TECHNICAL MANUAL FOR EMULATORS AND VARIOUS DEVICES
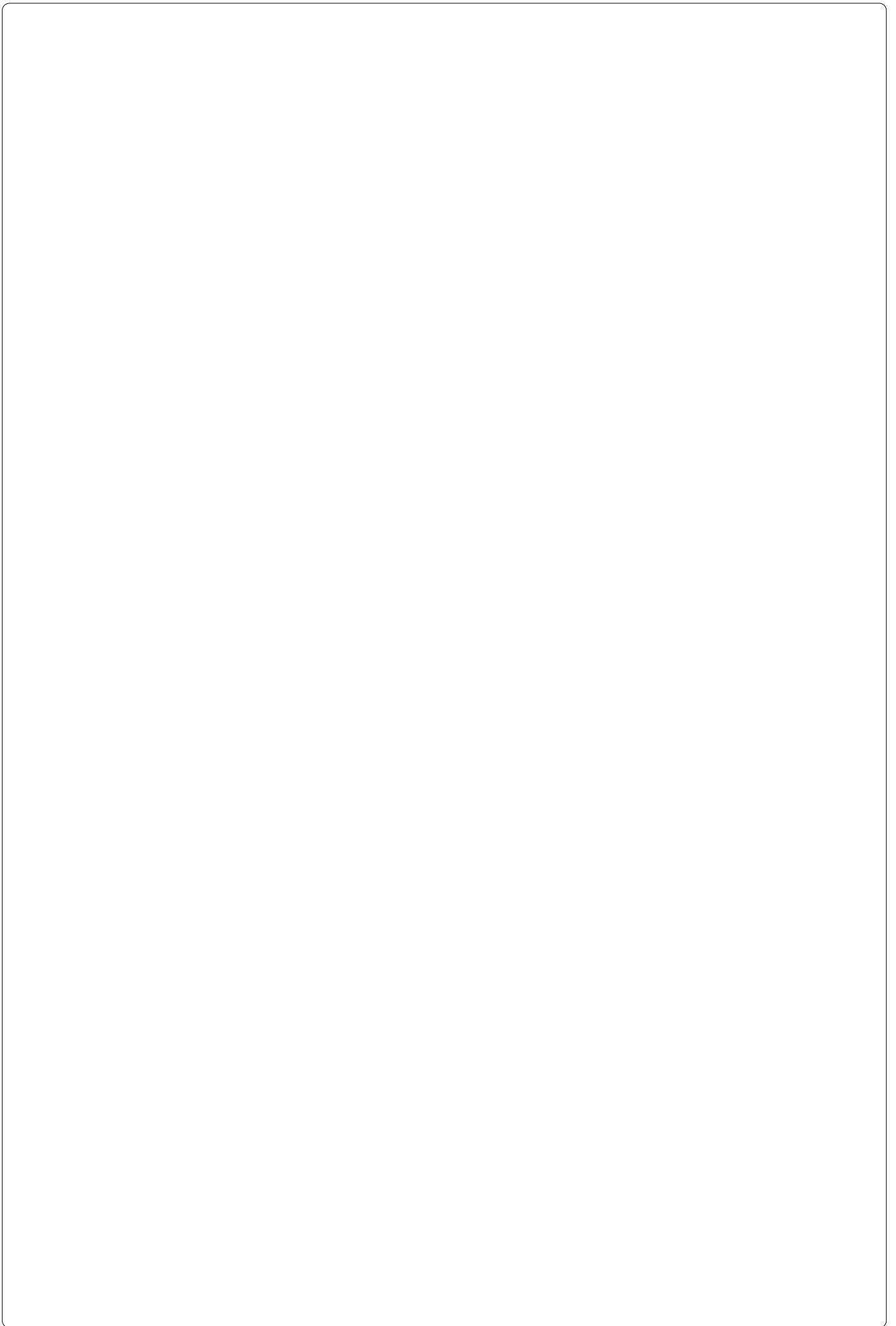
INDEX OF THEMES IN THE A.E.B. MANUAL

WHAT IS AN A.E.B. EMULATOR?

The A.E.B. emulator is a device that during the GAS use of the car *reproduces* or *changes* the operation of a pre - existing electrical or electronic component in the original car equipment.

WHAT IS AN A.E.B. EMULATOR USED FOR?

During the GAS (C.N.G. or L.P.G.) running, some components that are specifically designed for the GASOLINE operation, like for instance injectors, are not necessary anymore; other components, instead, behave in an anomalous way or give unsuitable signals for the good GAS running of the car (ex. oxygen sensor, M.A.P. sensor, heat sensors, T.P.S. sensors, etc.).

Due to the stricter and stricter anti - pollution standards, producers have developed more and more sophisticated central units to constantly check the correct operation of the single components (self - diagnosis).
This brings with it the fact that the necessary interruption of the GASOLINE injection during the GAS running is interpreted by the car central unit as a malfunction. According to the type of self - diagnosis, the original central unit "reacts" in different ways that go from the simple warning light switching on (CHECK - ENGINE) to the interruption of turning - on or to complex power - reduction strategies in order to preserve the engine.

Another very important component for the good car running is the OXYGEN SENSOR; during the GAS running, this latter supplies the original central unit with wrong data relating to the carburation for the good car GASOLINE running. In this way, when the car passes from the GAS to the GASOLINE running, the fuel management is surely unsuitable; the self - adapting data of the original central unit have been modified according to the data acquired by the oxygen sensor, but referred to GAS and no more to GASOLINE.

On the last - generation, EURO 3 and EURO 4 approved cars, to check the carburation parameters the OBDII diagnosis system uses two OXYGEN SENSORS, one before and one after the catalyst; on these cars, the diagnosis system is still more sensitive to the variation of self-adapting parameters.

Despite it is often possible to "zero" the acquisition of incorrect data by opening the memory circuit of the central unit (that is to say, by cutting out the power supply to the battery wire), it happen more and more frequently that data zeroing is possible only through a special diagnosis tool.

In order to establish correctly and use the type of emulator which is necessary on each car, we recommend to read the information supplied by A.E.B. before starting the conversion.

HOW DOES AN EMULATOR WORK?

The operation and the components of emulators can change a lot according to what they have to emulate, anyway the working principle is the same for all of them and is represented by the following operating diagram:
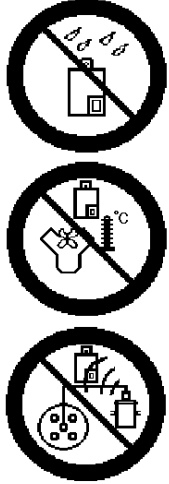
OPERATING DIAGRAM OF AN EMULATOR

GASOLINE RUNNING
SIGNAL / UNCHANHED FUNCTION

| CAR CENTRAL UNIT | EMULATOR | RELAY | ORIGINAL COMPONENT TO BE EMULATED |

GAS RUNNING
OPTIMISED SIGNAL
OR SIMULATED FUNCTION
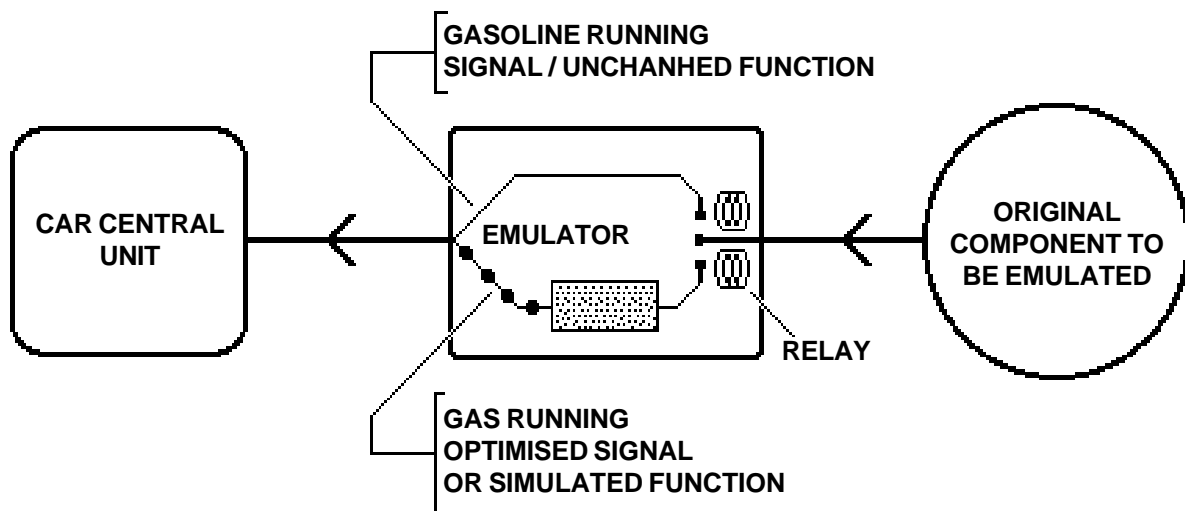
SAFETY, A.E.B. emulators switch on during the gas running and switch off during the gasoline running, thus automatically resetting the connections to the car original electrical system; *this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.*
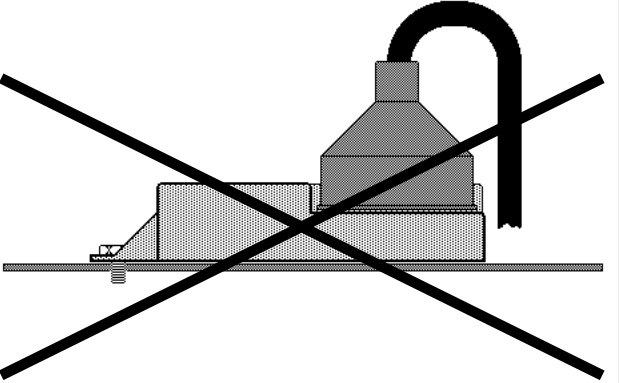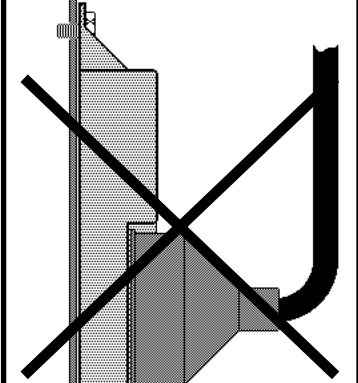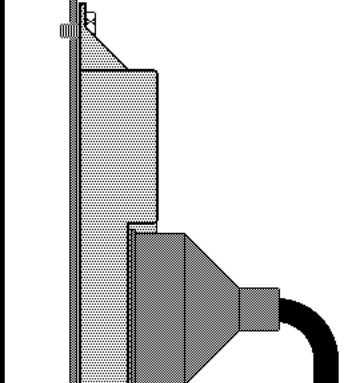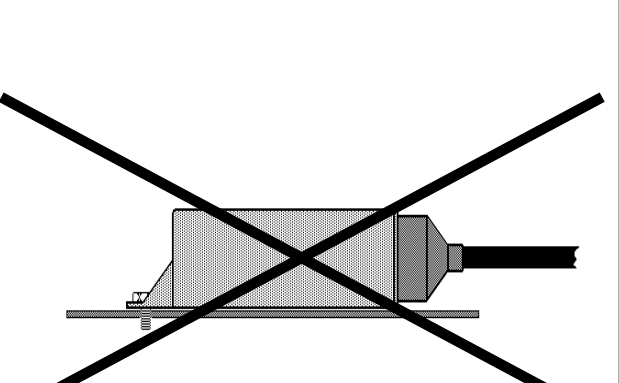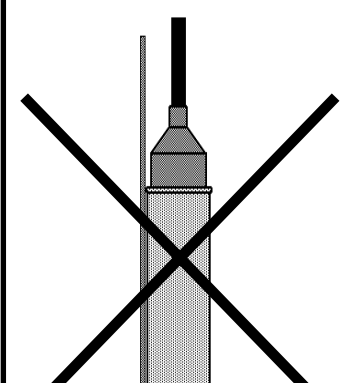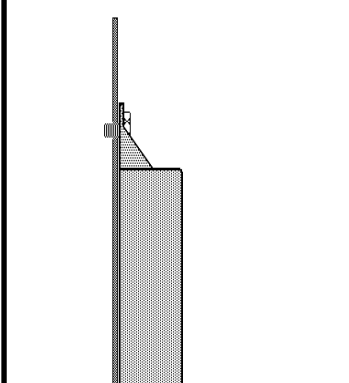
In the following pages we will see in details the various types of A.E.B. EMULATORS.

DESCRIPTION OF THE USED GRAPHIC SYMBOLS

How to fix the EMULATOR:

- FAR AWAY from possible **WATER INLETS**.

- FAR AWAY from **EXCESSIVE HEAT SOURCES** (ex. exhaust manifolds).

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

Carry out some good electrical connections by avoiding the use of "POWER REDUCERS".
Keep in mind that the best electrical connection is a duly insulated welding.

S.O.S.

Inform the customer that, in case of failure, the Emulator is equipped with an EMERGENCY connector that cuts out the Emulator and resets the original connection.

Do not open the Emulator box for any reason, mainly with running engine or switched - one control panel in order to avoid high voltage discharges inside.
A.E.B. refuses any responsibility for damage to things and persons due to the tampering of the device by unauthorised personnel with the consequent GUARANTEE annulment.

Apply the adhesive label supplied with the package on the engine compartment in a well - visible position in order to warn this parties on the EMULATOR presence.

**A.E.B. REFUSES ANY RESPONSIBILITY FOR DAMAGE TO THINGS AND PERSONS
DUE TO THE INCORRECT INSTALLATION OF DEVICES.**

HOW TO FIX AN A.E.B. EMULATOR

WRONG INSTALLATION	WRONG INSTALLATION	CORRECT INSTALLATION

WRONG INSTALLATION	WRONG INSTALLATION	CORRECT INSTALLATION

TECHNICAL SPECIFICATION

Supply voltage	10 V Min.	14 V Max.

Temperature range conforming with AUTOMOTIVE standards

STANDARD ACCESSORIES

- Wiring for electrical connection

- Adhesive warning label to be applied on the car

- Installation and adjusting instructions

- Accessory bag

- Guarantee Certificate to be GIVEN TO THE CUSTOMER

A.E.B. PRODUCTS CONFORM WITH THE FOLLOWING STANDARDS

UL - 94 V - 0	Printed circuits
95 / 54 / CE	Electromagnetic compatibility
R67 / 01 / ECE	
R10 / 02 / ECE	
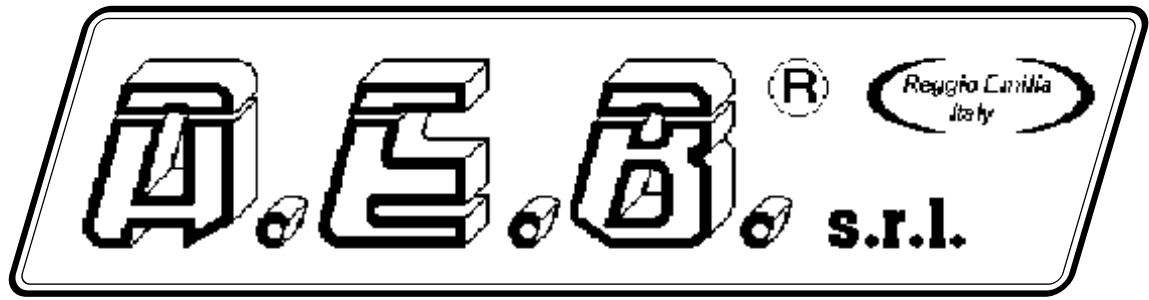
INJECTOR EMULATORS
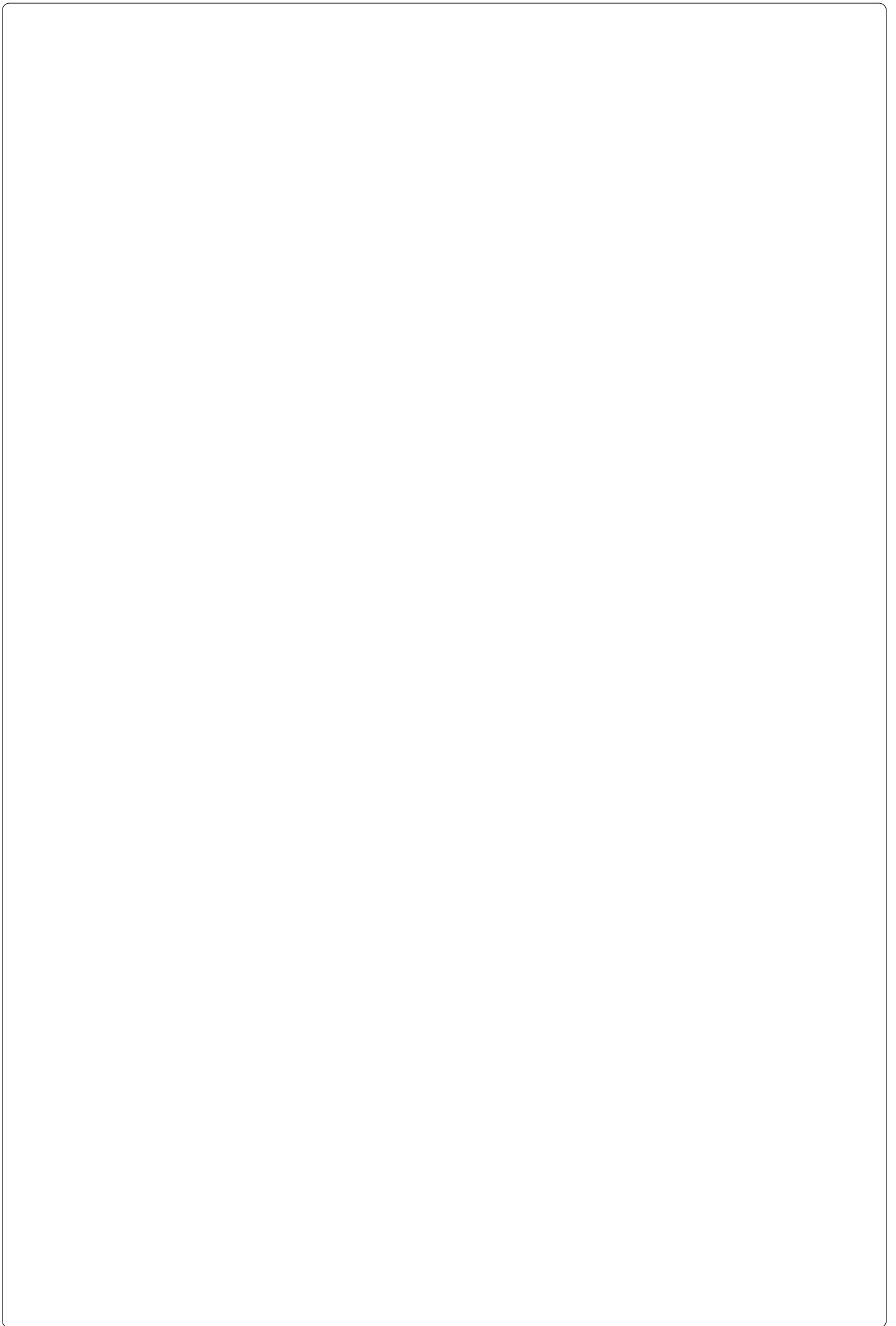
INJECTOR EMULATORS

Injector emulators are device that make it possible to interrupt the gasoline flow during the GAS running and that at the same time simulate the correct operation of injectors or of the gasoline supply system by means of heating elements or inductors that are duly calculated according to the type of injectors and central unit installed on the car.

Example of simplified flow diagram of an injector disconnecting emulator

INJECTION
CENTRAL UNIT

RELAY

POSITIVE
INJECTOR

FROM THE GAS POSITION
OF THE SWITCH
(BLUE WIRE)

OVERLAPPING
(DELAY)

GROUND

INJECTOR

RELAY

RELAY

RELAY
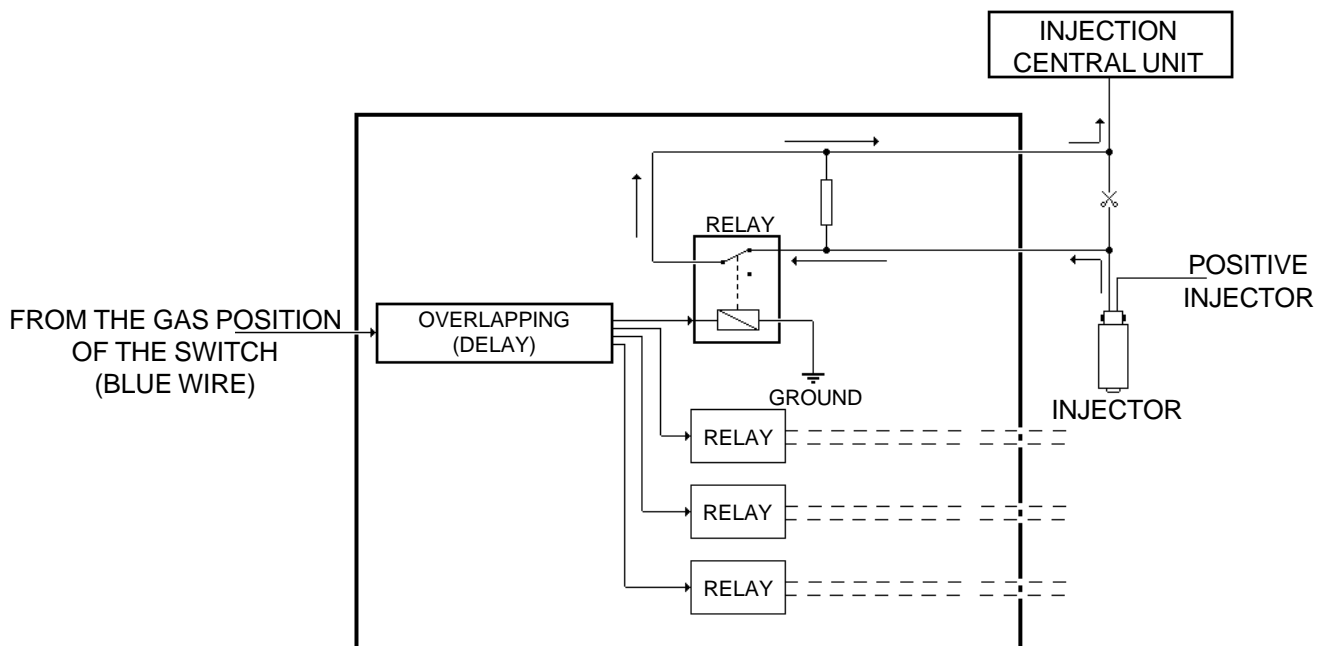
Moreover, these emulators allow to adjust the fuel **overlapping time**. During the passage from gasoline to GAS, any A.E.B. injector emulator delays the gasoline flow interruption of some fractions of seconds in comparison to the opening of gas solenoid valves, thus avoiding carburation voids; in this way, it is possible to reduce backfire risks due to the fact that the GAS reaches the mixer with a slight delay caused by the length of the pipe connecting the pressure reducer to the mixer.

