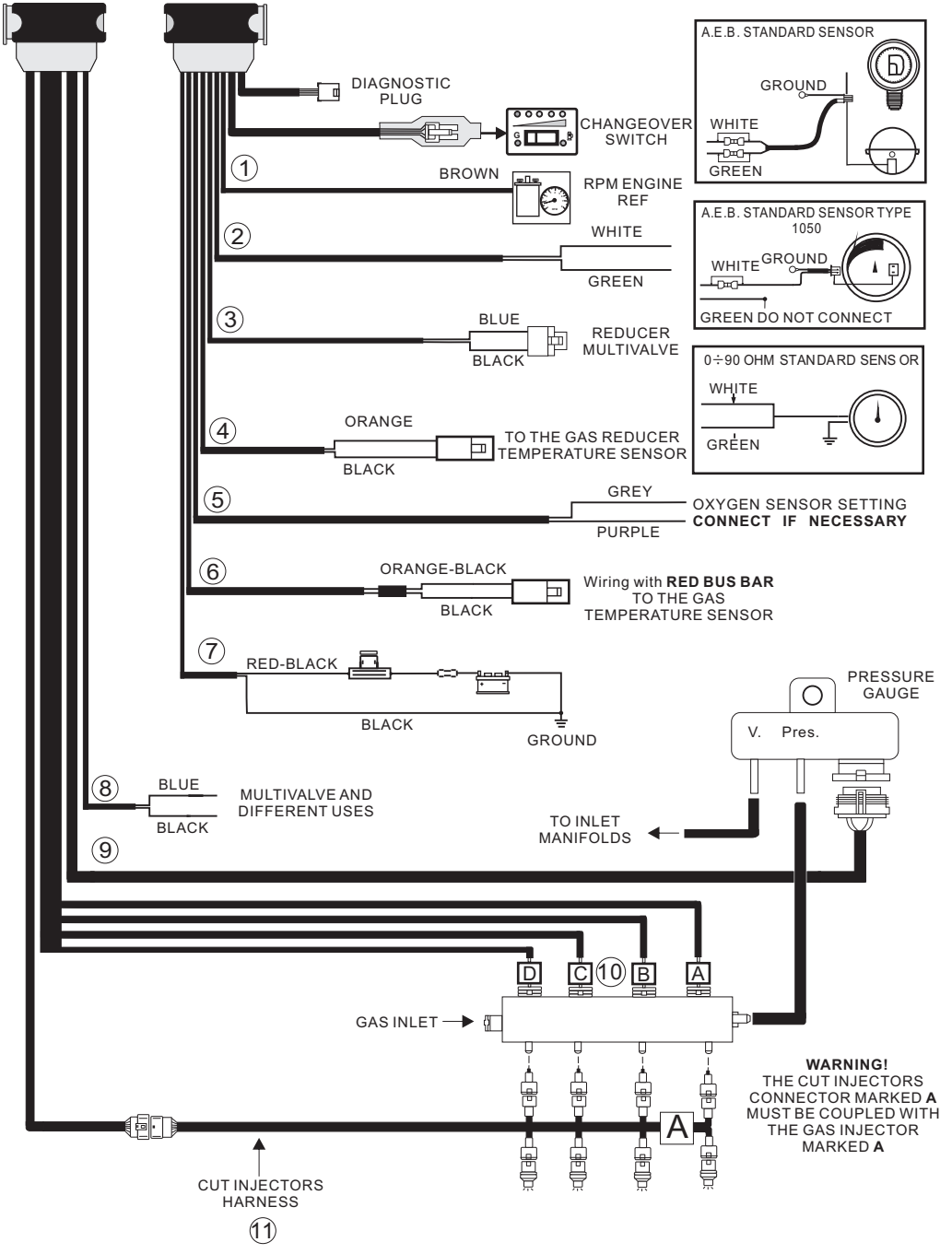
-connect the GAS pressure hose coming from the GAS injector rail to the **Pres.** nozzle;

-connect the vacuum hose coming from the suction manifolds to the **V.** nozzle.

3 cylinders vehicle wiring diagram



4 cylinders vehicle wiring diagram



WIRING HARNESS CONNECTION DESCRIPTION

1) BROWM wire(covered by a small sheath)- It is used to read the engine RPM. It can be connected to the RPM wire or directly to the negative side both of a signal coil and of a dual coil. It will be then necessary to set the software of the central unit according to the connection that was carried out.

