

# Injection Control Unit BLACK STORM

***Fitting Instructions***



## Index

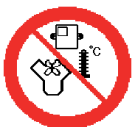
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### **English**

•	General information	<b>3</b>
•	MAP installation diagram	<b>4</b>
•	Wiring description for 3 - 4 cylinders	<b>5</b>
•	3 cylinders car wiring diagram	<b>7</b>
•	4 cylinders car wiring diagram	<b>8</b>
•	Connection of the cut injector wiring	<b>9</b>
•	Change-over switch operation	<b>10</b>

**Where to install the control unit:**

- **FAR** from any **WATER LEAKAGE**



- **FAR** from **EXCESSIVE HEAT SOURCES** (such as exhaust manifolds).



- **FAR** from **HIGH-VOLTAGE CABLES**.



Create efficient electrical connections without using any "POWER TAPS".  
**Properly insulated soldering is the most effective type of electrical connection.**



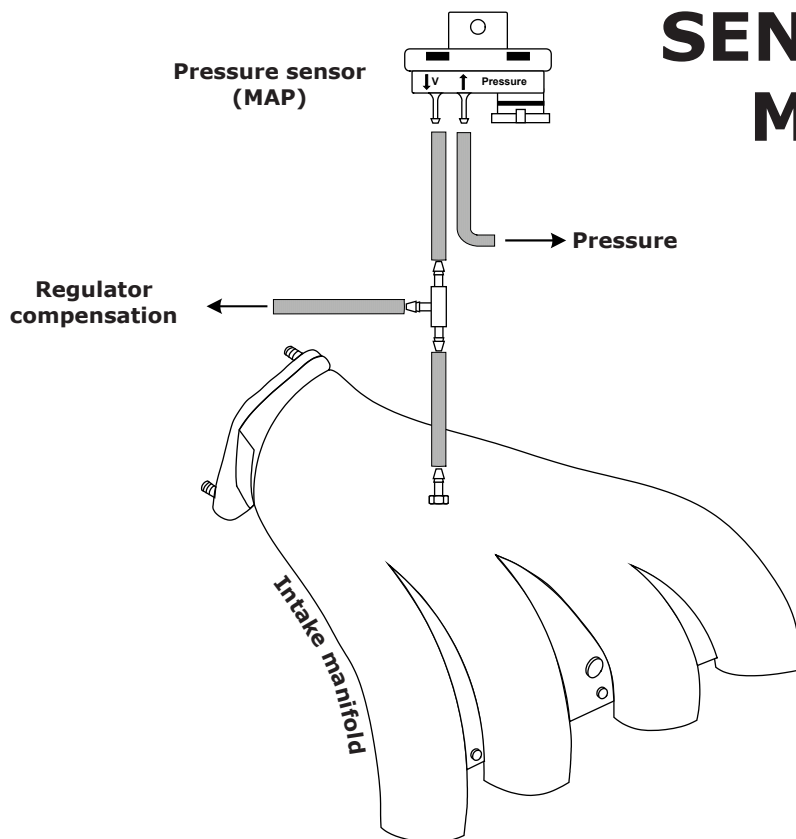
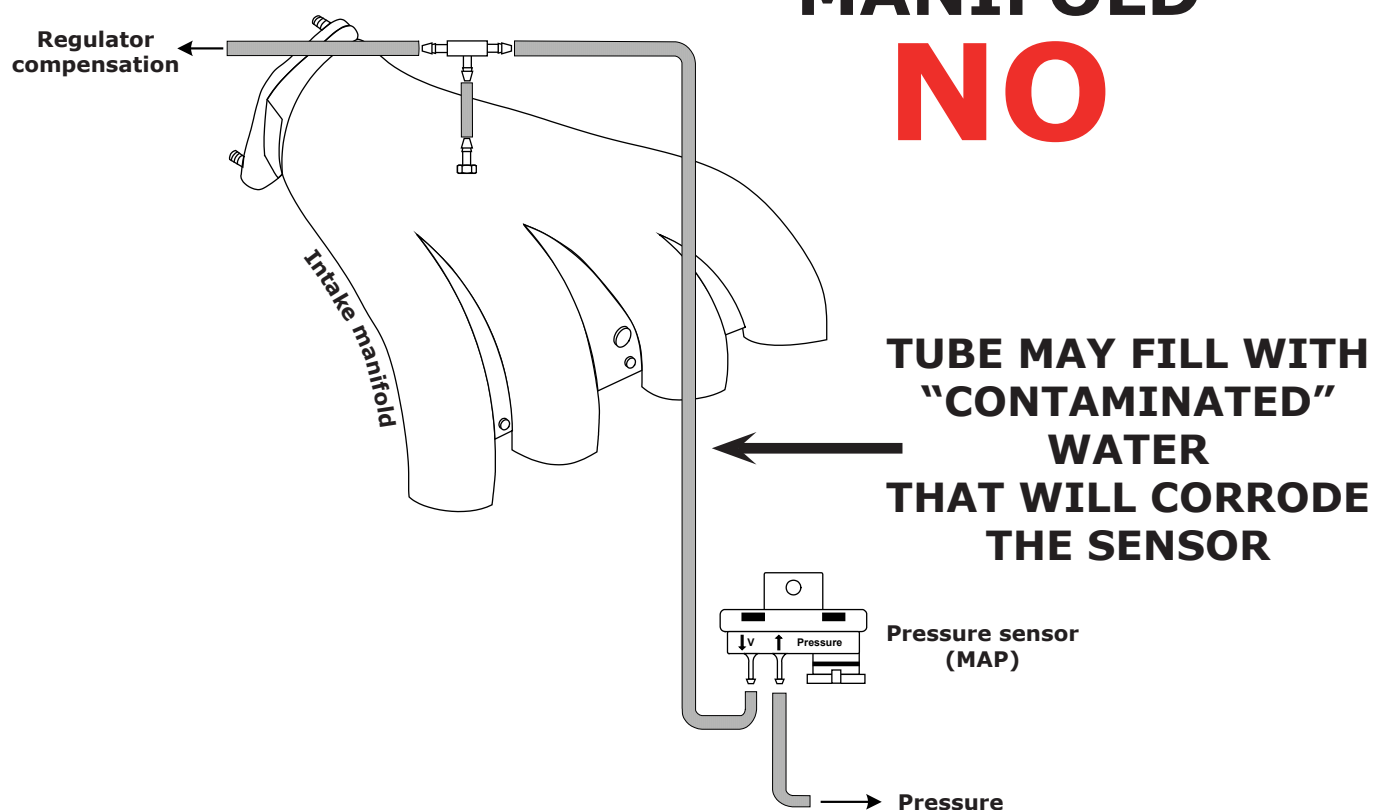
**Advise the customer that if the GAS system fuse burns, the connections of the devices to which it is connected will be restored. It is strongly recommended not to replace the fuse with another one with a higher amperage rating since it may cause irreparable damage.**