In the most injector emulators, **overlapping time** can be adjusted.

Pitagora injector disconnecting Emulators are equipped with interface wiring to ease the installation and make it possible to leave unchanged the car original wiring.

Anyway, the production of an interface wiring with the same connectors as the original ones is not always possible; in these cases, it is necessary to intervene by cutting the injection system wire and using other types of injector emulators (see emulators Code AEB162 and Code AEB163) by following the instructions supplied with the product. There are also specific emulators for some cars that must not absolutely be used on other cars from the ones indicated on the assembly instructions supplied with the product (see Code AEB446, Code AEB454, Code AEB430 etc.).

During the gas running, injector disconnecting emulators stop and simulate injectors, while the gasoline supplying electric pump continues to work; it is therefore very important that inside the gasoline tank there is always enough fuel to avoid any pump overheating and irrecoverable damage.

In order to establish correctly and use the type of emulator which is necessary on each car, we recommend to read the information supplied by A.E.B. before starting the conversion.

PITAGORA INJECTOR EMULATORS. This family of emulators has been studied to ease the interruption and the consequent injection emulation without considering anymore the polarity of injectors (positive pole on the right or on the left), because each injector is disconnected and emulated singularly. These devices can be installed on the most vehicles with multipoint injection and 4 - 5 - 6 **sequential, half - group or full - group** cylinders and easy - to - be - reached injectors (with heating element from 11 ÷ 15 Ohms). As regards 3 cylinder cars, it is sufficient to use the emulator for 4 cylinder cars and not to connect a wiring plug; for 8 or 10 cylinder cars, instead, it is necessary to install 2 emulators for 4 or 5 cylinders. Pitagora emulator are equipped with a trimmer to adjust the overlapping time (from 0 ÷ 1 second approx.) and with two switches to select the type of emulation.

ORIGINAL CONNECTORS

EMULATORE
PITAGORA
Cod. AEB160

BLACK   BLUE

INJECTORS   GROUND   CONNECT TO THE SYSTEM GAS OUTLET
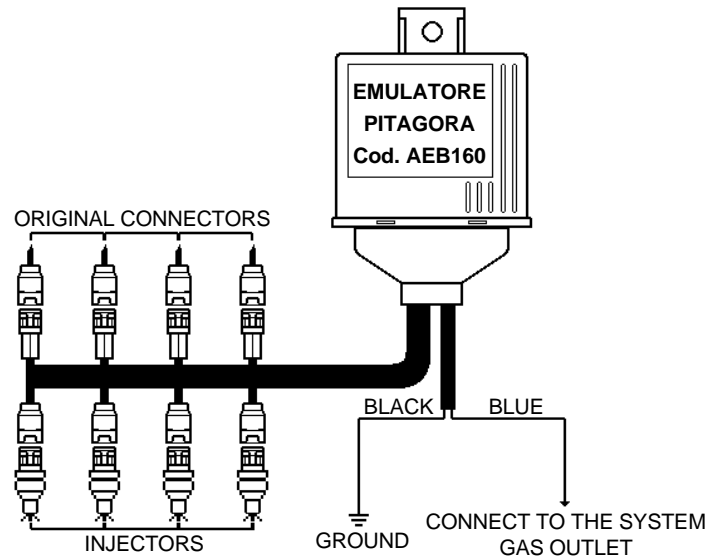
The combination of the 2 switches makes it possible to select three different types of emulation (**Standard Emulation, Emulation A, Emulation B**) thus adapting the device to the most commercial cars and reducing enormously the range of products to stock. Please remember that during the testing phase emulators are set up with the STANDARD emulation and with an optimal overlapping time of **approx. 0,4 seconds** for most cars.

Attached you will find the setting - up of switches according to the type of car on which the Emulator is installed:

STANDARD EMULATION	EMULATION "A"	EMULATION "B"
RELEASED	RELEASED	PRESSED
RELEASED	PRESSED	PRESSED
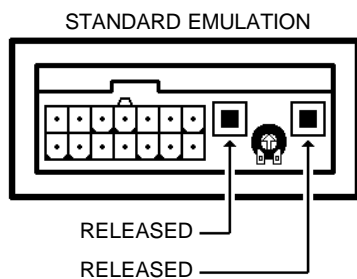
Standard Emulation:
Recommended for the most cars with injectors from 11 ÷ 15 Ohm **apart** from **Chrysler, Hyundai and Mitsubishi** cars.

Position of Switches:
Both released
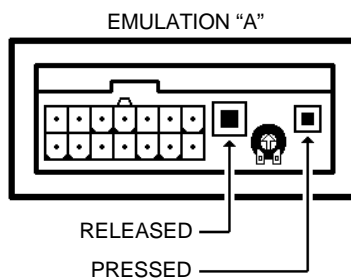
Emulation "A":
Recommended for **Chrysler and Hyundai** cars or for cars where by setting the **Standard Emulation** the check - engine warning light signals an injector failure.

Position of Switches:
one pressed
one released
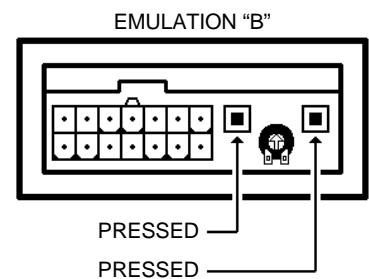
Emulation "B":
Recommended for **Mitsubishi** cars or for cars where by setting the **Emulation "A"** the check - engine warning light signals an injector failure.

Position of Switches:
Both pressed

Pitagora emulators switch on during the gas running and switch off during the gasoline running, thus automatically resetting the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

"Pitagora" emulators are equipped with various interface wiring with the same connectors as the original ones of the most commercial cars, thus avoiding the need to intervene on the car electrical system with the consequent risk of connection mistakes. The difference between the various "Pitagora" models is given by the number of car cylinders and by the type of connector of injectors, for instance Bosch, Japan, etc.
Below we report a list of the various available models.

List of PITAGORA EMULATORS:

Code AEB160
"Pitagora" emulator for 4 cylinders; for 4 cylinder cars with Bosch injector connector.

Code AEB160 - 5
"Pitagora" emulator for 5 cylinders; for 5 cylinder cars with Bosch injector connector.
Ex. Volvo 850 - Lancia K 2.0i 20v.

Code AEB160 - 6
"Pitagora" emulator for 6 cylinders; for 6 cylinder cars with Bosch injector connector; suitable both for in - line and V - type engines.

Code AEB160 - B
"Pitagora" emulator for 4 cylinders, Boxer type; for 4 cylinder cars and BOXER engine with Bosch injector connector.
Ex. Alfa Romeo 145 1.6i.

Code AEB160 - FB
"Pitagora" emulator for 4 cylinders, Fiat Bravo type; for some Fiat cars, 4 cylinders with IAW 1AF or IAW 49F injection central unit.
Ex. Fiat Bravo - Brava - Marea - Palio - Siena 1.6i 16v - Lancia Dedra - Delta 1.6i 16v.

Code AEB160 - H
"Pitagora" emulator for 4 cylinders, Honda type; for 4 cylinder Honda cars with the following types of engine:
D14A2, D15Z3, D16Y2 and D16Y3.

Code AEB160 - I
"Pitagora" emulator for 4 cylinders, Isuzu type; for 4 cylinder cars and Isuzu engine.
Ex. Chevrolet 4 cylinders.

Code AEB160 - J
"Pitagora" emulator for 4 cylinders, Japan type; for 4 cylinder cars with Japan injector connector.
Ex. Toyota Carina multipoint, Daihatsu multipoint and some Nissan models

Code AEB160 - N
"Pitagora" emulator for 4 cylinders, Nissan type; for 4 cylinder Nissan cars.

Code AEB160 - S
"Pitagora" emulator for 4 cylinders, Subaru type; for 4 cylinder Subaru cars and Boxer engine.

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

SINGLE BANK INJECTOR EMULATOR Code AEB162. This emulator is used on SINGLE - INJECTOR cars where the failure warning light switches on after the injector disconnection or on some types of MULTIPOINT cars. In case of SINGLE - INJECTOR it is not important to know the polarity of the single injector, because - due to the emulator design - it is possible to interrupt the positive or the negative pole of the single injector without distinction. In case of MULTIPOINT cars, it is necessary to follow the installation diagrams on the instruction supplied with the product, because the installation of this emulator is not recommended for any type of SEQUENTIAL multipoint injection.

Example of installation on SINGLE - INJECTOR car:

SINGLE - INJECTOR

SINGLE BANK
INJECTOR
EMULATOR
Cod. AEB162

YELLOW

YELLOW   BLACK

GROUND

POSITIVE OU NEGATIVE
DO SINGLE - INJECTOR

CONNECT TO THE   BLU
SYSTEM GAS OUTLET
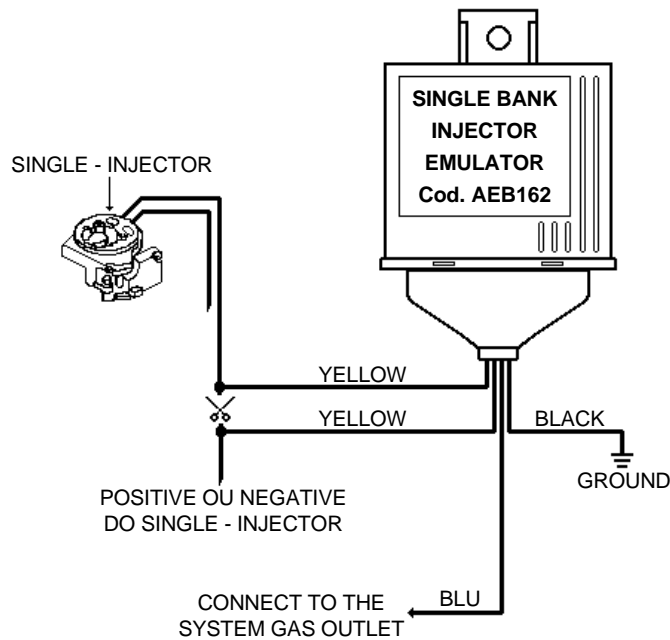
Example of installation on MULTIPOINT car:

SINGLE BANK
INJECTOR
EMULATOR
Cod. AEB162

YELLOW

YELLOW   BLACK

GROUND

BLUE→

CONNECT TO THE SYSTEM
GAS OUTLET

INJECTORS

On the AEB162 emulator it is possible to adjust the overlapping time that is calibrated when sold with an optimal time of approx. 0,4 seconds for most cars.

The AEB162 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

DUAL BANK INJECTOR EMULATOR Code AEB163. This emulator can be installed on any 4 or 6 cylinder car that uses a **semi - sequential** injection system (**Dual Bank**) with **15 Ohm** injectors. This type of injection controls injectors in groups of two, in 4 cylinder engine, and in groups of three in 6 cylinder engine; for this reason, in the injection central unit there are only two negative injectors that are interrupted and emulated with the AEB163 emulator.

Example of installation on 4 cylinder car and semi - sequential injection:
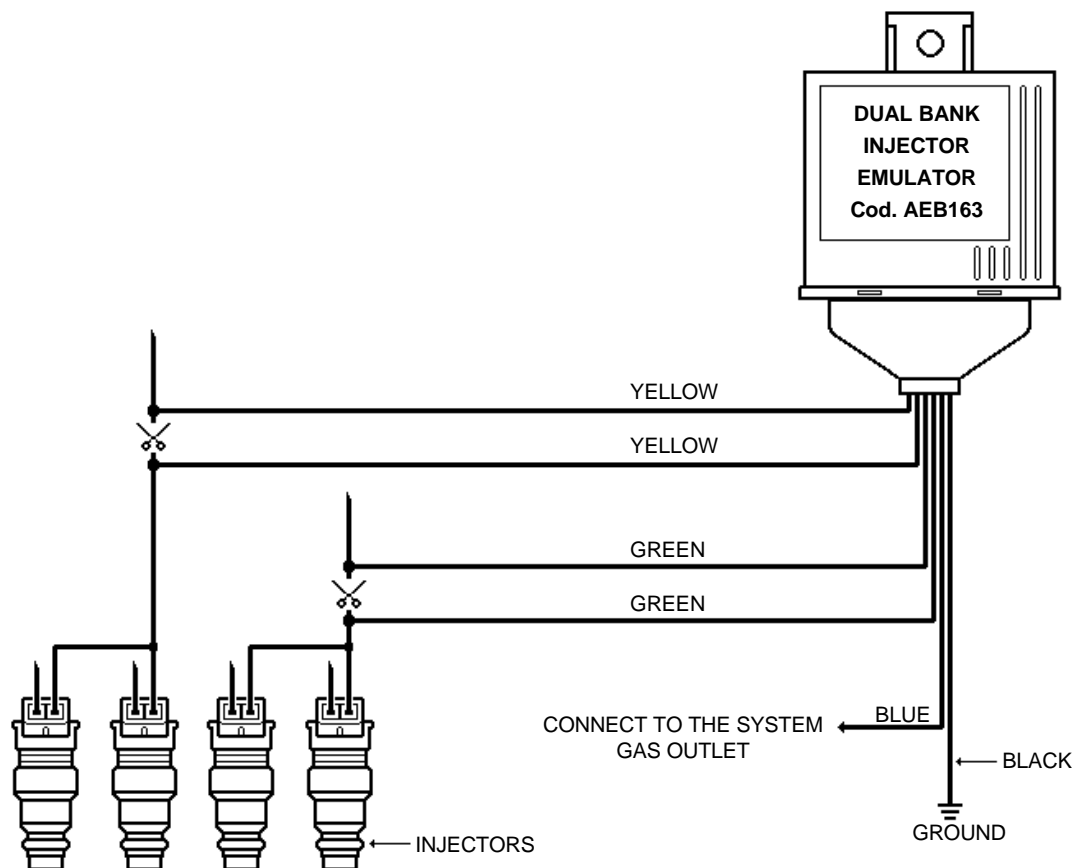
On the AEB163 emulator it is possible to adjust the overlapping time that is calibrated when sold with an optimal time of approx. 0,4 seconds for most cars.

The AEB163 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR FOR SINGLE - INJECTOR OF 1,5 Ohm Code AEB430. This emulator can be installed only on some types of Volvo cars with SINGLE - INJECTOR of 1,5 Ohm.

       Volvo 440 1.8i Single - Injector
       Volvo 460 1.8i Single - Injector
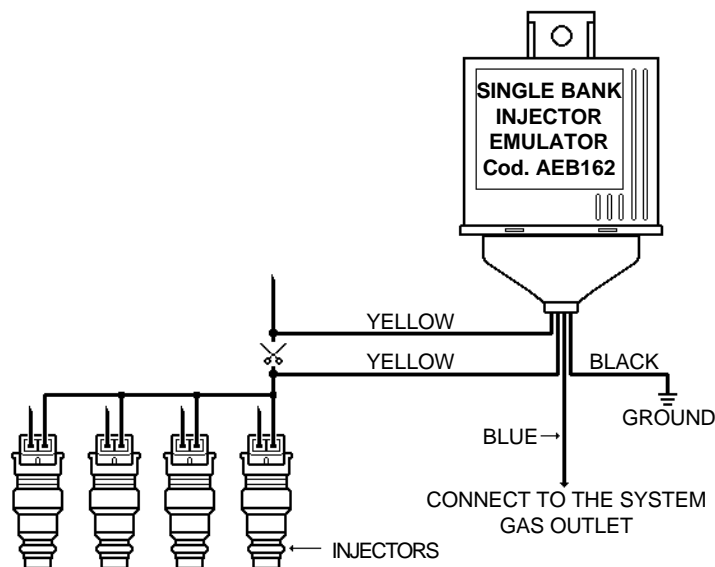   Subaru Legacy 1.8i Single - Injector

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB430:

In the AEB430 emulator the overlapping time is fix and is optimal for most cars.

The AEB430 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR FOR IAW AMERICA SINGLE - INJECTOR Code AEB439. This emulator can be installed only on some types of Fiat cars with SINGLE - INJECTOR.

Fiat Palio 1.6i Single - injector, catalysed
Fiat Siena 1.6i Single - injector, catalysed
Fiat Tempra 2.0i Single - injector, catalysed

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB439:

SINGLE - INJECTOR

EMULATORE
PER
MONOINIETTORE
IAW AMERICA
Cod. AEB439

ORIGINAL CONNECTOR OF
THE SINGLE-INJECTOR

BLACK   BLUE

GROUND

CONNECT TO THE SYSTEM
GAS OUTLET

The AEB439 emulator is equipped with a trimmer to adjust the overlapping time, from 0 ÷ 1 second approx., and with two switches to select the type of emulation. When sold, the emulator is set up with an optimal overlapping time of approx. 0,4 seconds for most cars and with the correct emulation for the above - mentioned cars; **for this reason, the button must not be touched**.

The AEB439 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

DOUBLE - INJECTOR EMULATOR FOR HONDA Code AEB446. This emulator can be installed only on some types of Honda cars with 2 INJECTOR injection.

Honda Civic1.5i 16v **Dual injector**
Honda Concerto 1.5i 16v **Dual injector**

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB446:
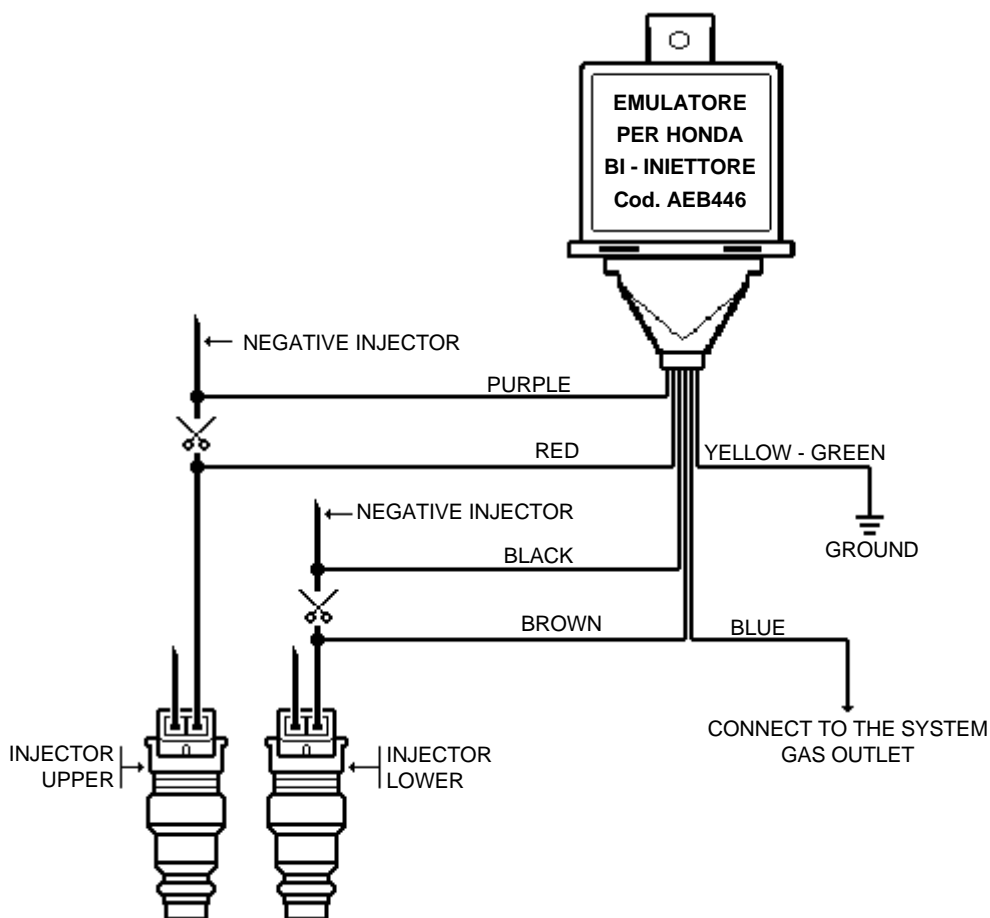
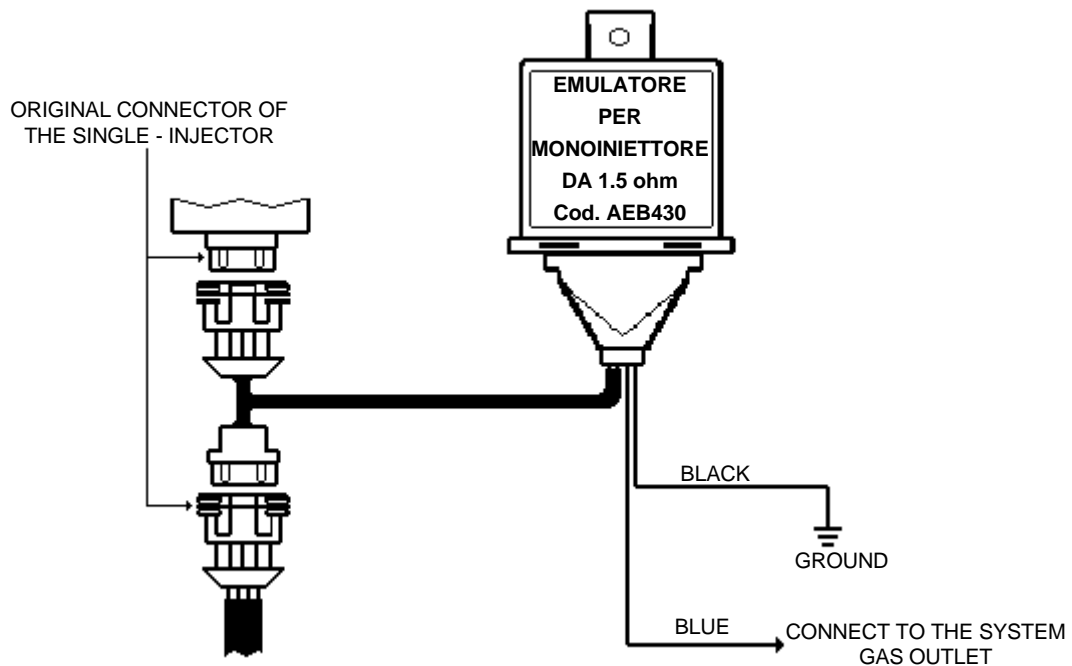In the AEB446 emulator the overlapping time is fix and is optimal for most cars.
The AEB446 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

RENIX EMULATOR Code AEB454. This type of emulator is recommended for some Volvo or Renault MULTIPOINT cars with Renix, Bendix, Siemens injection and **injectors with heating element from 2,5 ÷ 3 Ohm.** To measure the value of injectors, it is necessary to disconnect the original plug from an injector and, with a multimeter for measuring resistance, read its value; if it is of approx. 2,5 ÷ 3 Ohm install the AEB454 emulator (measure the value on two emulators); **if the measured value is very different from the one mentioned above, you must not absolutely install the AEB454 emulator, because you could irrevocably damage the car injection central unit**. Below it is possible to see a general installation diagram of AEB454; the list of the cars on which it can be installed is reported on the assembly instructions supplied with the product.