2) WHITE and GREEN wires- They are used to read the fuel (L.P.G. or C.N.G.) quantity that the tank contains. According to the type of used sensor, the wire connection (see diagram) and the central unit programming can change.

3) Wiring with 2-contact connector (Blue and Black wires)- They control the pressure regulator solenoid valve.

4) Wiring with 2-contact connector (ORANGE and BLACK wire)- This is used to read the temperature of the reduction unit . Connect it to the temperature sensor located under the reduction unit.

5) Wiring with RED BUSH STRIP and 2-contact connector (ORANGE-BLACK and BLACK wires)- This is used to read the GAS temperature. Connect to the GAS temperature that is located on the GAS injector rail.

6) PURPLE and GREY wires- Arrangement for the Oxygen Sensor bank 1. Connect if necessary.

7) PURPLE-BLACK and GREY-BLACK wires- Arrangement for the Oxygen Sensor bank 2. connect if necessary.

8) BLUE and BLACK wires- He control the gas multivalve (in case of L.P.G. system) and other various gas devices (i.e. timing advance processor, etc.).

9) RED-BLACK and BLACK wires - They are the power supply and the central unit ground. Connect them directly to the battery. Put the supplied fuse on the RED-BLACK wire.

10) Wiring with 4-contact connector - Connect it to the pressure gauge supplied with the kit.

11) Wiring with wires marked A,B,C,D -These are the wires that control the GAS injector. For the system correct operation, it is important that the wire marked A is connected to the GAS injector corresponding to the PETROL injector on which the cut-injector marked A has been connected (see diagram).

12) Wiring with 10-contact connector- Connect it to the cut-injector wiring (see page 22-23).

13) Wiring with wires marked E,F,G,H - These are the wires that control the GAS injectors. For the system correct operation, it is important that the wire marked E is connected to the GAS injector corresponding to the PETROL injector on which the cut-injector marked A has been connected (see diagram).

14) Wiring with RED BUSH STRIP and 10-contact connector- Connect it to the cut-injector wiring (see page 10-11).