Do not open the Control Unit box for any reason, especially when the engine is running or the key is in the ignition, to avoid irreparable damage.  
**ENERGY REFORM will not be held responsible for damage to property or injuries to persons if unauthorised personnel tamper with its devices; such tampering will also invalidate the WARRANTY.**

**How to install the Control Unit**

INCORRECT INSTALLATION	INCORRECT INSTALLATION	CORRECT INSTALLATION

**SENSOR ABOVE  
MANIFOLD****OK****SENSOR BELOW  
MANIFOLD****NO**

### WIRING WITH BLACK CONNECTOR

#### 1) SHEATH WITH 4-PIN CONNECTOR:

diagnostic socket for PC connection through a serial interface.

#### 2) SHEATH WITH 4-PIN CONNECTOR:

for the connection to the changeover switch/indicator.

#### 3) SHEATH WITH BROWN WIRE (covered by a small black sheath):

Needed to read the engine rpm. It can be connected to the engine speed indicator or directly to the negative of a single coil or a bicoil.

The control unit software must be configured based on the connection made.

#### 4) SHEATH WITH WIRES:

**GREEN AND WHITE:** For the connection to the level sensors (L.P.G. or NATURAL GAS PRESSURE) they are used to read the quantity of fuel contained in the tank.

Change the wire connection and the control unit programming according to the type of sensor used (see diagram on pages 7 and 8).

#### 5) SHEATH WITH 2-PIN CONNECTOR (WIRES BLUE AND BLACK):

They control the pressure regulator solenoid valve.

#### 6) SHEATH WITH 2-PIN CONNECTOR (WIRES ORANGE AND BLACK):

There are used to read the temperature of the regulator unit. Connect it to the temperature sensor located under the regulator unit.

#### 7) SHEATH WITH WIRES:

**VIOLET:** signal input only used to display the First oxygen sensor values on the PC (**the control unit does not need this connection to calculate the system operating parameters**).