Example of installation of the emulator Code AEB454:

INJECTION CENTRAL UNIT

20

21

EMULATORE
RENIX
Cod. AEB454

BROWN

YELLOW - GREEN

BLACK

GROUND

CONNECT TO THE SYSTEM
GAS OUTLET

BLUE

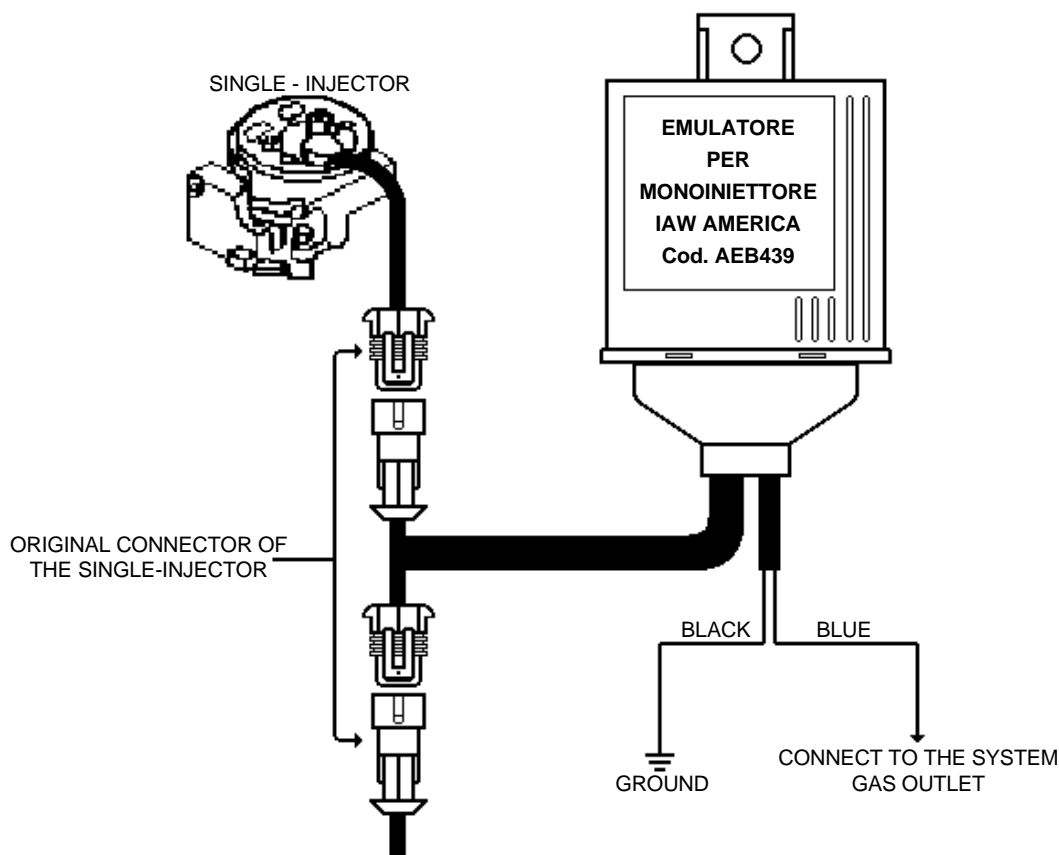In the AEB454 emulator the overlapping time is fix and is optimal for most cars.
The AEB454 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.
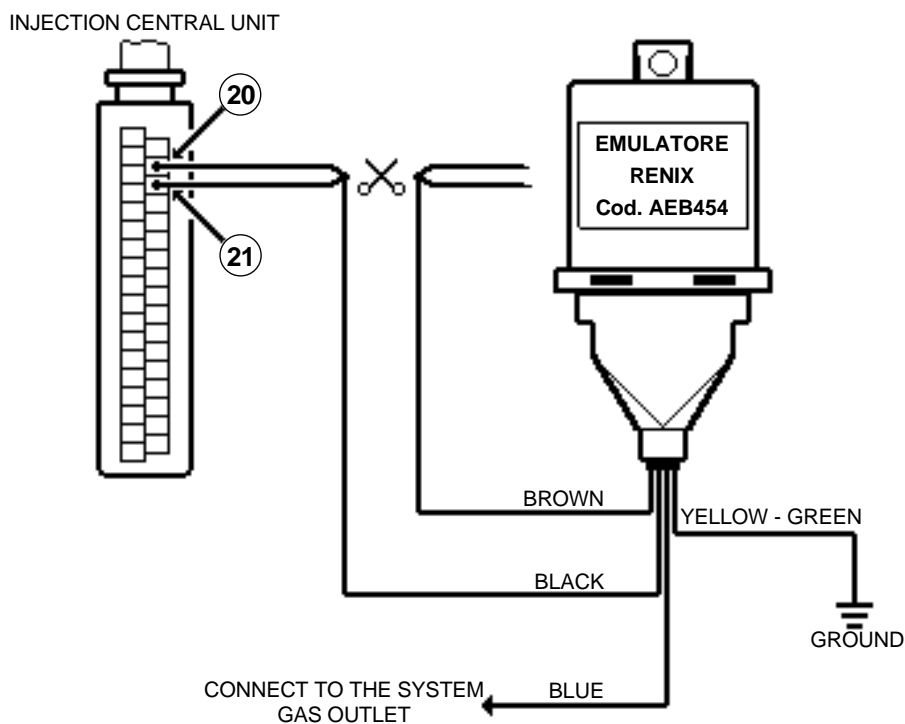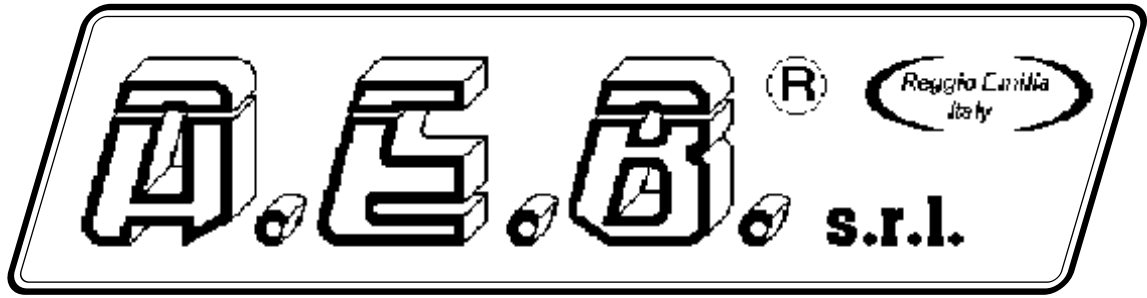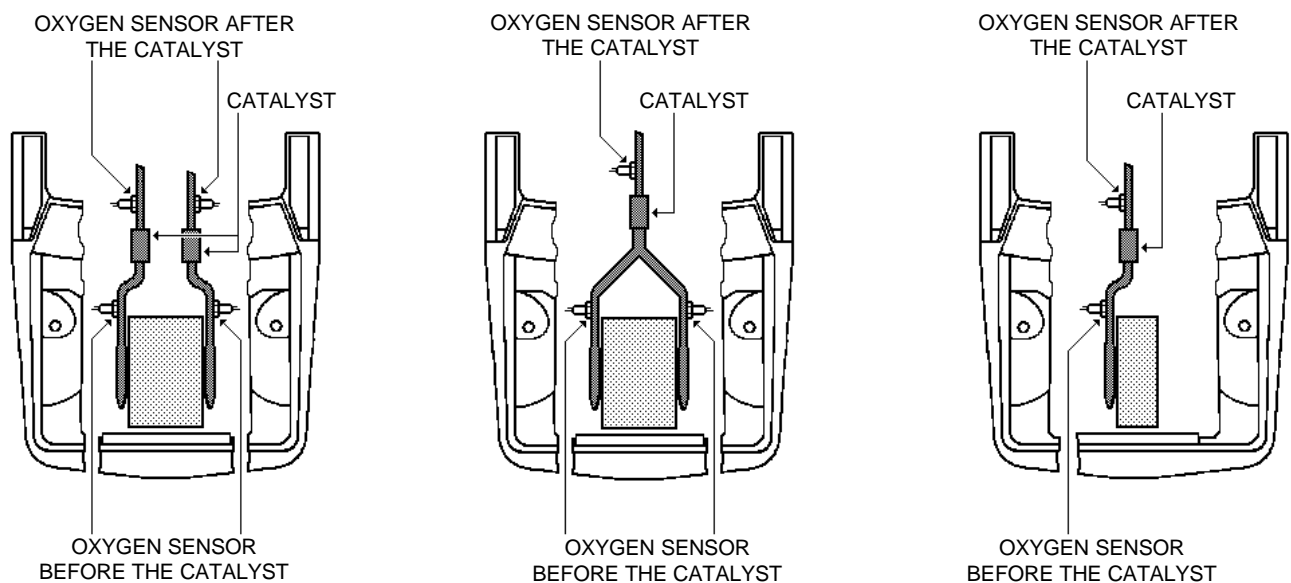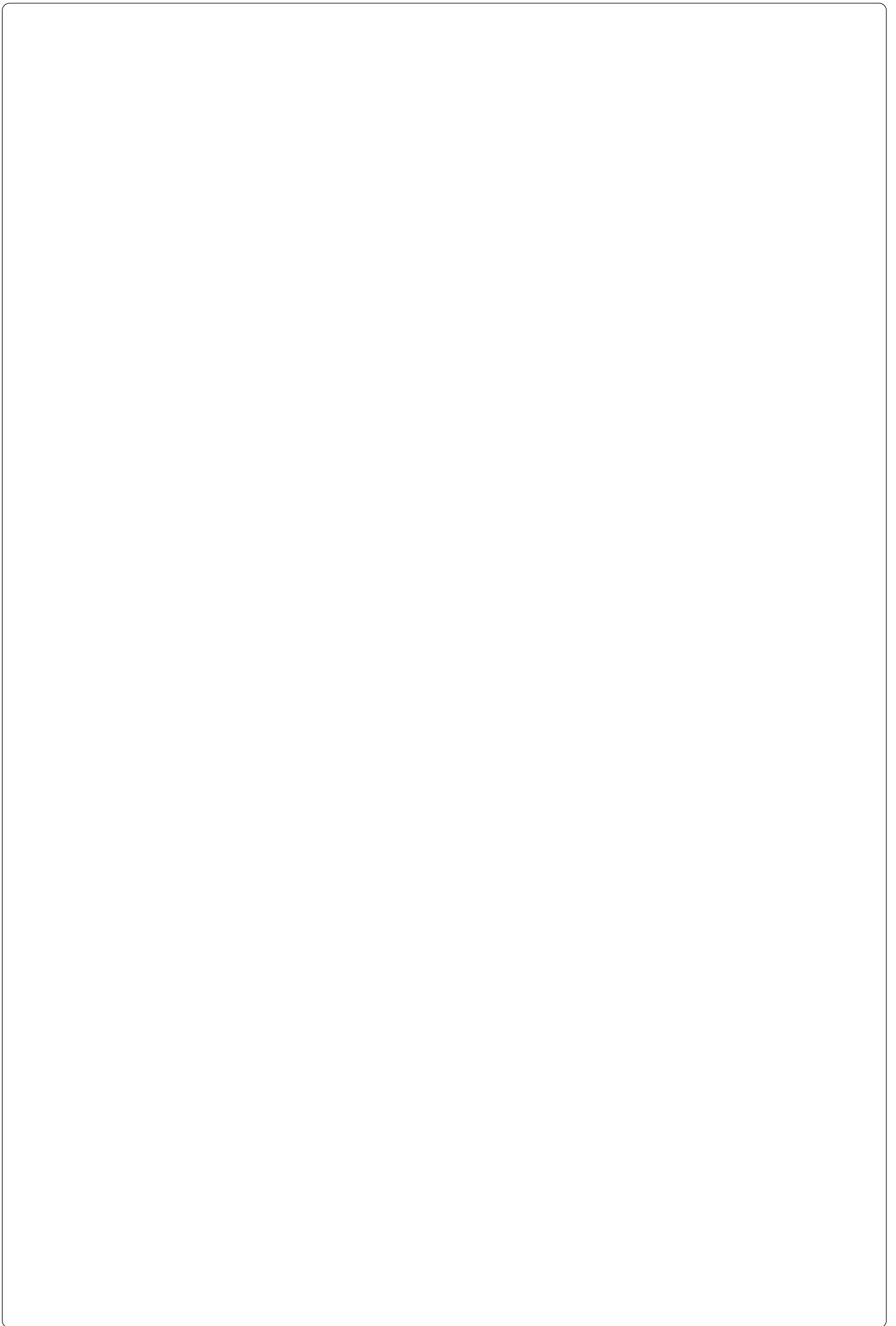
OBDII - µFIX EMULATORS

OBDII - µFIX EMULATORS

Because of the stricter and stricter exhaust emission limits imposed to car makers, a new diagnosis system has been introduced; it already existed in the United States with the name of OBDII (On - Board - Diagnostic - of the second generation), while in Europe it is called EOBD (European - On - Board - Diagnostic).

These systems have the same working principle, even if they use different communication standards.

They are based on the information received from the oxigen sensor located before the catalyst (that is to say near the engine) and from the one after the catalyst in order to check the catalyst efficiency and reduce the exhausted polluting gases at a minimum.

For this reason, cars with 4 cylinder engines equipped with the EOBD or OBDII diagnosis system will show 2 oxygen sensors, while for engines with 6, 8 or 10 cylinders we have different options; as a matter of fact, we find from a minimum of 2 oxygen sensors to a maximum of 4 oxygen sensors according to the number of installed catalysts and to the geometry of the car exhaust manifolds.

OXYGEN SENSOR AFTER THE CATALYST — CATALYST — OXYGEN SENSOR BEFORE THE CATALYST

OXYGEN SENSOR AFTER THE CATALYST — CATALYST — OXYGEN SENSOR BEFORE THE CATALYST

OXYGEN SENSOR AFTER THE CATALYST — CATALYST — OXYGEN SENSOR BEFORE THE CATALYST

On gas transformed cars, these diagnosis systems can store the variation of carburation parameters (with consequent car malfunctions) and/or the switching - on of the "engine failure" warning light.

To solve this inconvenience, A.E.B. has developed a new series of emulators called OBDII - µFIX.

The working principle they are based on is the same, but the emulator model changes according to the car on which they must be installed according to the different communication standards.

OBDII emulators are connected to the signal wire of the oxygen sensor and to the car diagnosis plug.

They communicate with the gasoline injection central unit and, according to the information they receive, they generate a correct oxygen sensor signal that they send back to the injection central unit, thus preventing it from changing the carburation parameters.

By installing these emulators, the car diagnosis system remains active; as a consequence, if during the GAS running the carburation is incorrect, **the lambda probe after the catalyst senses an error**, thus causing the switching - on of the "engine failure" warning light. In this case, it will be necessary to revise the car gas carburation. If a diagnosis of the car gasoline injection system is necessary, it must be set on GASOLINE.

The OBDII - µFIX emulators switch on during the gas running and switch off during the gasoline running, thus automatically resetting the connections to the car original electrical system that have been modified; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking. In the following pages, we will see in details where and how to install the various OBII - µFIX emulators supplied by A.E.B..

In order to establish correctly and use the type of emulator which is necessary on each car, we recommend to read the information supplied by A.E.B. before starting the conversion.

For the above - mentioned information, see "A.E.B. Technical Service" on page 79.

OBDII - µFIX EMULATOR - Code AEB424. The OBDII - µFIX emulator has been developed for GENERAL MOTORS and FORD cars equipped with OBDII and EOBD diagnosis system.
To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.
AEB424 must be installed on the oxigen sensor(s) before the catalyst, that is to say the one(s) nearest to the engine. On cars having separated exhaust manifolds with 2 oxygen sensors before the catalysts, it is important to identify the oxygen sensor of main bearings 1 (**corresponding to cylinder No. 1**) and the oxygen sensor of main bearings 2; we therefore recommend to carefully follow the assembly instructions supplied with the product, because a wrong wiring connection can cause malfunctions to emulator and car. AEB424 is connected to the wire of the oxygen sensor signal and to the car diagnosis plug; it communicates with the gasoline injection central unit and, according to the data it receives, it generates a oxygen sensor signal that it sends back to the gasoline injection central unit, thus preventing it from changing the carburation parameters and from switching on the engine failure warning light. With the OBDII - µFIX emulator, the car diagnosis system remains active; as a consequence, if during the GAS running the carburation is incorrect, **the lambda probe after the catalyst senses an error**, thus causing the switching - on of the "engine failure" warning light. In this case, it will be necessary to revise the car gas carburation. If a diagnosis of the car gasoline injection system is necessary, it must be set on GASOLINE.
AEB424 shows three LEDs that indicate its correct running as explained below:
Red LED and Yellow LED
- **ON** - At the same time: Communication problems (check the wiring).
- **OFF** - OK.
Green LED
- **ON** - Connection OK.
- **OFF** - No communication.
Yellow LED
- **ON** - GASOLINE operation; the led remains always ON.
- **OFF** - OK, GAS operation.

- **NOTE** - If during the GAS operation the YELLOW LED remains ON, this means that there are communication problems, therefore it is necessary to check the wiring or the installed device is not compatible.

Example of installation of the emulator Code AEB424:
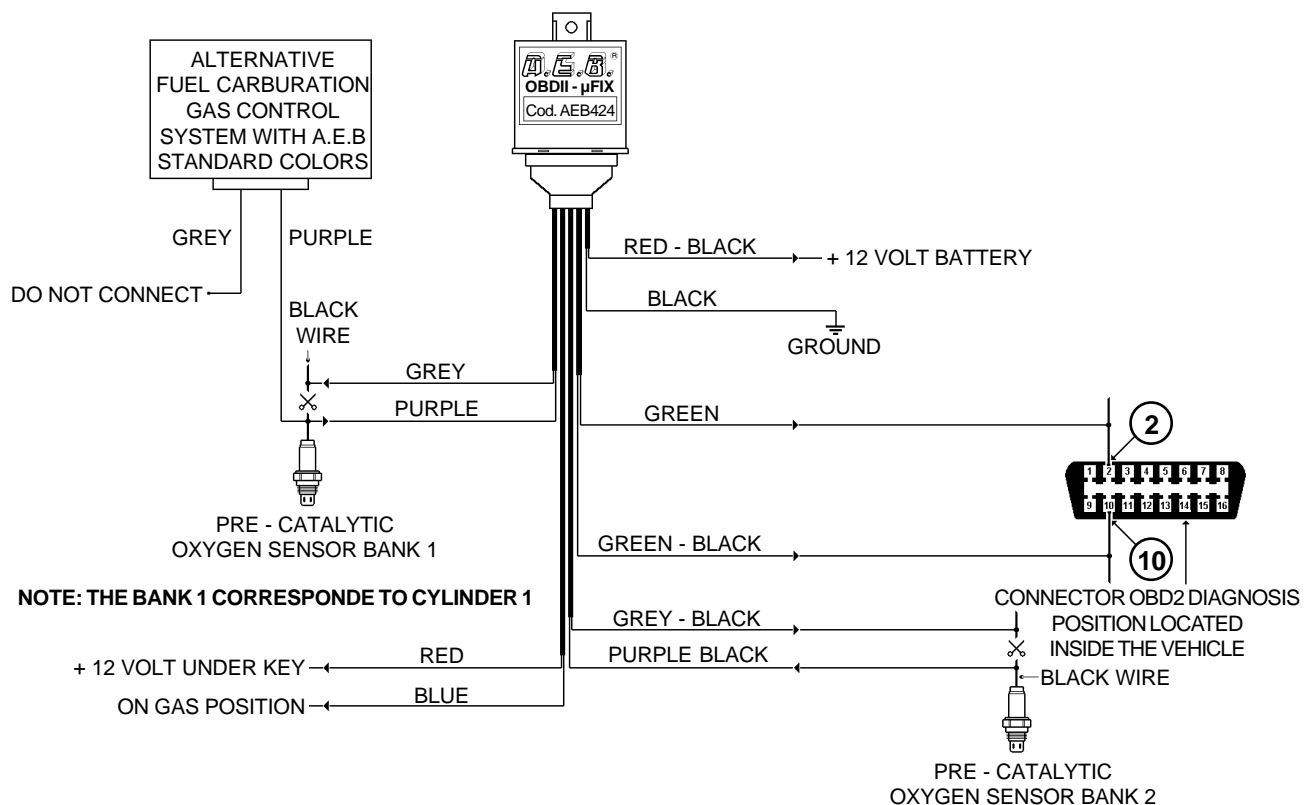
AEB424 switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

OBDII - µFIX EMULATOR - Code AEB425. The OBDII - µFIX emulator has been developed for VOLKSWAGEN, SKODA, SEAT cars equipped with 5 wire lambda probe, BOSCH or NTK type, and with OBDII or EOBD diagnosis system.

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

AEB425 must be installed on the oxygen sensor before the catalyst, that is to say the nearest to the engine; we recommend to carefully follow the assembly instructions supplied with the product, because a wrong wiring connection can cause malfunctions to emulator and car. AEB425 is connected to the wire of the oxygen sensor signal and to the car diagnosis plug; it communicates with the gasoline injection central unit and, according to the data it receives, it generates a oxygen sensor signal that it sends back to the injection central unit, thus preventing it from changing the carburation parameters and from switching on the engine failure warning light.

With the OBDII - µFIX emulator, the car diagnosis system remains active; as a consequence, if during the GAS running the carburation is incorrect, **the oxygen sensor after the catalyst** senses an error, thus causing the switching - on of the "engine failure" warning light. In this case, it will be necessary to revise the car gas carburation. If a diagnosis of the car gasoline injection system is necessary, it must be set on GASOLINE. AEB425 shows a LED that indicates its correct running as explained below:

Green LED
- **ON** - Emulator is working properly.
- **OFF** - There are connection problems with injection gearcase (check wire connection).