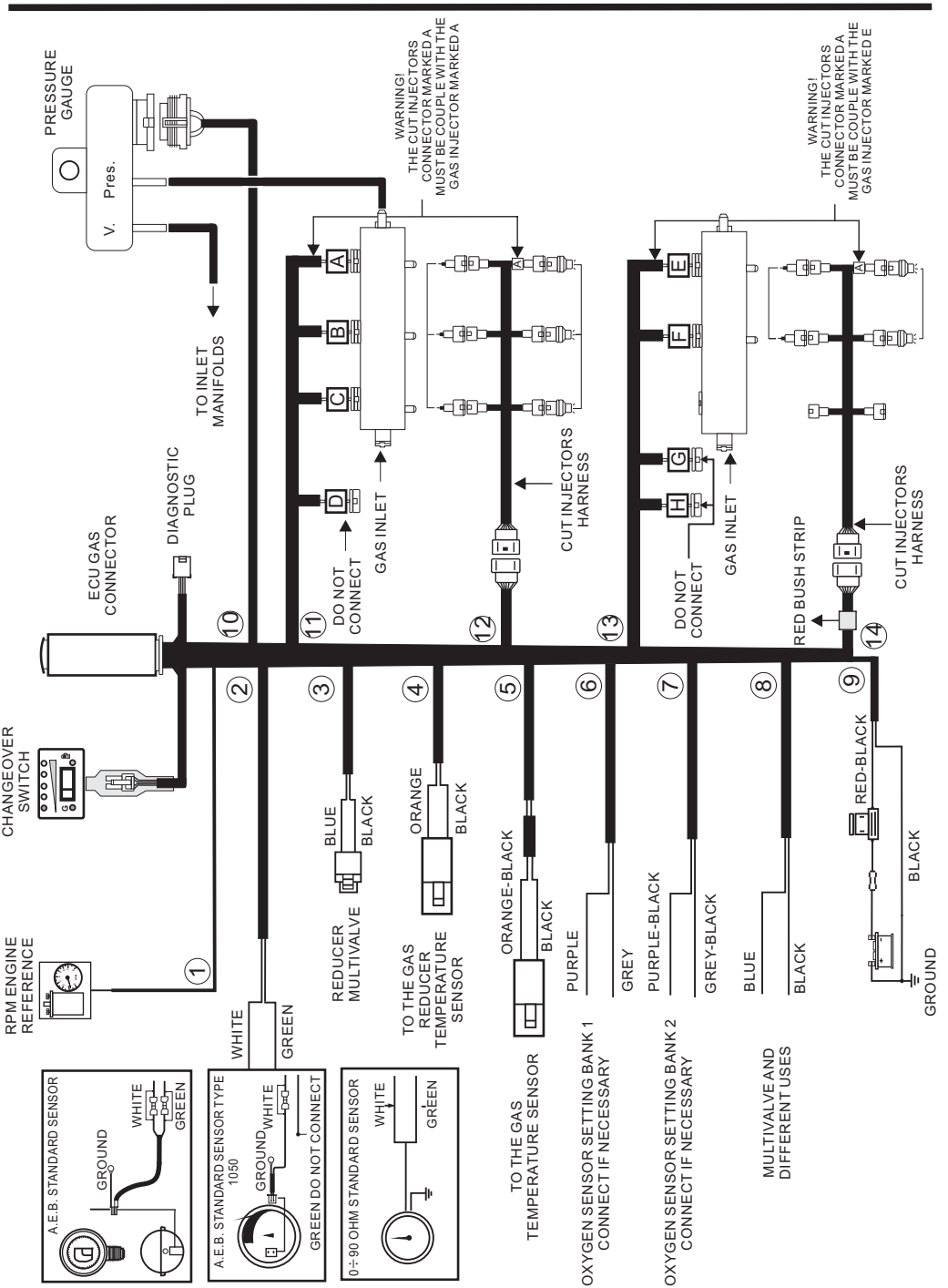
PRESSURE GAUGE

The pressure gauge informs the GAS central unit about the pressure difference that is present between the GAS injectors and the suction manifolds.