**GREY:** not used, therefore do not connect.

#### 8) SHEATH WITH WIRES:

**VIOLET-BLACK:** not used, therefore do not connect.

**GREY-BLACK:** not used, therefore do not connect.

#### 9) SHEATH WITH 2-PIN CONNECTOR (WIRES ORANGE-BLACK AND BLACK):

Connect to the temperature sensor positioned on the gas injector rail.

#### 10) SHEATH WITH WIRES:

**RED-BLACK:** connect to battery positive

**BLACK:** connect to battery ground

They are, respectively, the power supply and the ground for the control unit; connect them directly to the battery.

On the RED-BLACK wire connect the fuse supplied with the equipment, positioning it as close as possible to the battery.

**It is strongly recommended not to replace the fuse with another one with a higher amperage rating since it may cause irreparable damage.**

TO BE CONTINUED >>>

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## WIRING WITH GREY CONNECTOR

### 11) Wiring with 4-pin connector:

Connect to the pressure gauge supplied with the kit (aeb 025).

The pressure gauge transmits the pressure difference between the gas injectors and the intake manifolds to the gas control unit.

The bottom part of the pressure gauge has 2 nozzles identified as **Pres.** and **V.**;

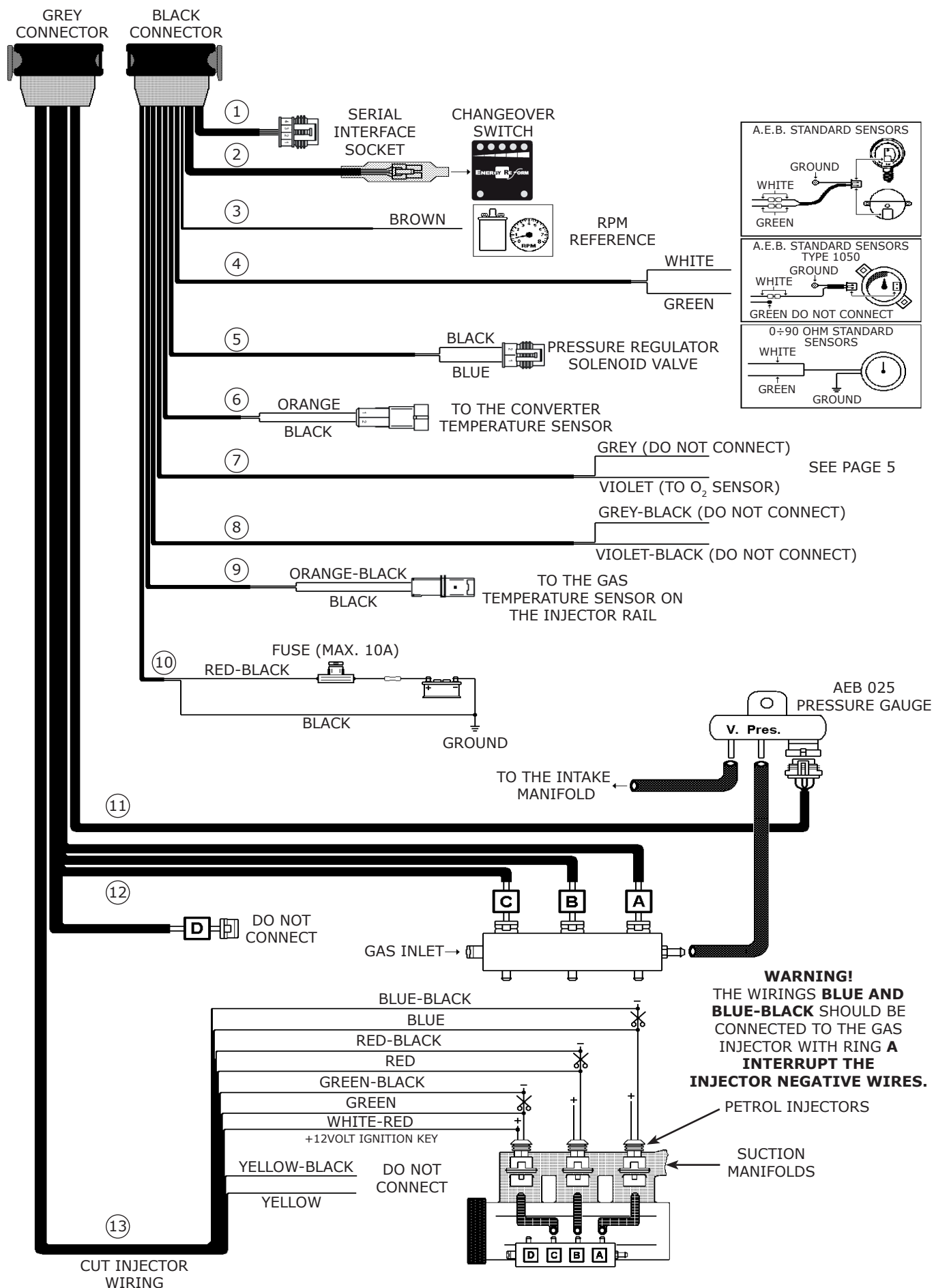
- connect the pressure hose coming from the gas injector rail to the **Pres.** nozzle;
- connect the vacuum hose coming from the intake manifolds to the **V.** nozzle.