In the lower part of the box under the rubber cap, AEB425 shows some switches that must be set according to the type of lambda probe which is present in the car (BOSCH or NTK), as explained below:

ADJUSTING OF MICROSWITCHES FOR CARS WITH SIEMENS INJECTION AND LAMBDA PROBE, GENERALLY 5 - WIRE BOSCH

ADJUSTING OF MICROSWITCHES FOR CARS WITH MARELLI INJECTION AND LAMBDA PROBE, GENERALLY 5 - WIRE NTK

Example of installation of emulator Code AEB425 on cars with SIEMENS injection and lambda probe 5 wire BOSCH:
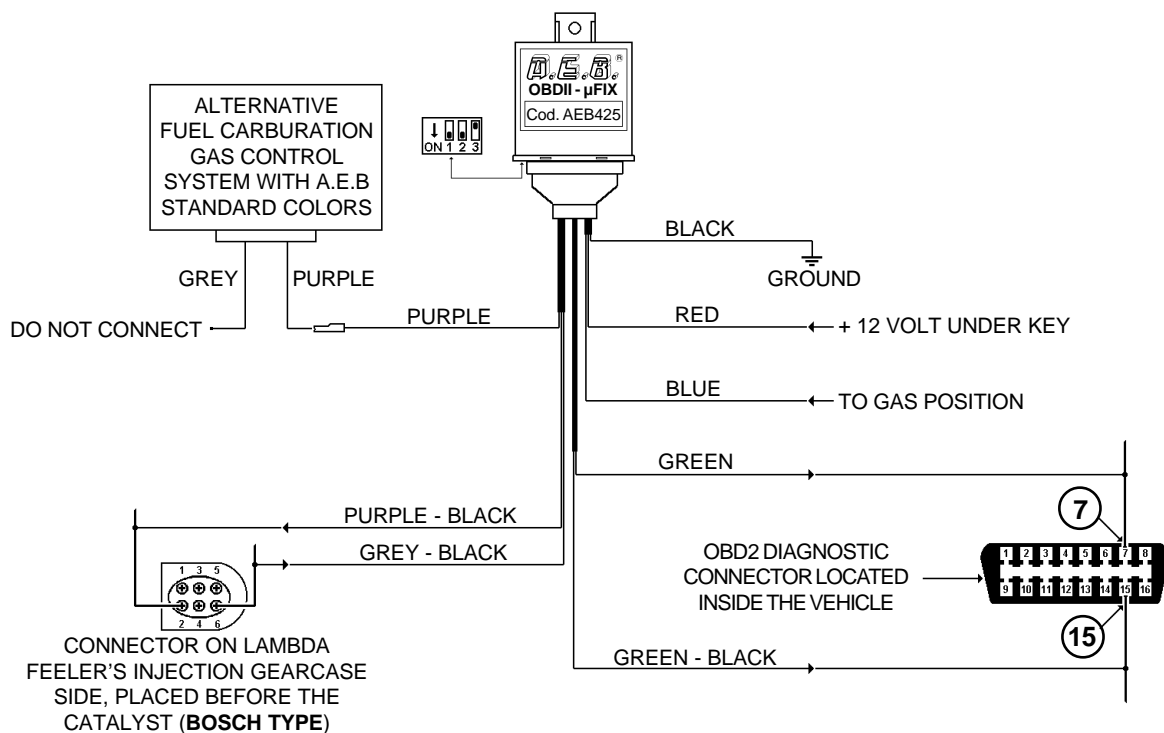
Example of installation of emulator Code AEB425 on cars with MARELLI injection and lambda probe 5 wire NTK:

ALTERNATIVE
FUEL CARBURATION
GAS CONTROL
SYSTEM WITH A.E.B
STANDARD COLORS

GREY   PURPLE

DO NOT CONNECT

PURPLE

BLACK
GROUND

RED
+ 12 VOLT UNDER KEY

BLUE
TO GAS POSITION

GREEN

PURPLE - BLACK
GREY - BLACK

OBD2 DIAGNOSTIC
CONNECTOR LOCATED
INSIDE THE VEHICLE

7

15

GREEN - BLACK

CONNECTOR ON LAMBDA
FEELER'S INJECTION GEARCASE
SIDE, PLACED BEFORE THE
CATALYST (**NTK TYPE**)
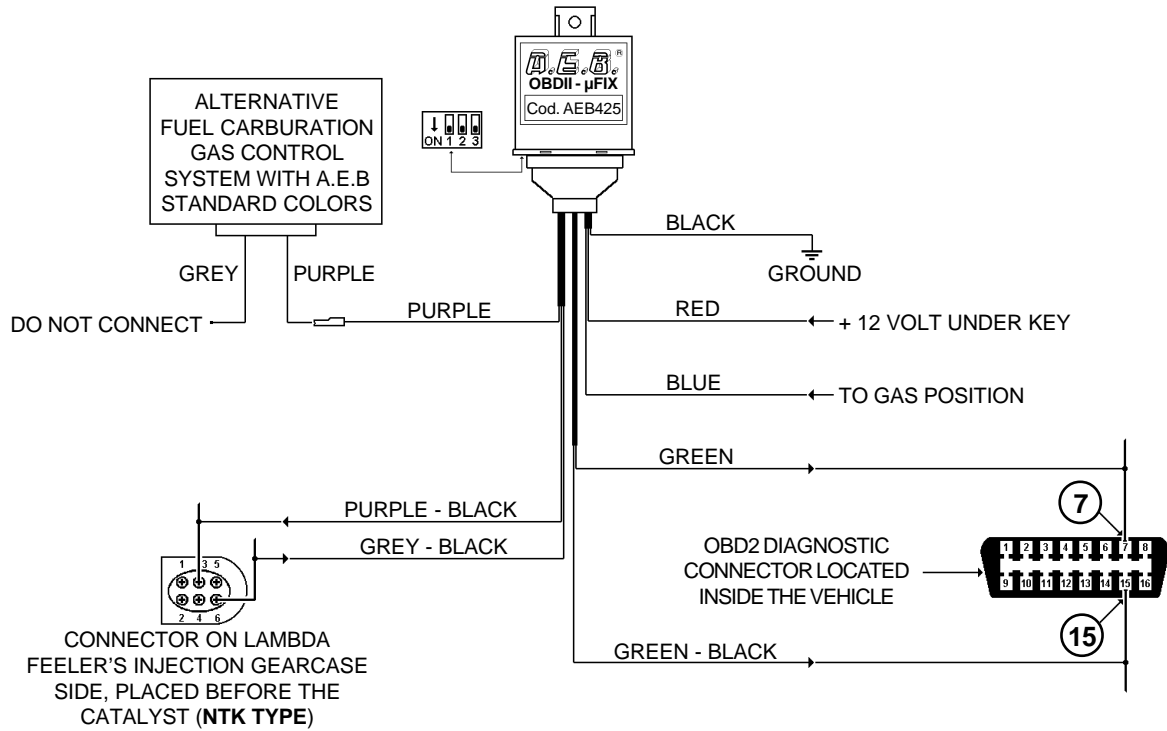
AEB425 switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

OBDII - µFIX EMULATOR - Code AEB426. The OBDII - µFIX emulator has been developed for CHRYSLER, HYUNDAI, VOLVO, NISSAN, HONDA, BMW, SKODA, ROVER, CITROEN, RENAULT, FIAT, OPEL cars equipped with OBDII or EOBD diagnosis system.
To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.
AEB426 must be installed on the oxygen sensor(s) before the catalyst, that is to say the one(s) nearest to the engine. On cars having separated exhaust manifolds with 2 oxygen sensors before the catalysts, it is important to identify the oxygen sensor of main bearings 1 (**corresponding to cylinder No. 1**) and the oxygen sensor of main bearings 2; we therefore recommend to carefully follow the assembly instructions supplied with the product, because a wrong wiring connection can cause malfunctions to emulator and car. AEB426 is connected to the wire of the oxygen sensor signal and to the car diagnosis plug; it communicates with the gasoline injection central unit and, according to the data it receives, it generates a oxygen sensor signal that it sends back to the gasoline injection central unit, thus preventing it from changing the carburation parameters and from switching on the engine failure warning light. With the OBDII - µFIX emulator, the car diagnosis system remains active; as a consequence, if during the GAS running the carburation is incorrect, **the oxygen sensor after the catalyst senses an error**, thus causing the switching - on of the "engine failure" warning light. In this case, it will be necessary to revise the car gas carburation. If a diagnosis of the car gasoline injection system is necessary, it must be set on GASOLINE. AEB426 shows three LEDs that indicate its correct running as explained below:

Red LED and Yellow LED
- **ON** - At the same time: Communication problems (check the wiring).
- **OFF** - OK.
Green LED
- **ON** - Connection OK.
- **OFF** - No communication.
Yellow LED
- **ON** - GASOLINE operation; the led remains always ON.
- **OFF** - OK, GAS operation.

- **NOTE** - if during the GAS operation the YELLOW LED remains ON, this means that there are communication problems, therefore it is necessary to check the wiring or the installed device is not compatible.

Example of installation of the emulator Code AEB426:
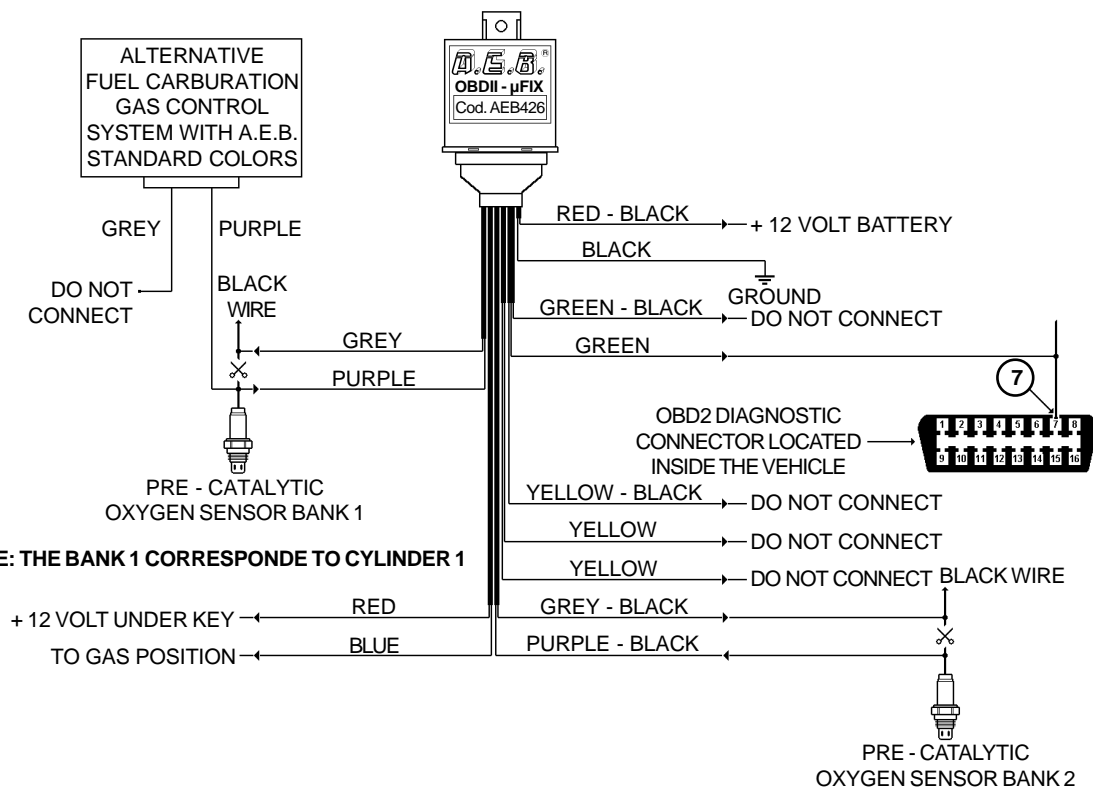
AEB426 switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.
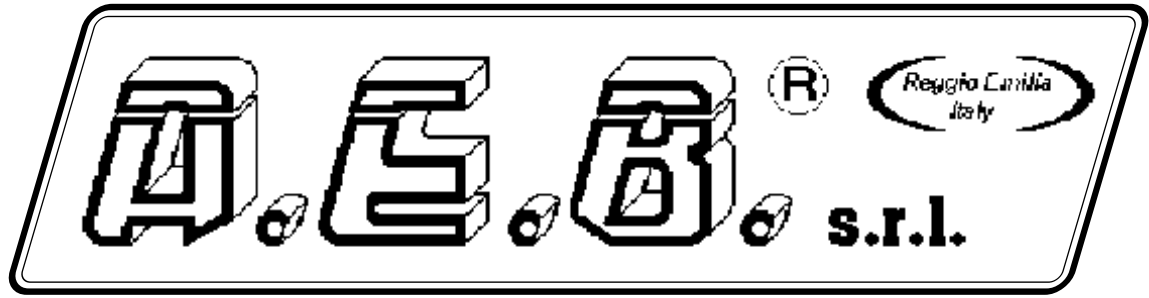
OXYGEN SENSOR EMULATORS

OXYGEN SENSOR EMULATORS

In a car equipped with catalyst there is a so - called "closed loop" system made up of an injection central unit, injectors and oxygen sensor (OXYGEN SENSOR).

Closed Loop system (Closed Loop):

INJECTION
CENTRAL UNIT

OXYGEN SENSOR   ENGINE
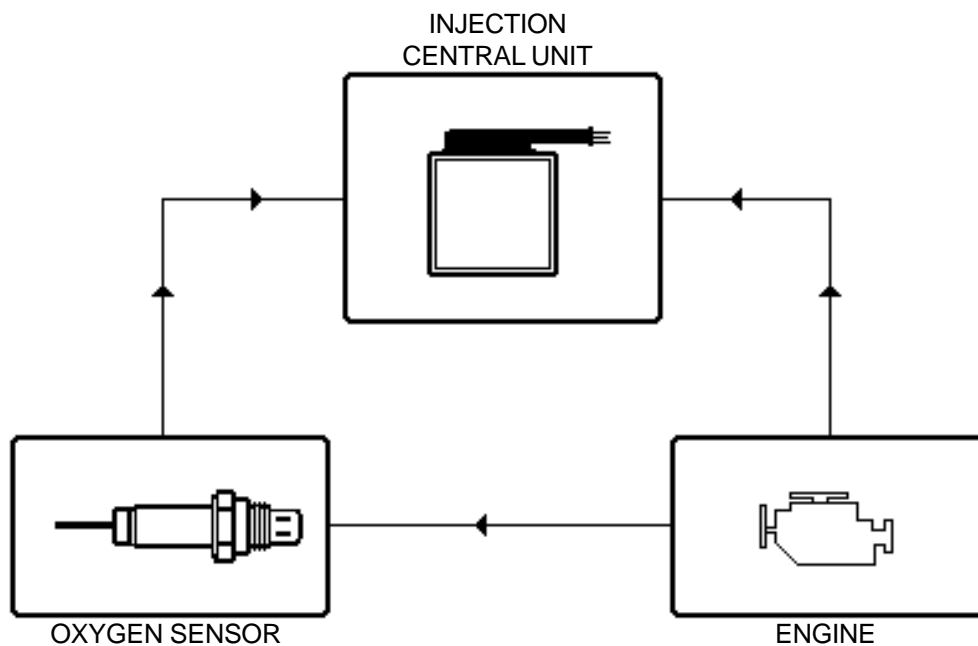
In a closed loop system, carburation is controlled according to the information coming from the oxygen sensor that senses the quantity of oxygen which is present in exhaust manifolds and informs the injection central unit that, on its turn, corrects the injector opening time in the suitable way and records in its memory the data relating to any loading condition and engine rpm to obtain always an excellent carburation.
This function is called **mapping**.

During the GAS running, the **closed loop** is interrupted because:

1) injectors are disabled;

2) the GAS combustion features are different from the gasoline ones.

From what mentioned above, it is clear that the oxygen sensor sends to the central unit data on the oxygen which is present in the exhaust manifold that refer no more to gasoline but to GAS; therefore, the central unit modifies and stores wrong gasoline injection times, thus causing the following malfunctions:

• Switching - on of the injection system failure warning light (Check - Engine) due to the out - of - range operation of the oxygen sensor.

• Unsuitable carburation during gasoline running to the storage of wrong injection times.

It is therefore necessary to send to the injection central unit a simulated signal that prevents the above mentioned problems.

During GAS running, the original circuit of the oxygen sensor is isolated, while the central control unit receives a simulated signal to prevent it from changing the carburation mapping.
In some cases, the emulation of the oxygen sensor is an function integrated in other A.E.B. products.

Closed loop system interfaced with A.E.B. emulator:
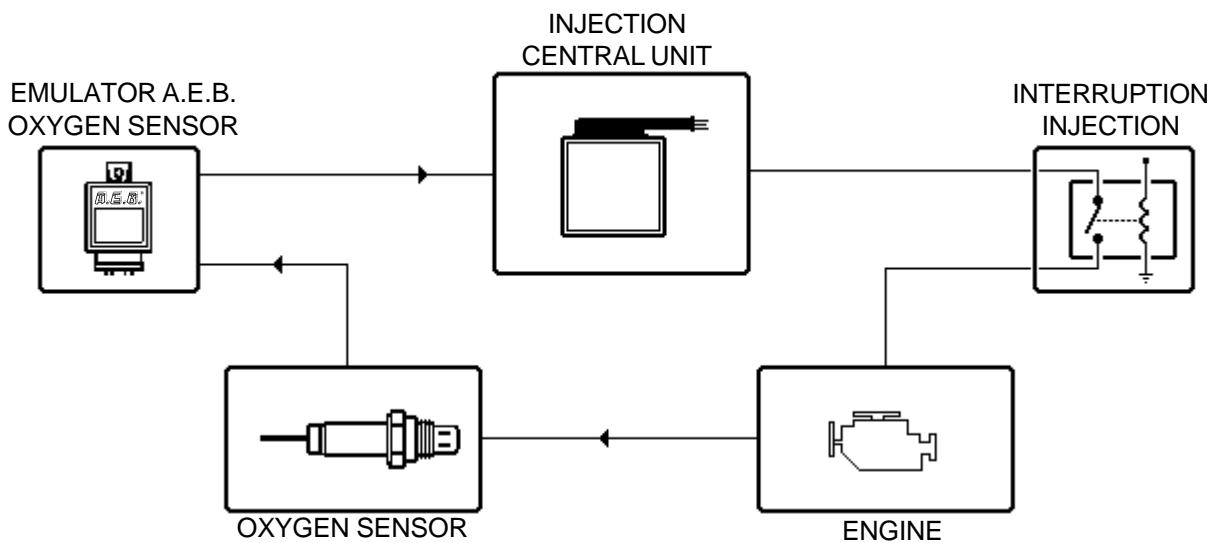
The A.E.B. emulators for oxygen sensor are devices that must be installed between the oxygen sensor and the injection central unit.
During the car gas running, the wire of the signal of the oxygen sensor is disconnected and a dummy lambda signal is sent to the injection central unit, so that this latter does not sense errors due to the probe out - of - range running, thus avoiding the switching - on of the engine warning light and a wrong gasoline carburation after the gas running.

The A.E.B. oxygen sensor emulators switch on during the gas running and switch off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

A.E.B. produces various models of oxygen sensor emulator for different types of injection central units and oxygen sensor; in the following page, it is possible to see a short description of the various types of lambda probes available on the market to better understand how and which type of A.E.B. emulator to use.

In order to establish correctly and use the type of emulator which is necessary on each car, we recommend to read the information supplied by A.E.B. before starting the conversion.

- First of all, it is necessary to make a foreword on the models of oxygen sensor that are currently present on the market.

Types of oxygen sensor:

• OXYGEN SENSOR 0 ÷ 1 V
These oxygen sensor, even if they have a different number of wires, show the same operation.
The voltage of the wire of the signal with hot oxygen sensor ranges from 0 ÷ 1 V:

- 0 ÷ 0,2 V   **WEAK** mixture

- 0,45 V   cold oxygen sensor

- 0,8 ÷ 1 V   **RICH** mixture

If the voltage remains stable on 0,45 V approx., even when the oxygen sensor should be almost hot and the voltage should oscillate, very probably the oxygen sensor is broken.

- SIGNAL WIRE   BLACK OR VIOLET

- SONDE SIGNAL   BLACK
- + 12 VOLT HEATING   WHITE
- GROUND HEATING   WHITE

- SONDE SIGNAL   BLACK
- GROUND SONDE   GREY

- + 12 VOLT HEATING   WHITE
- GROUND HEATING   WHITE
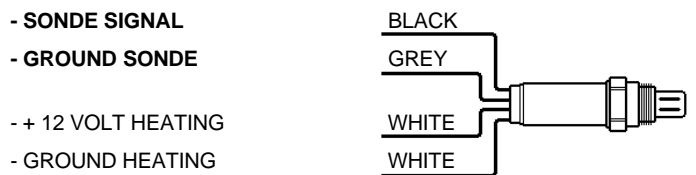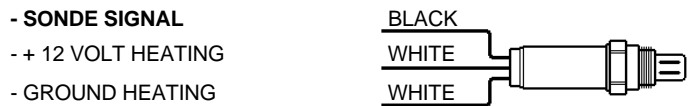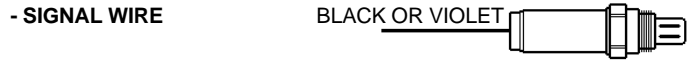
• RESISTIVE OXYGEN SENSORS
The FIRST of these oxygen sensor has 3 wires with a voltage ranging from 0 ÷ 1 V and generally colours are:
- **RED**   heating
- **BLACK**   signal 0 ÷ 1 V
- **WHITE**   oxygen sensor ground
In this type of oxygen sensor you must connect only VIOLET wire of the central unit and insulate GREY wire.

The SECOND oxygen sensor has four wires with a voltage ranging from 0 ÷ 5 V (STRAIGHT) or 5 ÷ 0 V (REVERSED).
To better understand if it is a **STRAIGHT** or **REVERSED** type oxygen sensor, proceed as follows:
- interrupt the signal wire that is generally black or yellow;
- switch on the panel;
- with a multimeter, measure the voltage which is present on the signal wire towards the injection central unit as shown in pictures 2 and 3.

• If the voltage is of 0 V this means that it is a STRAIGHT 0 ÷ 5 V oxygen sensor (TYPE B) (Fig. 2).

- 0 V WEAK mixture

- 5 V RICH mixture

• If the voltage is of 5 V this means that it is ad REVERSED 5 ÷ 0 V oxygen sensor (TYPE A) (Fig. 3).