In the pressure gauge lower part you can find 2 nozzles identified by the words **Pres.** and **V.:**

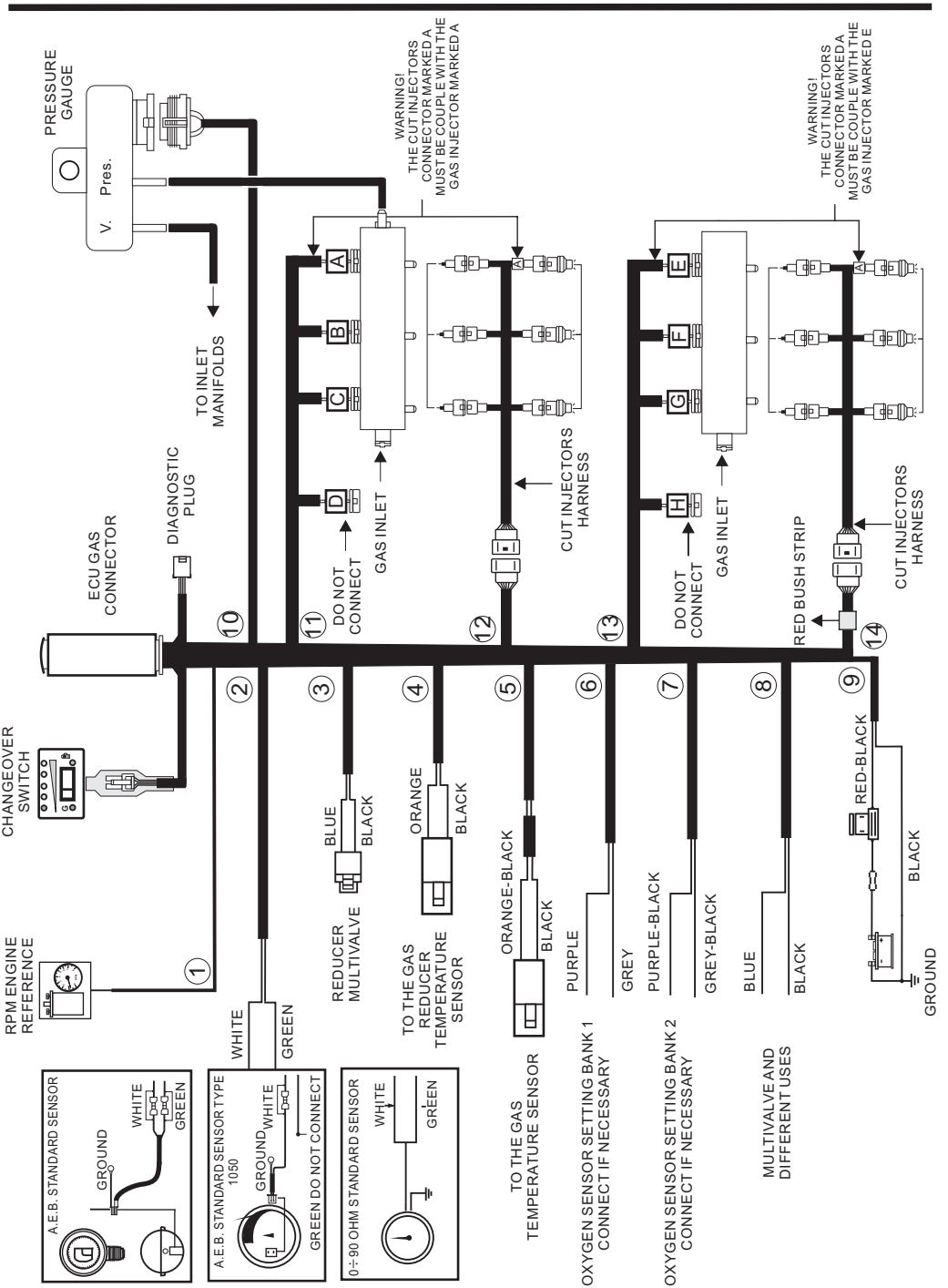
-connect the GAS pressure hose coming from the GAS injector rail to the **Pres**. nozzle;