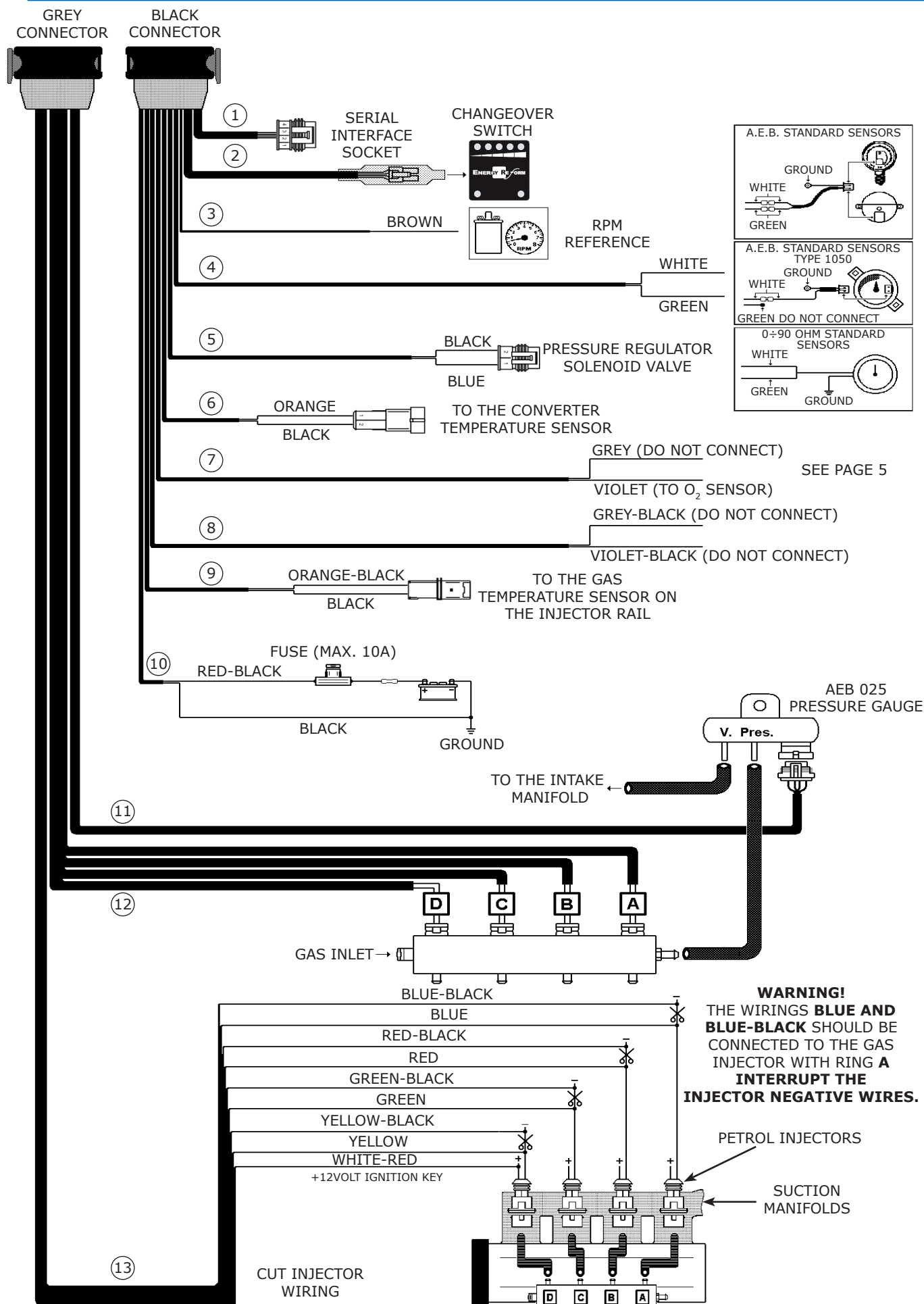
### 12) SHEATH FOR CONNECTION OF THE GAS INJECTORS A, B, C, D.