- 5 V WEAK mixture

- 0 V RICH mixture

- SIGNAL 0 ÷ 1 V   BLACK
- GROUND SONDE   WHITE
- HEATING + 12 V   RED

1

- + 12 V HEATING   RED
- GROUND HEATING   WHITE

- SONDE 5 V POWER SUPPLY   YELLOW
- SIGNAL PROBE 0 ÷ 5 V   BLACK

VOLTAGE **0 V**
SONDE **0 ÷ 5 V**

INJECTION CENTRAL UNIT

2

- + 12 V HEATING   RED
- GROUND HEATING   WHITE

- GROUND SONDE   BLACK
- SIGNAL SONDE 5 ÷ 0 V   YELLOW

VOLTAGE **5 V**
SONDE **5 ÷ 0 V**

INJECTION CENTRAL UNIT

3
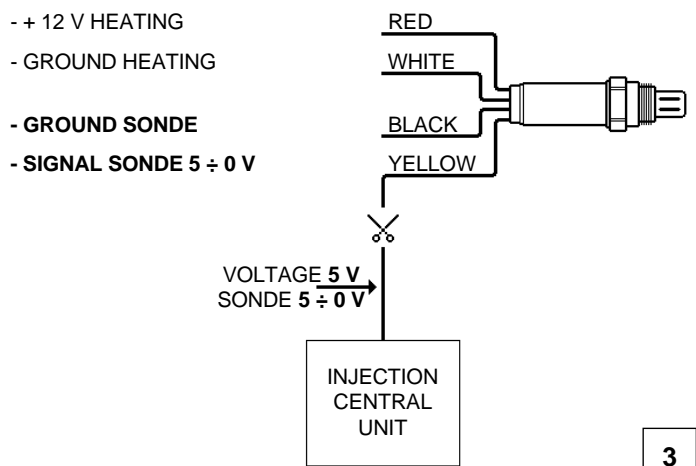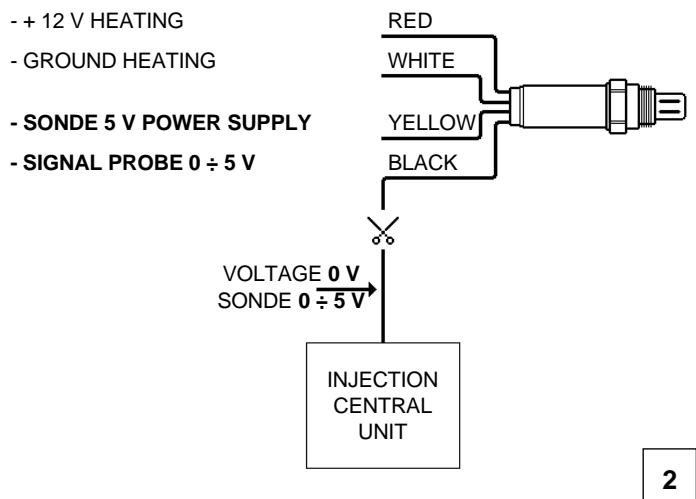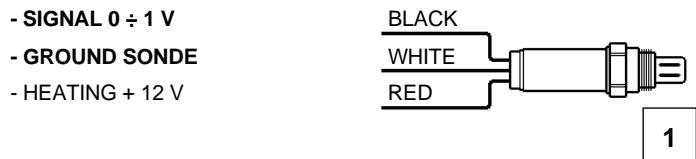
ADAPTER FOR OXYGEN SENSOR - Code AEB351. This device is used on cars equipped with 5 V oxygen sensor that do not need a straight or reversed 5 V oxygen sensor emulator (351/2 and 351/3). The adapter for 5 V oxygen sensor transforms the signal of lambda probes with 0 ÷ 5 V signal into a 0 ÷ 0,8 V signal which is typical of normal probes, thus allowing a correct operation of all the lambda controlled systems (that we will see afterwards). It can be used for oxygen sensors both with straight 0 ÷ 5 V or reversed 5 ÷ 0 V signal. If the orange wire is connected to the ground, it identifies the 0 ÷ 5 V straight oxygen sensors, while if it is not connected it identifies the 5 ÷ 0 V reversed oxygen sensors.

AEB351 shows a LED inside the box that indicates its operation:

a) LED ON = running device
b) LED OFF = device not running

For the moment, it is used on the following cars:

Cars with straight 5 V sonde:
        BMW 320i 24v catalysed, Siemens injection.
        BMW 520i 24v catalysed, Siemens injection.
Cars with reversed 5 V sonde:
        BMW 320i 24v catalysed, Siemens injection, model 1995 with 2 oxygen sensor.

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB351:

OPERATION LED

ADAPTER
PER SONDA
LAMBDA 5V
Cod. AEB351

BLACK   PURPLE   OUTPUT OXYGEN SENSOR
                                                         SIGNAL TRANSFORMED BY
                                                         SIGNAL 0 ÷ 5 V or 5 ÷ 0 V INTO
                                                         SIGNAL 0 ÷ 0,8 V

ORANGE   GREEN

←RED

+ 12 V UNDER KEY

                                                         WIRE SIGNAL OXYGEN SENSOR

GROUND   FOR CONNECTION; CHECK THE TYPE
            OF OXYGEN SENSOR INSTALLED ON   OXYGEN SENSOR
            THE CAR (STRAIGHT REVERSED)
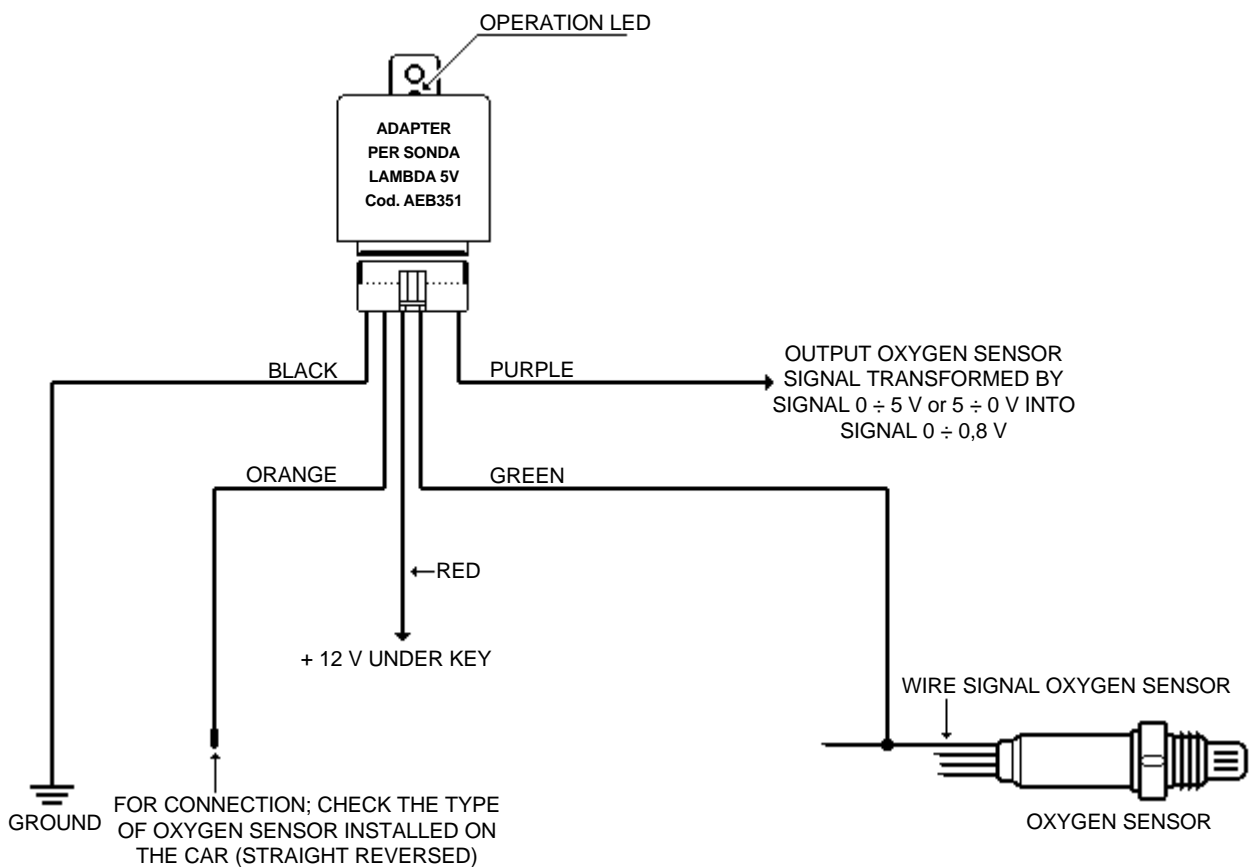
AEB351 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR FOR 5 V REVERSED OXYGEN SENSOR Code AEB351/2. The oxygen sensor emulator is capable of simulating the lambda signal on cars with injection central unit that uses a resistive oxygen sensor at 5 V with reversed signal (5 V weak mixture - 0 V rich mixture). It prevents the engine warning light from switching on and a wrong gasoline carburation after the gas running. The emulator has more than one output transforming the $5 \div 0$ V signal of the oxygen sensor into a $0 \div 0,8$ V signal, which is typical of normal oxygen sensors. This allows a correct operation of the lambda control systems.

For the moment, this emulator is applied only on the Volvo 850 2.0i 10 - valver car; for the installation of the emulator on different cars, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB351/2:

EMULATORE
PER SONDA
LAMBDA 5V
INVERTITA
Cod. AEB351/2

DO NOT CONNECT
AND INSULATE

CENTRALINA
D'INIEZIONE

YELLOW   BLUE   CONNECT TO THE
SYSTEM GAS OUTLET

YELLOW   GREEN   OUTPUT OXYGEN SENSOR
SIGNAL TRANSFORMED FROM
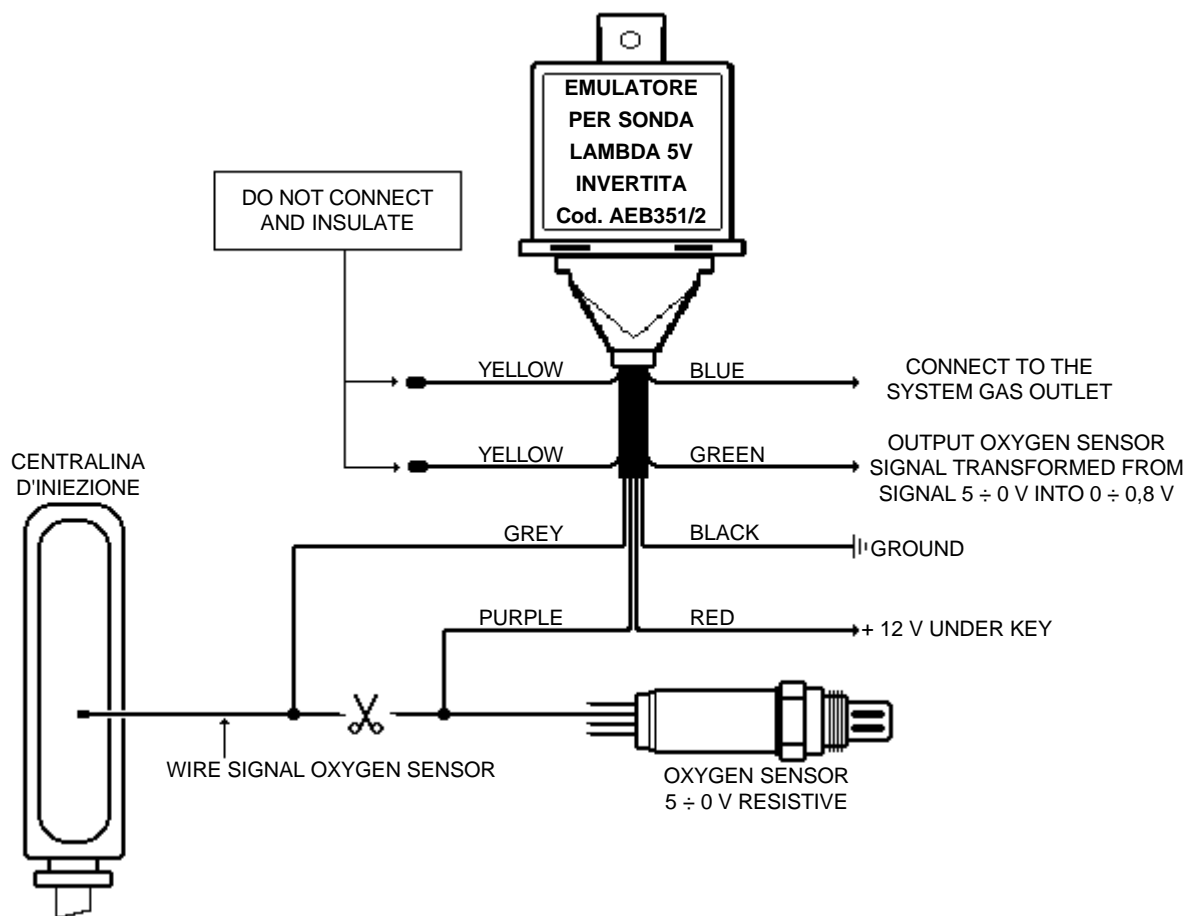SIGNAL $5 \div 0$ V INTO $0 \div 0,8$ V

GREY   BLACK   GROUND

PURPLE   RED   + 12 V UNDER KEY

WIRE SIGNAL OXYGEN SENSOR

OXYGEN SENSOR
$5 \div 0$ V RESISTIVE

The AEB351/2 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR FOR 0 V STRAIGHT OXYGEN SENSOR Code AEB351/3. The lambda probe emulator is capable of simulating the lambda signal on cars with injection central unit that uses a resistive oxygen sensor at 5 V with straight signal (5 V weak mixture - 5 V rich mixture). It prevents the engine warning light from switching on and a wrong gasoline carburation after the gas running. The emulator has more than one output transforming the 0 ÷ 5 V signal of the oxygen sensor into a 0 ÷ 0,8 V signal, which is typical of normal oxygen sensor.
This allows a correct operation of the lambda control systems.

For the moment, this emulator is used on some Opel cars:

Opel Astra with multipoint 16 - valve engine and Siemens Simtec - 56 injection central unit
Opel Vectra with multipoint 16 - valve engine and Siemens Simtec - 56 injection central unit
Opel Omega with multipoint 16 - valve engine and Siemens Simtec - 56 injection central unit
Opel Frontera with multipoint 16 - valve engine and Siemens Simtec - 56 injection central unit
Opel Calibra with multipoint 16 - valve engine and Siemens Simtec - 56 injection central unit

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB351/3:

The AEB351/3 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.
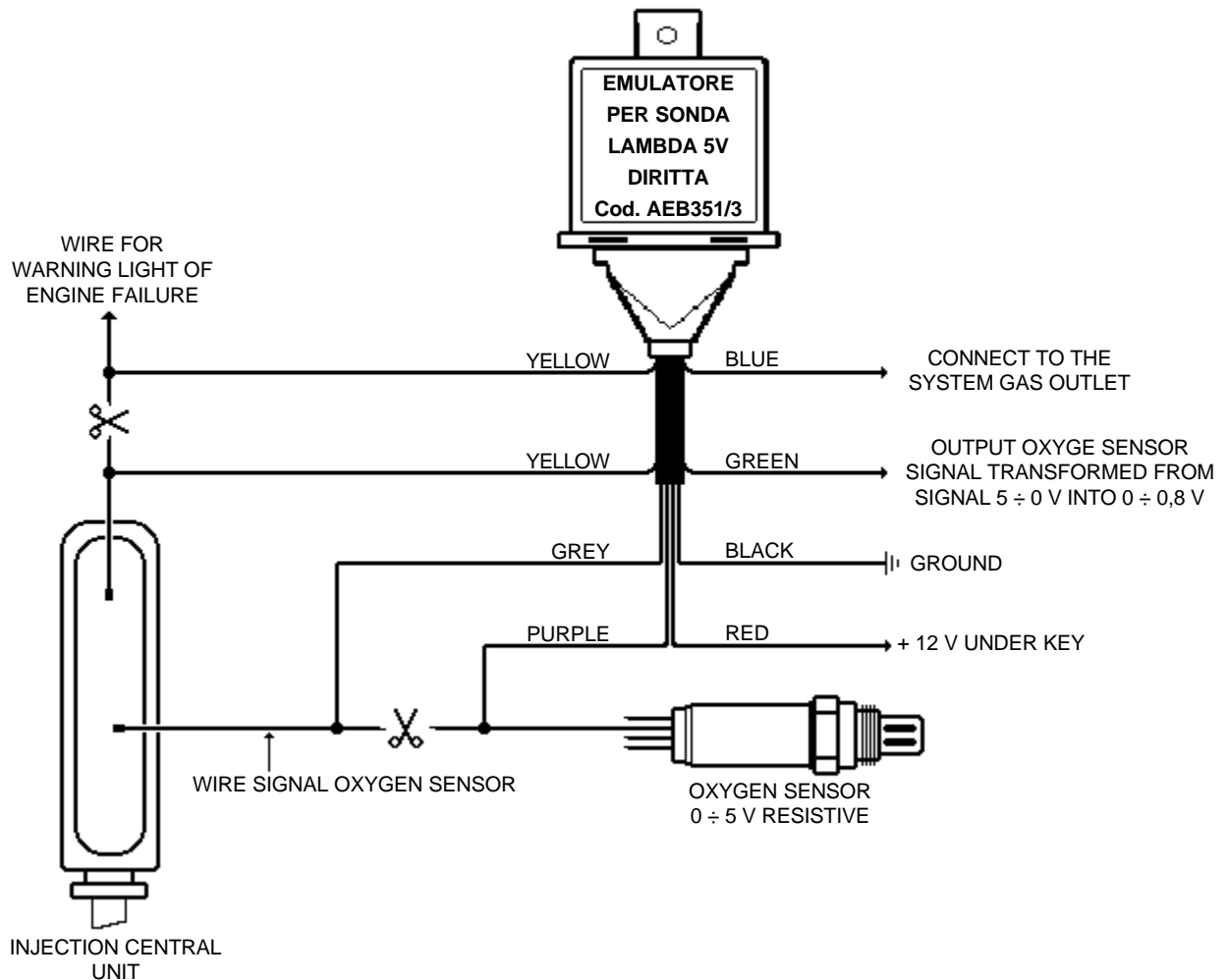
EMULATOR FOR 0 V VOLT RESISTIVE OXYGEN SENSOR Code AEB351/4. The oxygen sensor emulator is capable of simulating the lambda signal on cars with injection central unit that uses a resistive oxygen sensor at 1 V, prevents the engine warning light from switching on and a wrong gasoline carburation after the gas running. For the moment, this emulator is used on the following cars:

Alfa Romeo 145 and 146 1.3i with catalyst and IAW 8F injection

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB351/4:

The AEB351/4 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

OXIGEN SENSOR EMULATOR Code AEB462/2. The oxygen sensor emulator is used for $0 \div 1$ V oxygen sensor with 1, 3 or 4 wires. It can simulate the lambda signal on most catalysed, multipoint or single - injector cars. The emulator has an indicator with three LEDs for checking gas carburation that give the following indications:

a) Green LED ON = weak mixture
b) Red LED ON = rich mixture
c) Alternated switching on of the red - yellow - green LEDs = right mixture
d) Yellow LED = oxygen sensor cold

Example of installation of the emulator Code AEB462/2:

LED FOR ADJUSTMENT

OXIGEN
SENSOR
SIMULATOR
Cod. AEB462/2

GROUND

BLACK

CONNECT TO THE
SYSTEM GAS OUTLET

BLUE

GREY →   ← PURPLE

OXYGEN SENSOR $0 \div 1$V
WITH 1, 3 or 4 WIRES

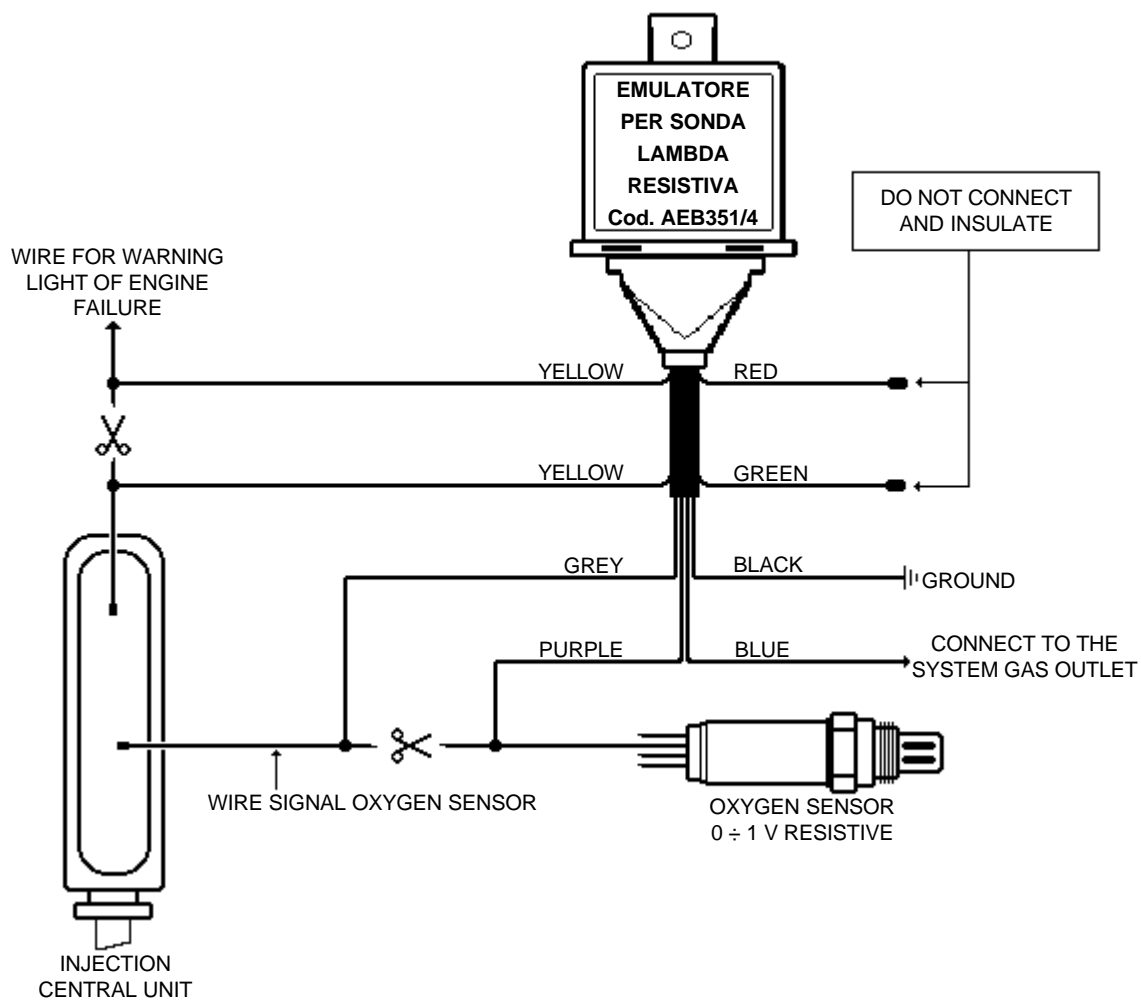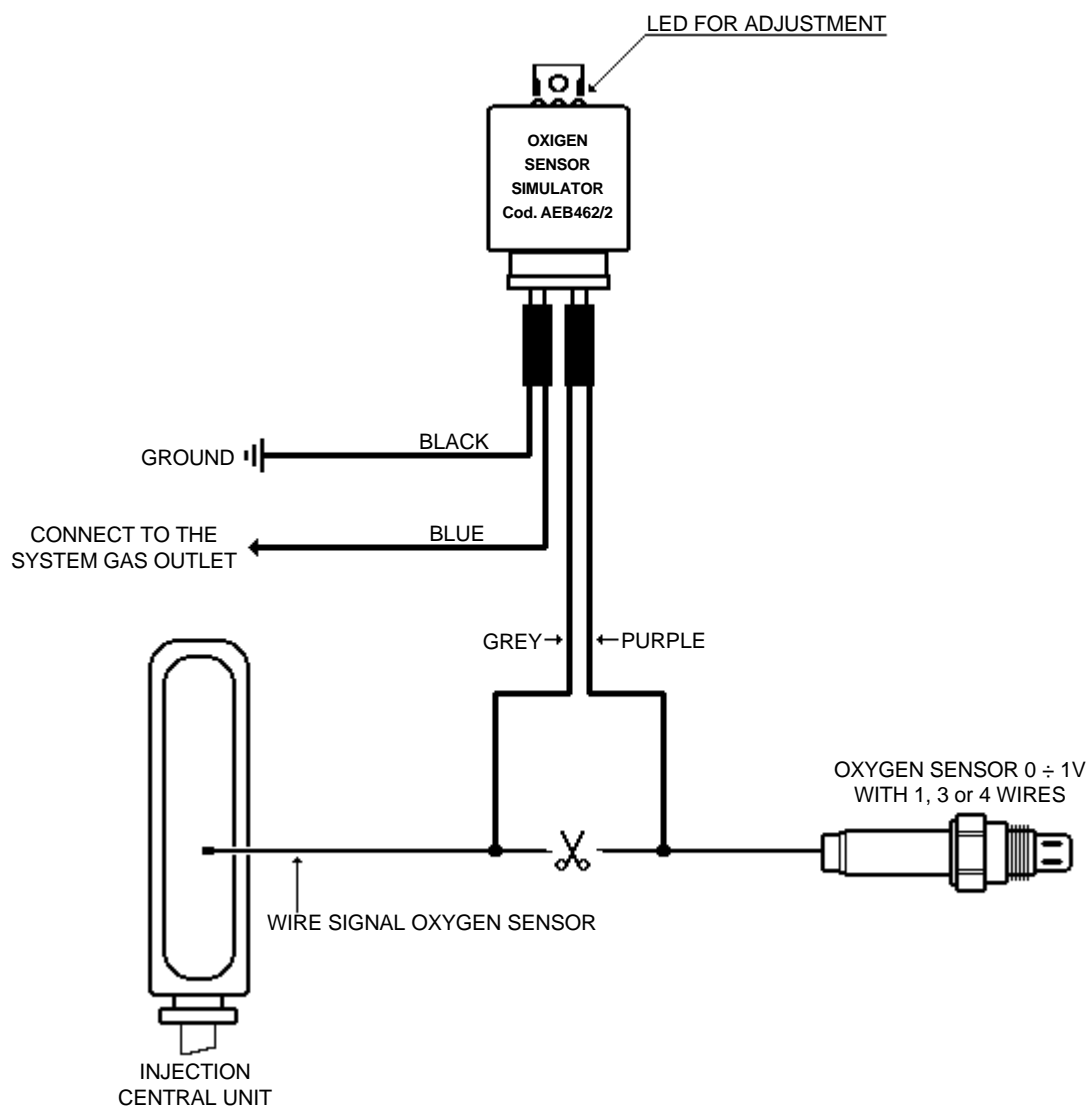WIRE SIGNAL OXYGEN SENSOR

INJECTION
CENTRAL UNIT

The AEB462/2 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

OXYGEN SENSOR EMULATOR Code AEB462/3. The operating principle of this oxygen sensor emulator is the same of AEB462/2; the only difference is that AEB462/3 is used on the following cars:

Volvo 850 2.0i GLT 20v multipoint with Bosch LH - Jetronic injection central unit

that have problems in terms of switching - on of the engine failure warning light and malfunctions in case of gasoline running after the gas running.

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator shows a LED inside the box that indicates its operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Example of installation of the emulator Code AEB462/3:

OPERATION LED (gas or gasoline)

**EMULATORE
SONDA LAMBDA
Cod. AEB462/3**

GROUND — BLACK

CONNECT TO THE
SYSTEM GAS OUTLET — BLUE

GREY → ← PURPLE

OXYGEN SENSOR

WIRE SIGNAL OXYGEN SENSOR

INJECTION
CENTRAL UNIT
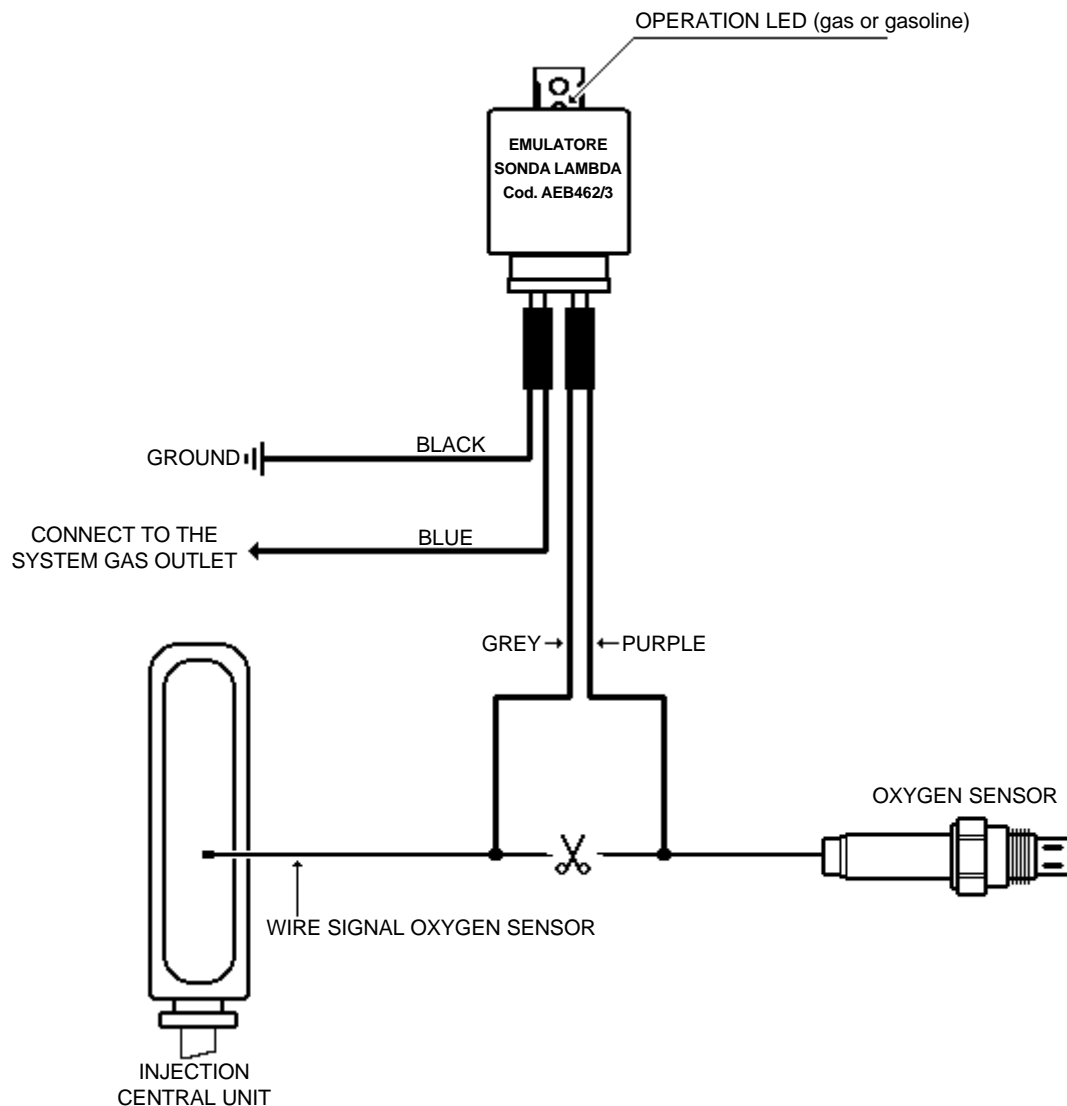
The AEB462/3 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

OXYGEN SENSOR EMULATOR Code AEB472. This emulator is used for $0 \div 1$ V probes with 1, 3 or 4 wires. It can simulate the lambda signal on any single - injector car equipped with **Bosch Mono - Jetronic and Bosch Mono - Motronic** injection central unit.

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator has an indicator with three LEDs for checking gas carburation that give the following indications:

a) Green LED ON = weak mixture
b) Red LED ON = rich mixture
c) Alternated switching on of the red - yellow - green LEDs = right mixture
d) Yellow LED = oxygen sensor cold

Example of installation of the emulator Code AEB472:

LED FOR ADJUSTMENT

EMULATORE
SONDA
LAMBDA
Cod. AEB472

GROUND

BLACK

CONNECT TO THE
SYSTEM GAS OUTLET

BLUE

GREY →   ← PURPLE

OXYGEN SENSOR $0 \div 1V$
WITH 1, 3 or 4 WIRES

WIRE SIGNAL OXYGEN SENSOR

INJECTION
CENTRAL UNIT

For the moment, the emulator Code AEB472 **is used not only on single - injector cars equipped with Bosch Mono - Jetronic and Bosch Mono - Motronic injection central unit, but also on multipoint cars like Fiat Brava / Bravo and Marea 1.6ie with IAW 1AF injection**; it is not excluded that it can be installed also on other car models.

The emulator AEB472 switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.
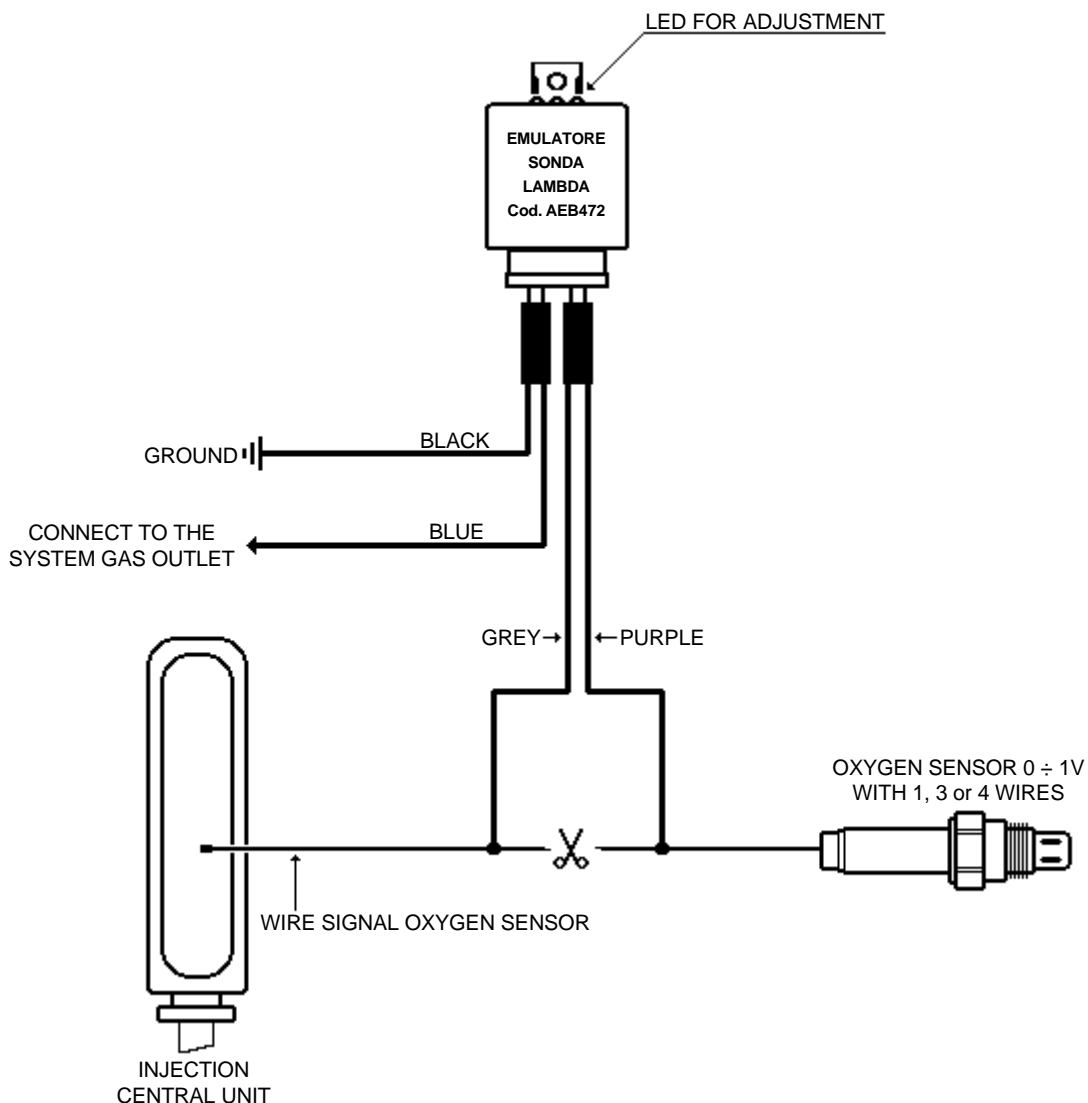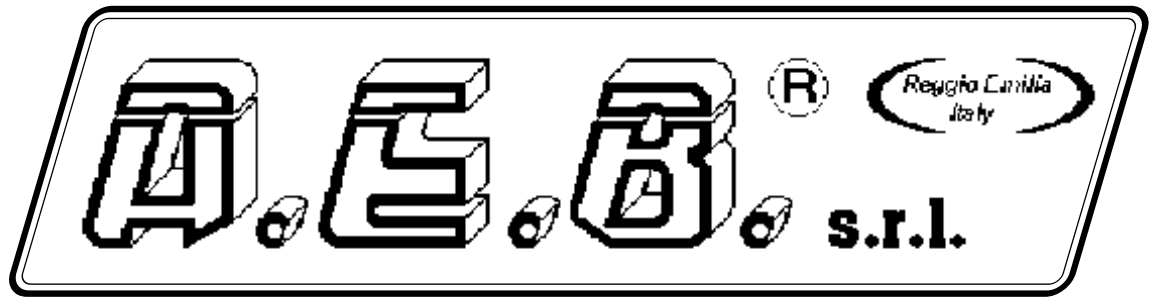
SIGNAL EMULATORS
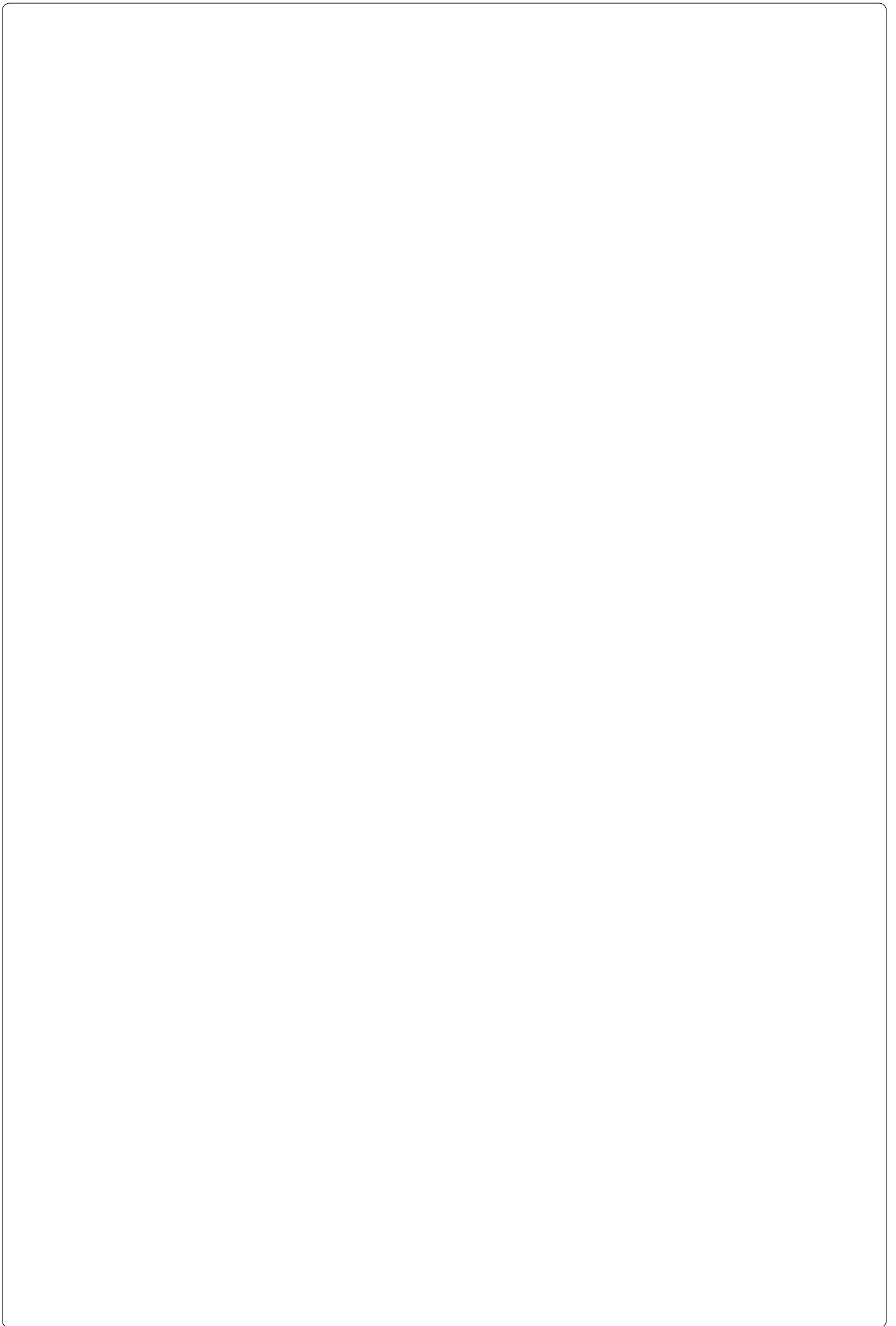
SIGNAL EMULATORS

In a catalysed injection car, beyond the oxygen sensor, there are many other sensors contributing to the carburation check and the correct running of the car in any condition. As a matter of fact, they inform instant by instant the injection central unit on the engine state - when you are accelerating or decelerating - on the engine temperature and so on.

```
        ABSOLUTE
        PRESSURE
      SENSOR (M.A.P.)

  THROTTLE                        SPEED
POSITION SENSOR                   SENSOR
  (T.P.S.)

                  INJECTION                   PHASE
OXYGEN SENSOR   CENTRAL UNIT                   SENSOR

  SENSOR                                    SPARK KNOCK
TEMPERATURE                                   SENSOR
ENGINE WATER
                   SENSOR
                 TEMPERATURE
                 SUCKED AIR
```
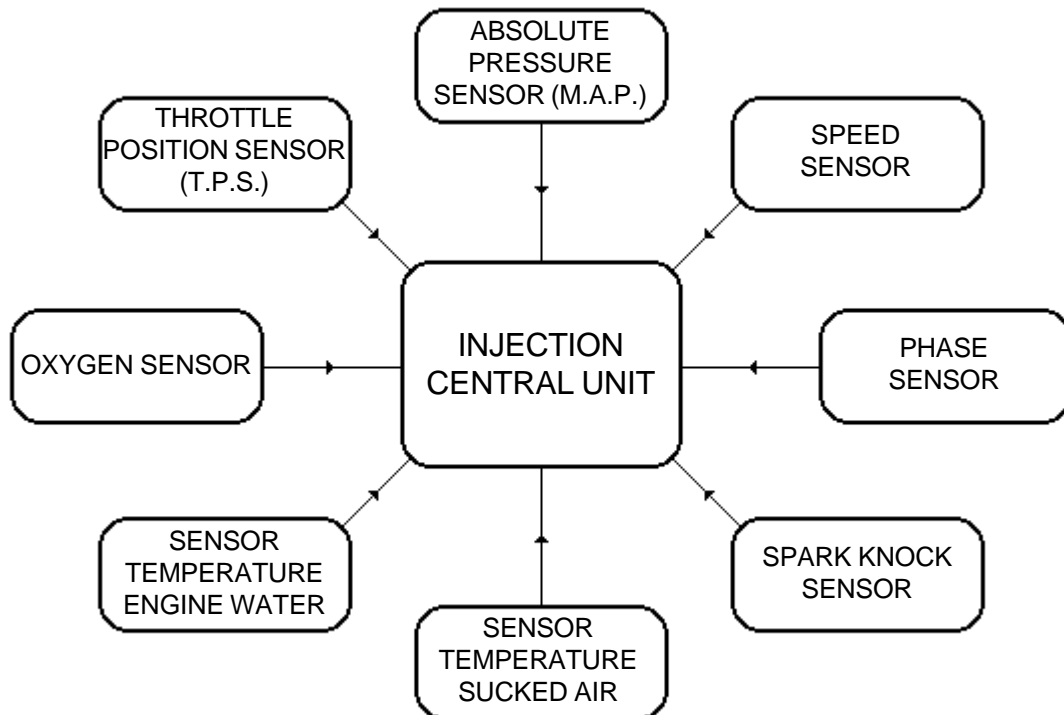
Anyway, if these sensors guarantee a correct gasoline running of the car, it can happen that on some cars, during the gas running, they create some problems and the installation of a "signal emulator" to solve the problem is necessary. A.E.B. has various types of emulators; some of them are created to guarantee a good operation of the gas system devices; others have instead been developed to improve the gas running of some special cars. They modify the signal which is generated by the component on which they must be installed, by making it more suitable for the car gas running.
These signal emulators can generate a signal with the same features of the original device or a modified signal in order to obtain improvements in the car gas running, for instance reduction of backfire risks, increase of idling, improvement of performance, etc.