-connect the vacuum hose coming from the suction manifolds to the **V.** nozzle.

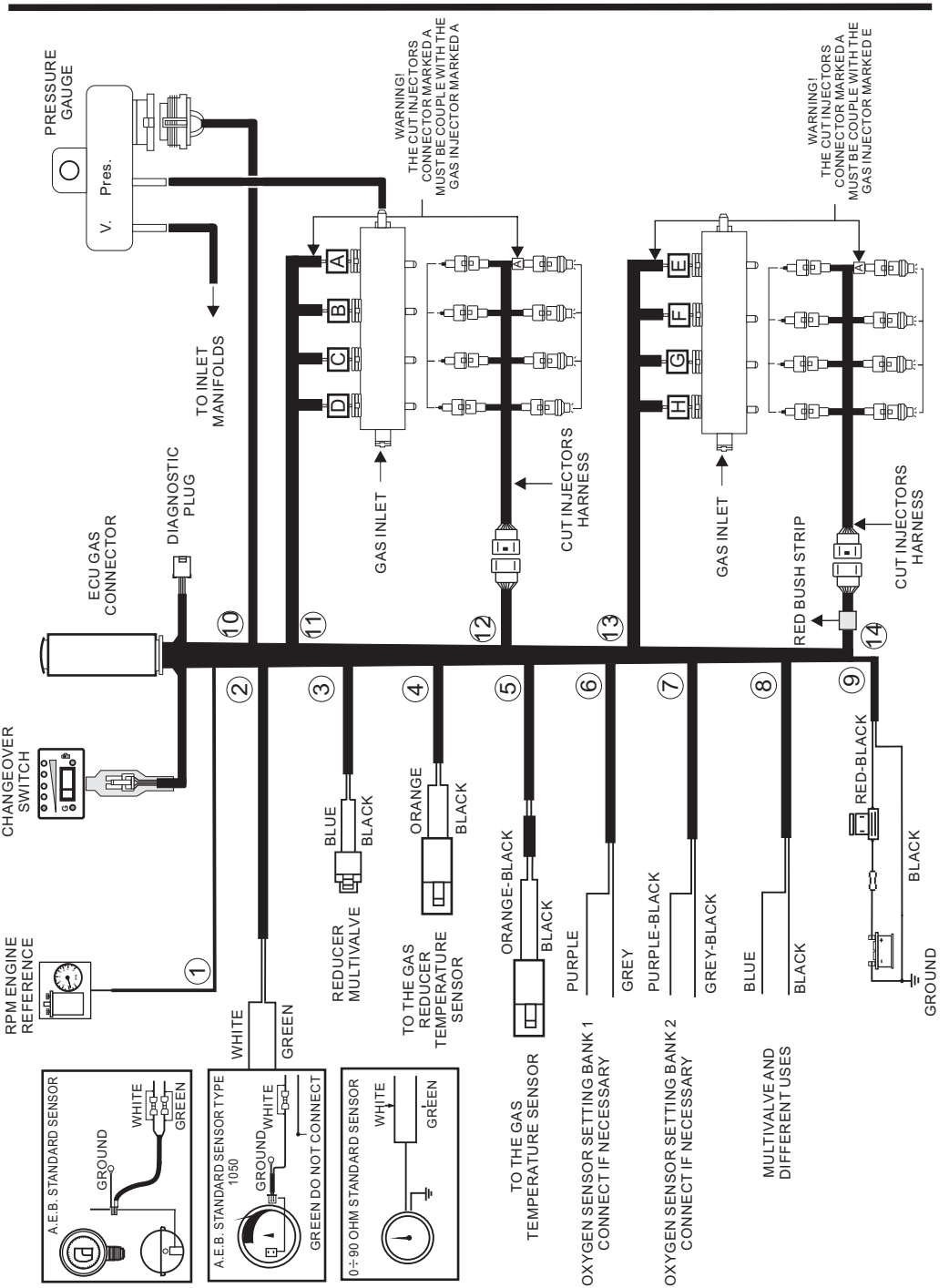
5 cylinders vehicle wiring diagram



6 cylinders vehicle wiring diagram



8 cylinders vehicle wiring diagram



Checking the injector disconnecting wiring to be used

There are different types of injector disconnecting wiring to be combined to the injection control unit: **Code Sa144, Code SA144INV, Code SA144J, Code SA144JINV, Code SA144SJ, Code SA144E, Code SA144U, Code Sa143 and Code SA143INV.**
NOTE: the injector disconnecting wiring must be ordered separately; it is not included in the kit.

To know which injector disconnecting wiring you must use, it is necessary to check on the PETROL injector connector which PIN the injector position pole reaches.
To identify which one of the two wires is the positive side, follow these instructions:
-disconnect all the injector connectors;
-take a multimeter;
-place the negative best prod on the ground;
-switch on the panel and immediately check whether a +12 voltage is supplied.
CAUTION:If the +12 voltage is timed, therefore after some seconds from the panel switch-on it fails. We recommend to check the polarity of every injector connector to make sure that no one of them is inverted (it's difficult, but not impossible).

SA144-SA144INV for 4-8 cylinder cars

Wirings **Code SA144** and Code **SA144INV** are equipped with "BOSCH" type connectors to be connected directly to the PETROL original injectors; to establish whether to use model **Code SA144** or **Code SA144INV**, you need to check the polarization of the PETROL injector connectors.

Code SA144: it must be used if the positive pole of the original injectors is on PIN No.1 and the negative pole on PIN No.2. Refer to Fig.1.

Code SA144INV: it must be used if the position pole of the original injectors is on PIN No.2 and the negative pole on PIN No.1.Refer to Fig.1.

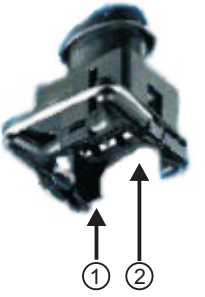


Fig.1

SA144J-SA144JINV-SA144JS for 4-8 cylinder cars

Wirings **Code SA144J** and **Code SA144JINV** are equipped with "JAPAN" type connectors to be connected directly to the PETROL original injectors; to establish whether to use model **Code SA144** or **Code SA144INV**, you need to check the polarization of the PETROL injector connectors.

Code SA144J: it must be used if the positive pole of the original injectors is on PIN No.1 and the negative pole on PIN No.2.Refer to Fig.2.

Code SA144JINV: it must be used if the positive pole of the original injectors is on PIN No.2 and the negative pole on PIN No.1.Refer to Fig.2

Wiring **Code SA144SJ** is equipped with "JAPAN" type pins and with an extended wiring in order to install it on SUBARU cars with BOXER engine. It must be used **ONLY** if the positive pole of the original injectors is on PIN No.2 and the negative pole on PIN No.1.Refer to Fig.2.