For the connection refer to the diagrams on pages 7-8.

### 13) WIRING FOR THE CUT INJECTOR CONNECTION:

For the connection to the cut injector wiring refer to the diagrams on pages 7-8 and 9.







### How to check the correct connection of the cut injector wiring

To check the correct connection of the cut injector wiring, you must first check, on the petrol injector connector, on what PIN the injector positive is connected.

**To identify which of the two wires is positive, do the following:**

- **detach all the connectors from the injectors;**
- **set a multimeter to measure DC voltage;**
- **put the negative probe to ground;**
- **put the positive probe into one of the two pins of the injector wiring;**
- **insert the key into the ignition and immediately check the multimeter reading.**

**If the multimeter reads +12 volts, that pin is the positive.**

**WARNING: the injector +12 volt on some cars might be timed; therefore the reading might disappear a few seconds after the ignition is turned on. Check the polarity of all injector wiring connectors to make sure that they are all polarised in the same way.**

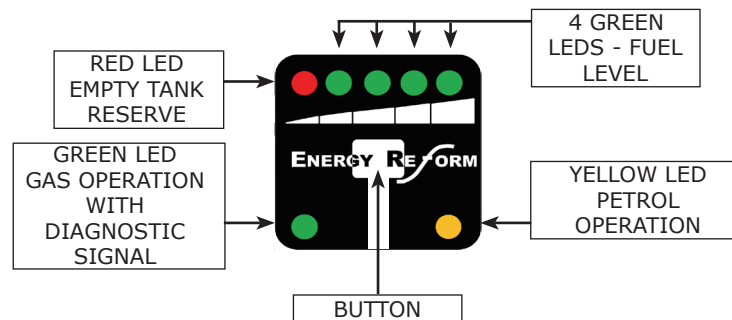
To install the cut injector wiring, cut the negative wires of the petrol injectors in the order indicated in the figure.

The connection direction is very important. The **BLACK striped** wires should be installed toward the petrol injection control unit and the others toward the injectors.

The **WHITE-RED** wire should be connected to any of the injector positives.

## Operating description

The changeover switch supplied with the kit has one button, 7 LEDs and an internal buzzer.



## BUTTON

This is used to select either the petrol or the gas fuel supply. Press the button one time to switch to gas and press it again to return to petrol.

## GREEN LED FUNCTIONS

**Rapid flashing** – the control unit is prepared to start with petrol and switch automatically to GAS.

**Steady on with yellow LED off** – Gas operation.

## RED LED + 4 GREEN LED FUNCTIONS

**Fuel level indicator;** reserve RED LED, while the 4 GREEN LEDS indicate the fuel level (1/4, 2/4, 3/4, 4/4). The indicator is illuminated only when the gas mode is selected.

## YELLOW LED FUNCTIONS

**Steady on with Green LED off** – PETROL operation.

**Steady on with flashing Green LED** – the control unit is prepared to start with petrol and switch automatically to Gas.

## LOW GAS PRESSURE PETROL CHANGEOVER

When the changeover switch indicates the fuel tank is in **reserve** and the gas pressure drops below a set value, the control unit automatically switches over to gas. This prevents the engine from running with an excessively lean carburetion, thus damaging the catalyser. Before returning to gas operation, fill up. The changeover switch signals the **changeover to petrol due to low gas pressure** by activating the internal buzzer, illuminating the YELLOW petrol operation LED and by illuminating the RED LED in an alternating pattern with the 4 GREEN LEDS. To make the changeover switch return to normal operation press the BUTTON one time; the YELLOW LED will remain on to indicate that the car is operating with petrol and the buzzer turns off.

## EMERGENCY

If the car won't start with petrol (e.g. problems with the petrol pump, etc.), it can be started directly with GAS. To do this follow the instructions listed below:

- insert the ignition key and press the button to switch the changeover switch to gas operation;
- remove the key;
- insert the ignition key and keep pressing the button (about 5 seconds) until the GREEN LED stops flashing;
- now, start the engine without turning off the ignition key; the car will start directly with GAS;
- each time the car engine is turned off, the operation will have to be repeated to start in the EMERGENCY condition.

## WARNING!

**The EMERGENCY function can be activated only if the changeover switch is illuminated when the ignition key is turned**



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