For the correct detection and use of the type of emulator which is necessary on each car, we recommend to refer to the information supplied by A.E.B. before starting the conversion.

STOP K - J Code AEB377. This emulator is capable of interrupting gasoline injection on catalysed cars equipped with Bosch KE - Jetronic mechanical injection.

It prevents the gasoline pump from interrupting, thus keeping the KE - Jetronic unit always wet and constantly under pressure, therefore it obtains an excellent operation of all its organs also during the gas running.

In this way, it avoid noisy problems of idling and long car ignitions.

AEB377 must be installed on the gasoline pressure control module on the KE - Jetronic unit that is the device controlling the car carburation, thus increasing and lowering the gasoline pressure on injectors and controlling its injection times.

AEB377 does not interrupt completely the gasoline flow, but let it flow in the circuit and on injectors with such a pressure that it does not have the power to open injectors.

In case the car has no gasoline pressure control module, AEB377 must not be installed; the only solution to interrupt gasoline injection is to stop the pump.

The emulator shows a LED inside the box that indicates its operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Example of installation of the emulator Code AEB377:
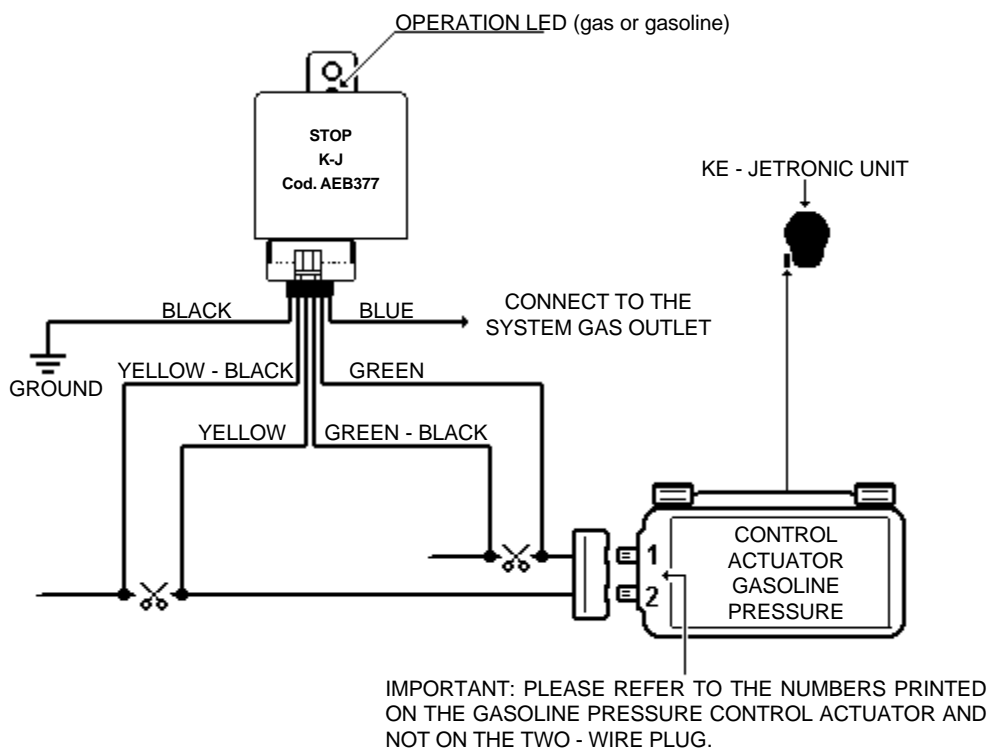
The AEB3773 emulator has a trimmer to adjust the overlapping time that is calibrated when sold with an optimal time of approx. 0,4 seconds for most cars.

The AEB377 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR HL Code AEB380. This emulator is capable of avoiding dangerous backfire events while accelerating. It acts at the same time on the signal of the throttle position sensor (T.P.S.) and on the signal of the absolute pressure sensor (M.A.P.), by modifying them only during the gas running.

This emulator has a wiring with the same connectors as the original ones for the most cars on which it must be installed and a T.P.S. signal output that can be used for other devices relating to the gas system that need a T.P.S. signal (ex. spark advance variators or lambda control systems).

AEB380 is used only on some Hyundai cars:

       Hyundai Coupè 1.6i Multipoint, Siemens injection
       Hyundai Lantra 1.6i Multipoint, Siemens injection
       Hyundai Lantra 1.8i Multipoint, Siemens injection

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB380:
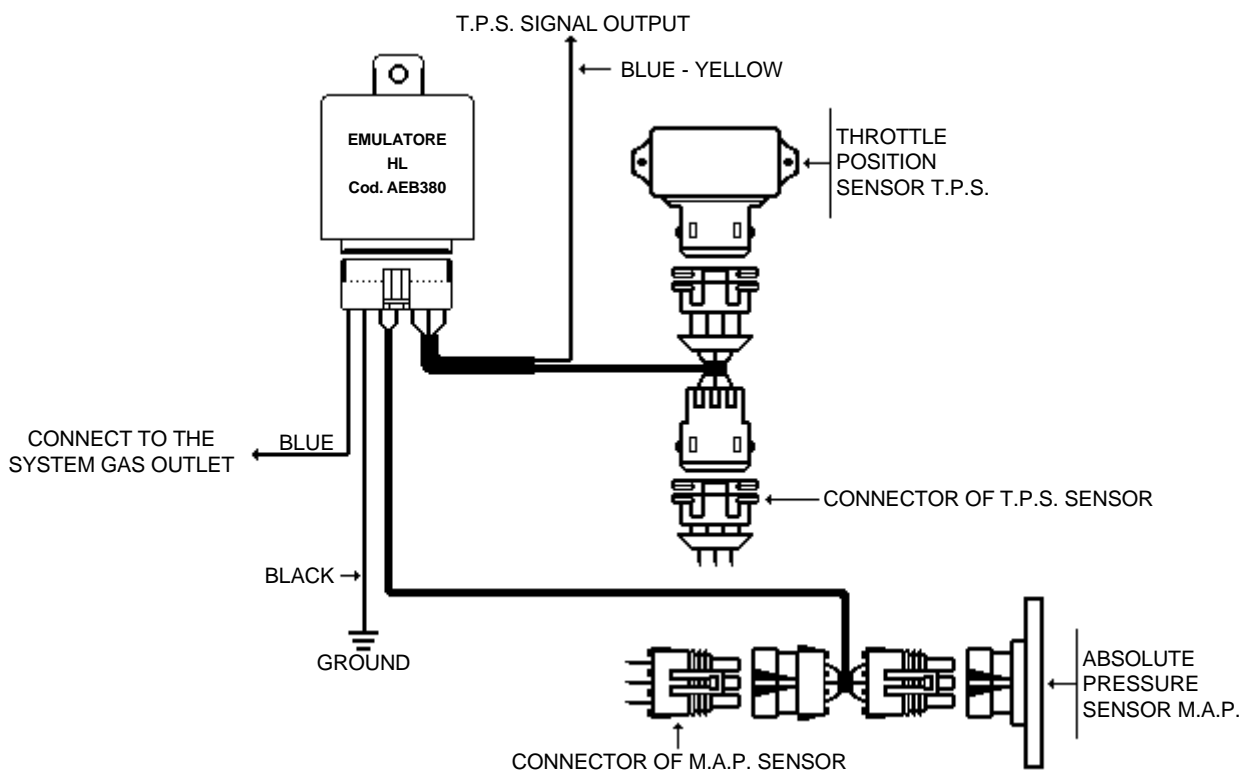
The AEB380 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

IDLING STABILIZER FOR BOSCH SINGLE INJECTOR Code AEB429. This emulator is used on cars with Bosch single injector. By modifying some signals on the idling starter, it allows a fast lowering of the rpm when releasing the gas pedal, thus obtaining a higher engine brake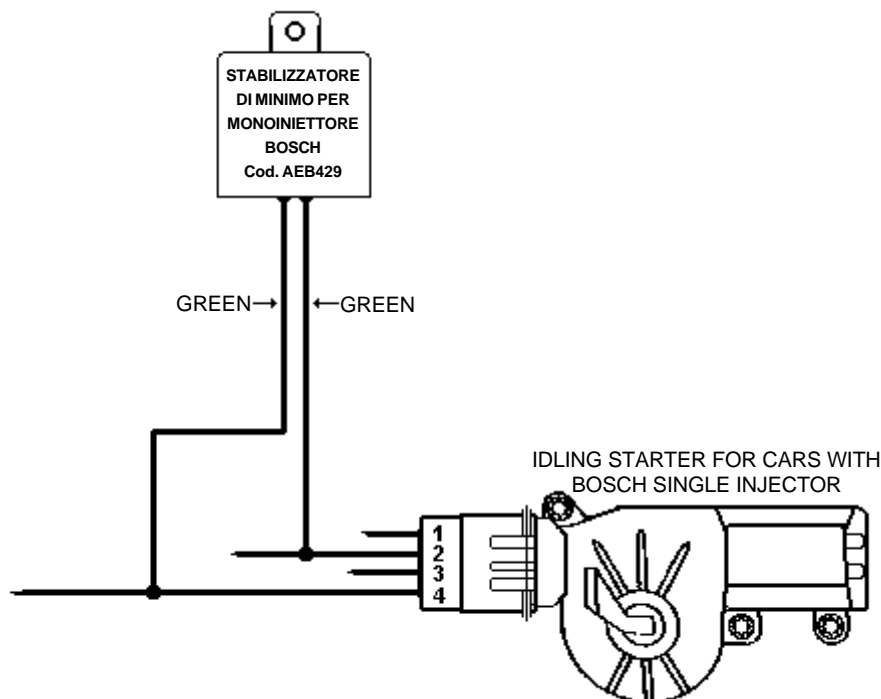; moreover, it eliminates irregular operations of the original idling starter as spontaneous car accelerations when releasing the gas pedal or high idling.

AEB429 is used on various types of cars, for instance:

       Audi - any model with Bosch single injector
       Citroën - any model with Bosch single injector
       Fiat - any model with Bosch single injector
       Lancia - any model with Bosch single injector
       Peugeot - any model with Bosch single injector
       Seat - any model with Bosch single injector
       Volkswagen - any model with Bosch single injector

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB429:

STABILIZZATORE DI MINIMO PER MONOINIETTORE BOSCH Cod. AEB429

GREEN→ ←GREEN

IDLING STARTER FOR CARS WITH BOSCH SINGLE INJECTOR

The emulator AEB429 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR FOR LANCIA K Code AEB441. This emulator is capable of interrupting the wire of the engine failure warning light on a catalysed Lancia K 2.0 20v.

It is not a simple relay, but a special circuit which has been specifically developed for this car.

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator AEB441 shows a LED inside the box that indicates its operation:

a) LED ON = running device
b) LED OFF = device not running

Example of installation of the emulator Code AEB441:

STATUS LED

EMULATORE
"K"
Cod. AEB441

WIRE FOR ENGINE
FAILURE WARNING LIGHT

← ORANGE - BLACK

GROUND   BLACK   GREEN

RED →

ORANGE

+ 12 V UNDER KEY ←   BLUE - BLACK

27   51

38   55
20   37
1   19

INJECTION CENTRAL UNIT

EMULATOR NISSAN PRIMERA Code AEB443. The emulator is capable of eliminating noisy chugging that you can have on the silencer after the car gas transformation, by modifying the T.P.S. signal during the gas running. It is used on the following car:

Nissan Primera 1.6i 16v Multipoint

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator AEB443 has a LED that indicates its operation:

OPERATION LED (gas or gasoline)

EMULATORE PER NISSAN PRIMERA Cod. AEB443

BROWN→   ←BROWN

BLACK   BLUE

T.P.S. CONNECTOR

WHITE

GROUND

CONNECT TO THE SYSTEM GAS OUTLET

The AEB443 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.
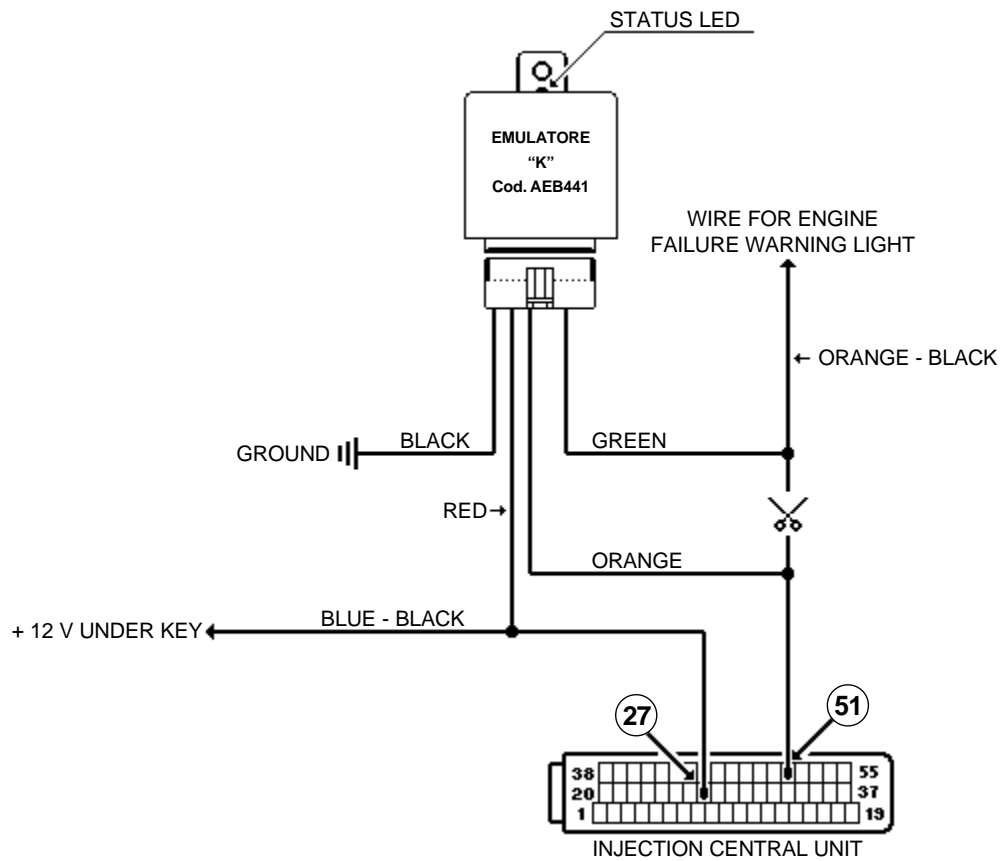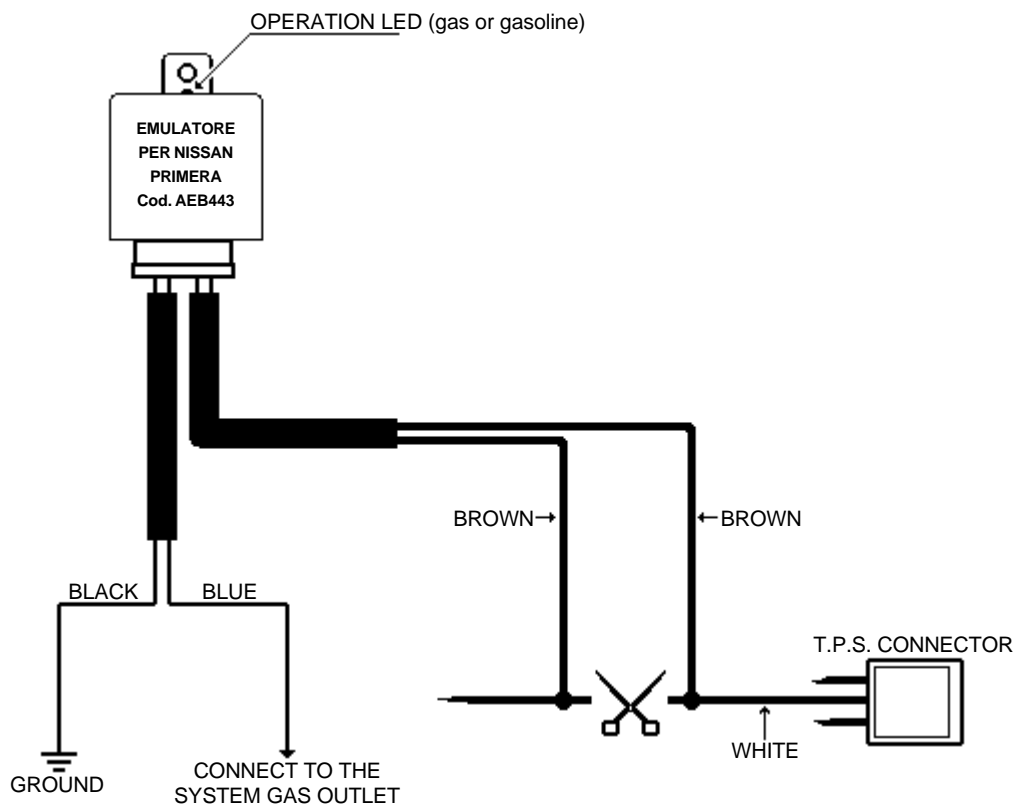
EMULATOR ASTRA Code AEB444. This emulator is capable of eliminating noisy carburation holes while rapidly accelerating during the gas running. It is installed on the engine water temperature sensor by means of a wiring with the same connectors as the original ones; it deceives the injection central unit by informing it of the fact that the water temperature is colder of approx. 25 degrees in comparison to the original temperature; as a consequence, the injection central unit uses ignition spark advance mapping more suitable for gas.
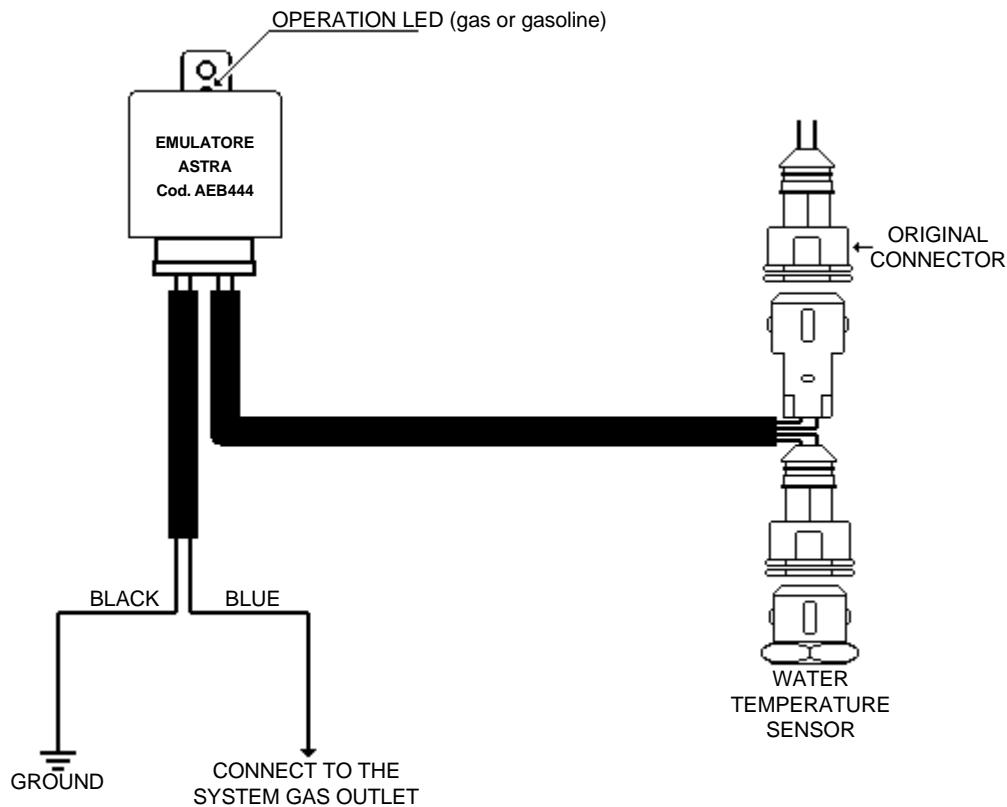It is used on the following car:

Opel Astra single - injector and multipoint

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator AEB444 shows a LED inside the box that indicates its operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Example of installation of the emulator Code AEB444:

OPERATION LED (gas or gasoline)

EMULATORE ASTRA Cod. AEB444

ORIGINAL CONNECTOR

BLACK   BLUE

WATER TEMPERATURE SENSOR

GROUND

CONNECT TO THE SYSTEM GAS OUTLET

The AEB444 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR Code AEB447. This emulator is capable of increasing or stabilizing idling and avoid noisy carburation holes while rapidly accelerating during the gas running. It is installed on cars where the engine water temperature sensor only informs the injection central unit on the engine temperature and does not manage the switching - on of the cooling fan; it deceives the injection central unit by informing it that the water temperature is colder of 20 degrees in comparison to the original temperature; as a consequence the injection central unit uses the most different injection spark advance mapping that are more suitable for gas running. This emulator in installed on the engine water temperature sensor by means of a wiring with the same connectors as the original ones.

In case by installing the AEB447 emulator the idling increases too much or insufficiently, there are other two types of emulators having the same features of AEB447. The only difference is in the number of degrees.

EMULATOR ALFA Code AEB448. This emulator supplies information on the engine temperature of - 10 degrees in comparison to the original temperature.

EMULATOR PANDA Code AEB449. This emulator supplies information on the engine temperature of - 30 degrees in comparison to the original temperature.