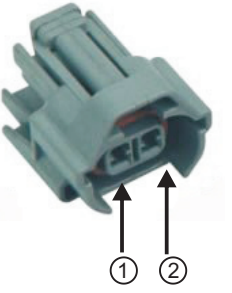


Fig.2

SA144E

Wiring **Code SA144E** is equipped with a 6-contact connector; it is possible to use it on some types of Flat, Citroen or Peugeot cars that use the same connector along the injector wiring.
For the installation and to know on which cars it is possible to use it, follow the instructions enclosed to the wiring.

SA143-SA143INV for 3-5-6 cylinder cars

.Wirings **Code SA143** and **Code SA143INV** are equipped with "BOSCH" type connectors to be connected directly to the PETROL original injectors; to establish whether to use model Code **SA143** or **Code SA143INV**, you need to check the polarization of the PETROL injector connectors.

Code SA143: it must be used if the positive pole of the original injectors is on PIN No.1 and the negative pole on PIN No.2.Refer to Fig.1.

Code SA143INV: it must be used if the positive pole of the original injectors is on PIN No.2 and the negative pole on PIN No.1.Refer to Fig.1.

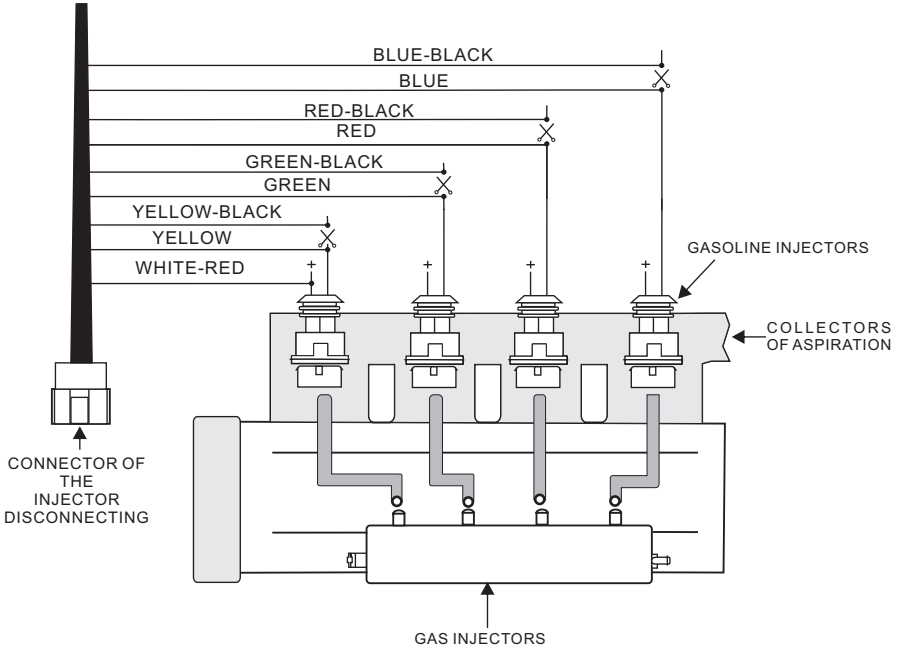
SA144U

All the wires of wiring **Code SA144U** are free without connectors; this wiring must be used on those case were it is not possible to mount other wirings, because they use different injector connectors from ours, or when it is not possible to get the injector original connectors.
To install this wiring, you need to cut the negative wires of the original injectors by following the order in the picture.
The connecting direction is very important; the **striped BLACK** wires must be laid towards the control unit and the others towards the injectors.
The **WHITE-RED** wire must be connected to any of the injector positive sides.

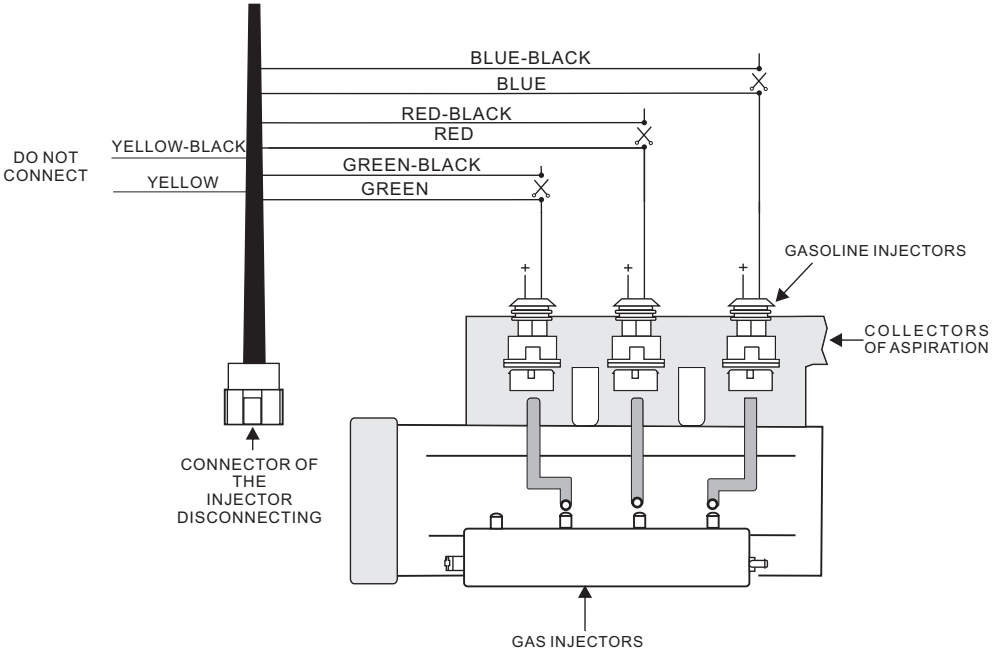
CAUTION!

Observe the connection sequence; the **BLUE** and **BLUE-BLACK** wires must correspond to the **A**-marked GAS injector, while the others as shown in the picture.

Wiring diagram for 4-cylinder cars

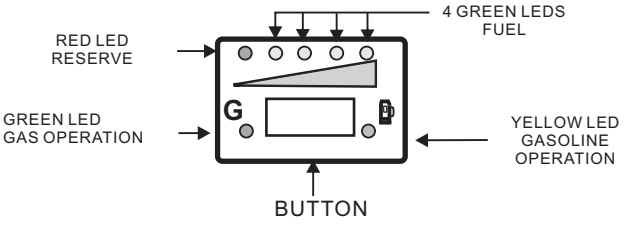


Wiring diagram for 3-cylinder cars



Describing

The switch that is supplied with the kit has a button, 7 luminous LEDs and an inner buzzer with the following functions:



BUTTON

It is used to choose between the PETROL supply and the GAS supply. Press the button once to set the GAS supply and press it again to shift to PETROL.

GREEN LED

Fast blinking-The central unit is arranged for the PETROL starting and the automatic passage to GAS.
Always lit-GAS operation.

RED LED + 4 GREEN LEDS

Fuel level indicator - The RED LED is for reserve, while the 4 GREEN LEDs indicate the fuel level (1/4, 2/4, 3/4, 4/4).This indicator is lit only when the GAS mode is selected.

YELLOW LED

Always lit with GREEN led turned off- PETROL operation.
Always lit with GREEN led blinking- The central unit is arranged for the PETROL starting and the automatic passage to GAS.

PASSAGE TO PETROL DUE TO A LOW GAS PRESSURE

When the switch is in reserve and the GAS pressure fails below a pre-established value, the central unit switches automatically to PETROL. This is done to avoid that the engine can rotate with a too weak mixture, thus damaging the catalyst. Before returning the car to GAS, it is necessary to refuel.
The passage to PETROL due to a low GAS pressure is signalled by the switch with the YELLOW led led's and with the acoustic warning of the inner buzzer.
To set the switch to the normal operation, press once the BUTTON; only the YELLOW led remains lit to indicate that the car is running with PETROL.

EMERGENCY

In case the car cannot be started with PETROL (for instance due to problems with the petrol pump, etc.), it is possible to start it directly with GAS. To do this ,proceed as follows:

- switch on the panel and press the button to set the switch to the PETROL operation;
- disconnect the panel;
- turn on the panel and keep pressing the button until the GREEN led is turned ON (approx. 5 seconds);
- at this point, start the motor without switching off the panel. The car is started directly with GAS;
- every time you switch off the panel, you must repeat this operation to start the CAR in EMERGENCY.

CAUTION!

The EMERGENCY operation can be only activated if the switch is lighted when the panel is turned on.