The emulators AEB447, AEB448 and AEB449 show a LED inside the box that indicates their operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Example of installation of the emulators Code AEB447, AEB448 and AEB449:
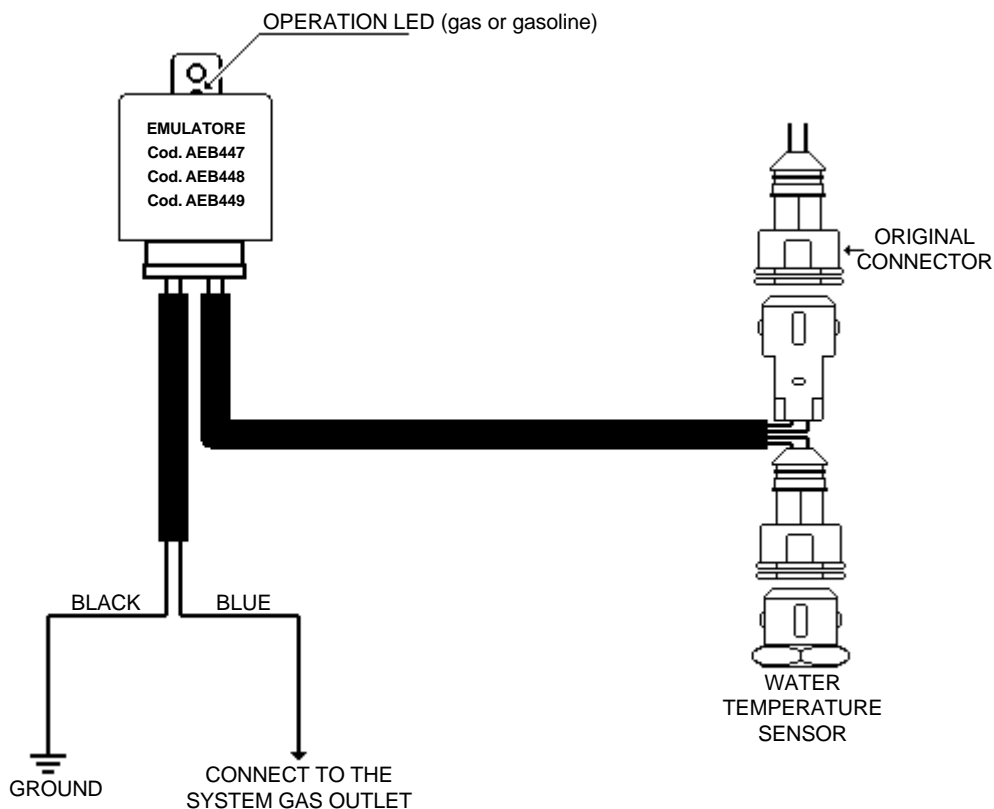
The AEB447, AEB448 and AEB449 emulators switch on during the gas running and switch off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

IDLING STABILIZER Code AEB453. This emulator is capable of preventing any unstable idling during the gas running or any idling excessive lowering with the consequent engine switching off.

It can be installed on any injection car with idling adjusting valve, type "VAE". Instead it cannot be installed on valves of the stepping engine type. Therefore, if the valve receives two (2) or three (3) OK wires, the device can be installed; on the contrary, is wires are four (4) this is not possible.

Among the cars using "VAE" type valves there are: Mercedes, BMW, Opel, Ford etc. The idling stabilizer has an adjuster by means of which you can adjust the car gas idling without changing the original setting of the producer (see the instructions supplied with the product).

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB453:
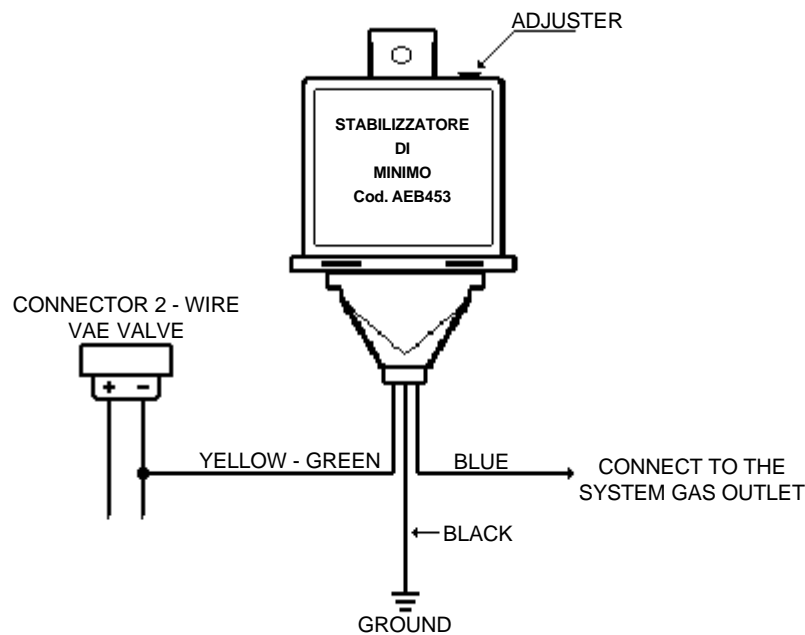
The emulator AEB453 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR M 200 Code AEB460. This emulator is capable of eliminating the risks of dangerous backfire events and carburation holes during fast acceleration, thus improving the car performance when gas driving. It is installed on engine temperature sensors and deceives the ignition central unit by informing it of the fact that the engine temperature is colder in comparison to the normal one; as a consequence, the central unit uses the most different ignition spark advance mapping that are more suitable for gas running.

It is used on special Mercedes cars:

Mercedes 190 catalysed with Ke - Jetronic injection and Bosch or Siemens ignition central units
Mercedes 200 catalysed with Ke - Jetronic injection and Bosch or Siemens ignition central units
Mercedes 260 catalysed with Ke - Jetronic injection and Bosch or Siemens ignition central units
**Mercedes 300** catalysed with Ke - Jetronic injection and Bosch or Siemens ignition central units

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator AEB460 shows a LED inside the box that indicates its operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Example of installation of the emulator Code AEB460:
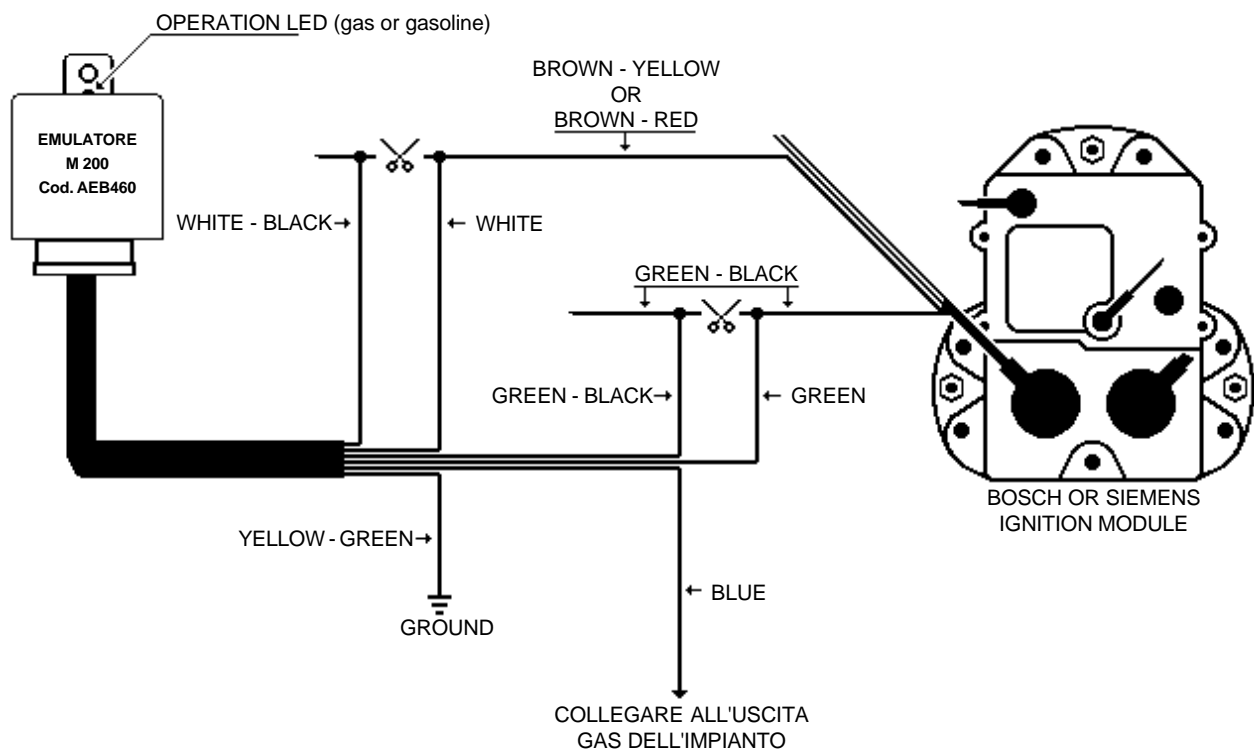
The AEB460 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR M.A.P. Code AEB466. This emulator is capable of improving performance and avoiding sudden spark advance losses while accelerating, thus avoiding the risk of backfire during the gas operation. The AEB466 emulator is equipped with a wiring with the same connections as the original ones, even if for some cars it is necessary to cut the wires, because the connectors of A.E.B. wiring are not the same as the original ones.

This emulator has been developed for some Skoda and Chrysler cars equipped with absolute pressure sensor (M.A.P.) type:

Skoda Felicia 1.3i multipoint Siemens
Chrysler Stratus 2.0i 16v multipoint
Chrysler Voyager 2.0i 16v multipoint

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator AEB466 shows a LED inside the box that indicates its operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Example of installation of the emulator Code AEB466:
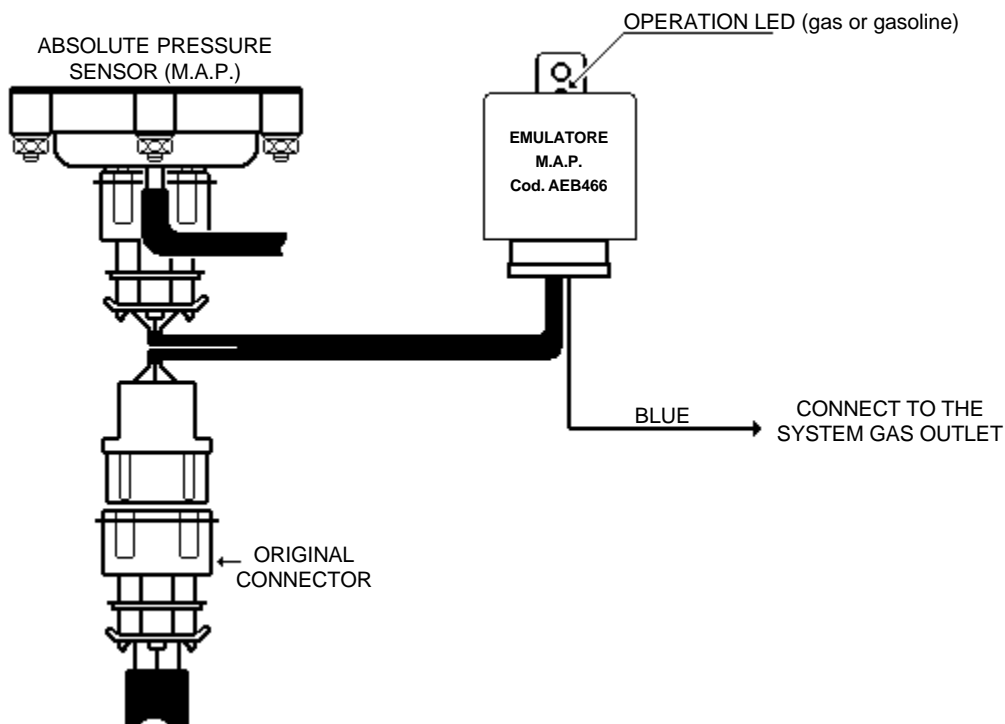
The AEB466 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR KNOCK Code AEB467. This emulator is used on cars with knock sensor converted to C.N.G. (for the cars converted to L.P.G., the emulator is not necessary) and prevent the engine warning light from switching on as well as car malfunctions both during the gas and gasoline running caused by the storage in the central unit of a knock sensor error.

AEB467 generates a false signal of the knock sensor so that the injection central unit does not store any error. It is used on the following cars:

Opel Corsa 1.2i with engine code X12SZ
Opel Corsa 1.6i 16v with engine code C16XE
Opel Astra 1.6i 16v with engine code C16XEL

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

The emulator AEB467 shows a LED inside the box that indicates its operation:

a) LED ON = gas running
b) LED OFF = gasoline running
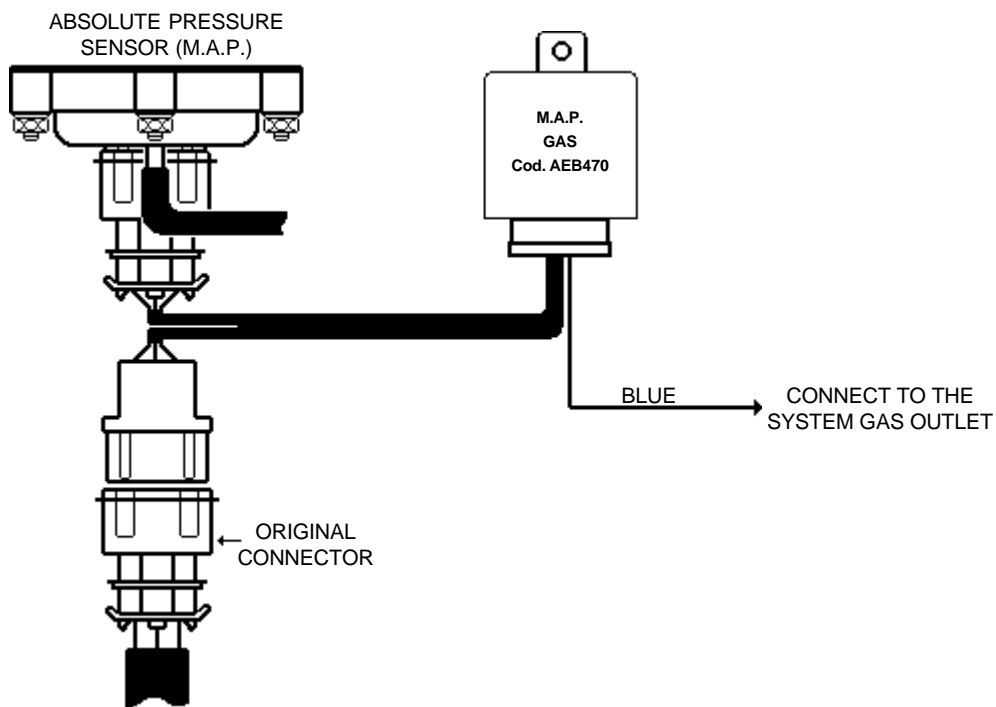
Example of installation of the emulator Code AEB467:
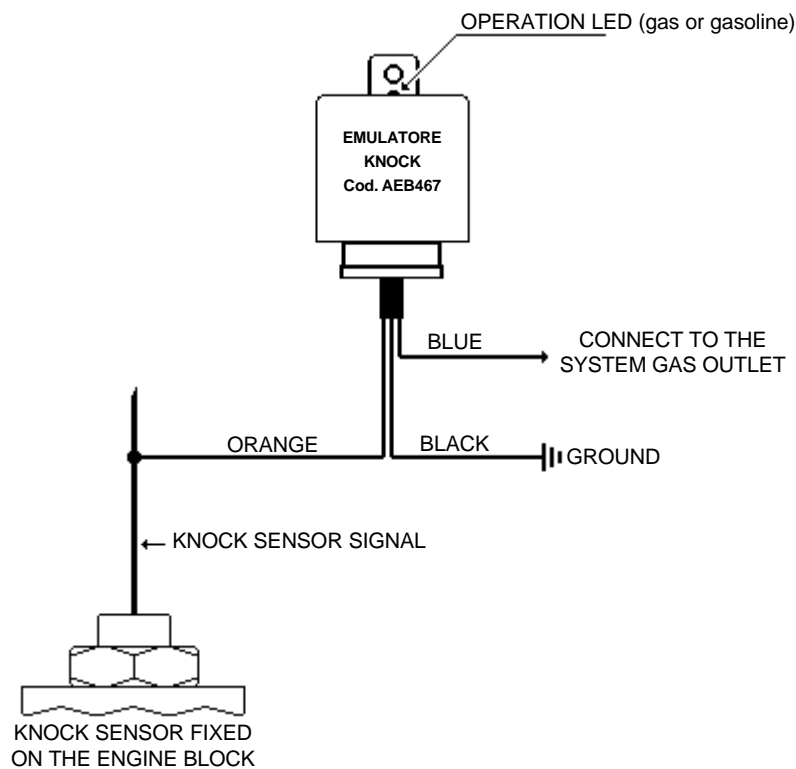
The emulator AEB467 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

M.A.P. - GAS, M.A.P. SIGNAL OPTIMIZER Code AEB470. This emulator is used on cars with absolute pressure sensor (M.A.P.) and Marelli IAW injection central unit; it optimises the M.A.P. sensor signal by making the injection central unit work with ignition spark advance mapping that are more suitable for the car gas use, thus improving its performance and allowing a faster reduction of rpm while releasing. No wire cutting is necessary for installation, because the M.A.P. - GAS is equipped with the same connections as the original ones.
AEB470 is used on single - injector Fiat cars with Marelli IAW6F or IAW16F injection central unit.

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB470:

ABSOLUTE PRESSURE
SENSOR (M.A.P.)

M.A.P.
GAS
Cod. AEB470

BLUE → CONNECT TO THE
SYSTEM GAS OUTLET

← ORIGINAL
CONNECTOR

The AEB470 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

EMULATOR 471 Code AEB471. This emulator is used on cars with Marelli IAW49F injection central unit; it optimises the M.A.P. sensor signal and acts directly on the central unit by reducing the risk of backfire during the gas running (L.P.G. or C.N.G.).
AEB471 is used on single - injector Fiat or Lancia cars with Marelli IAW49F injection central unit.

Fiat Brava 1.6i 16v with Marelli IAW49F injection
**Fiat Bravo1.6i 16v** with Marelli IAW49F injection
Fiat Marea 1.6i 16v with Marelli IAW49F injection
Fiat Dedra 1.6i 16v with Marelli IAW49F injection
Lancia Delta 1.6i 16v with Marelli IAW49F injection

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB471:
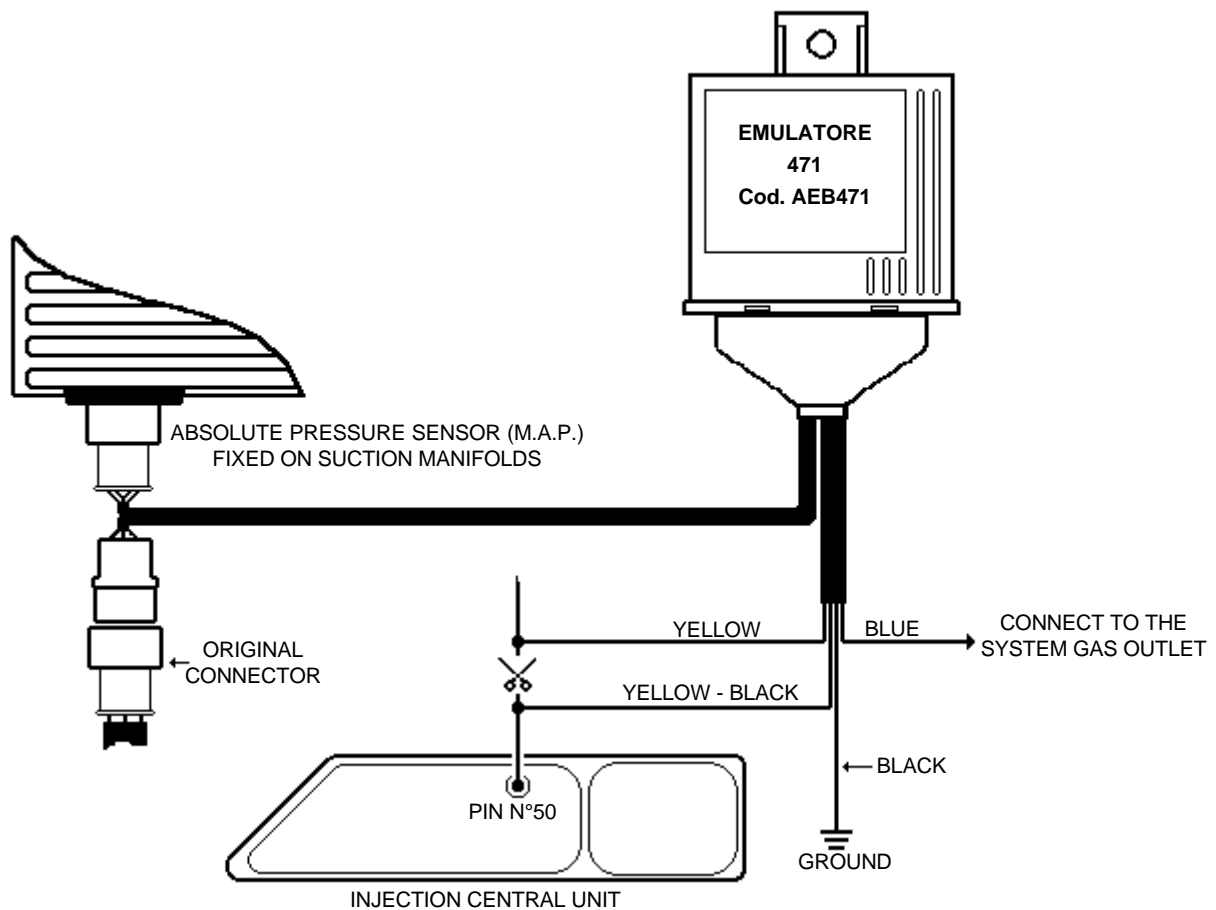
The AEB471 emulator switches on during the gas running and switches off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.
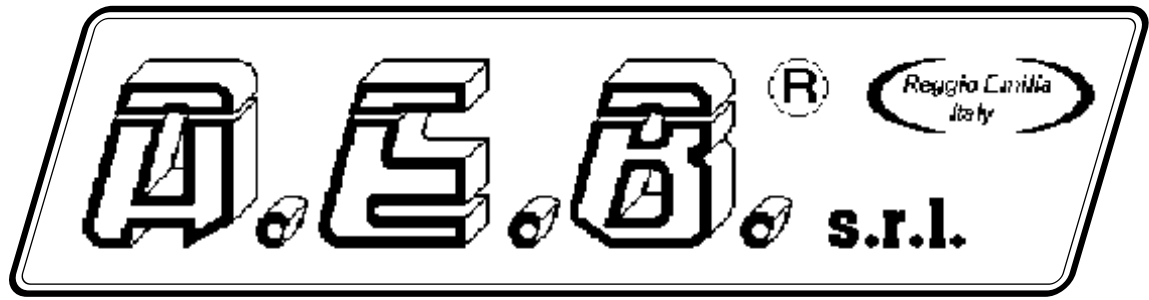
VARIOUS DEVICES

VARIOUS DEVICES

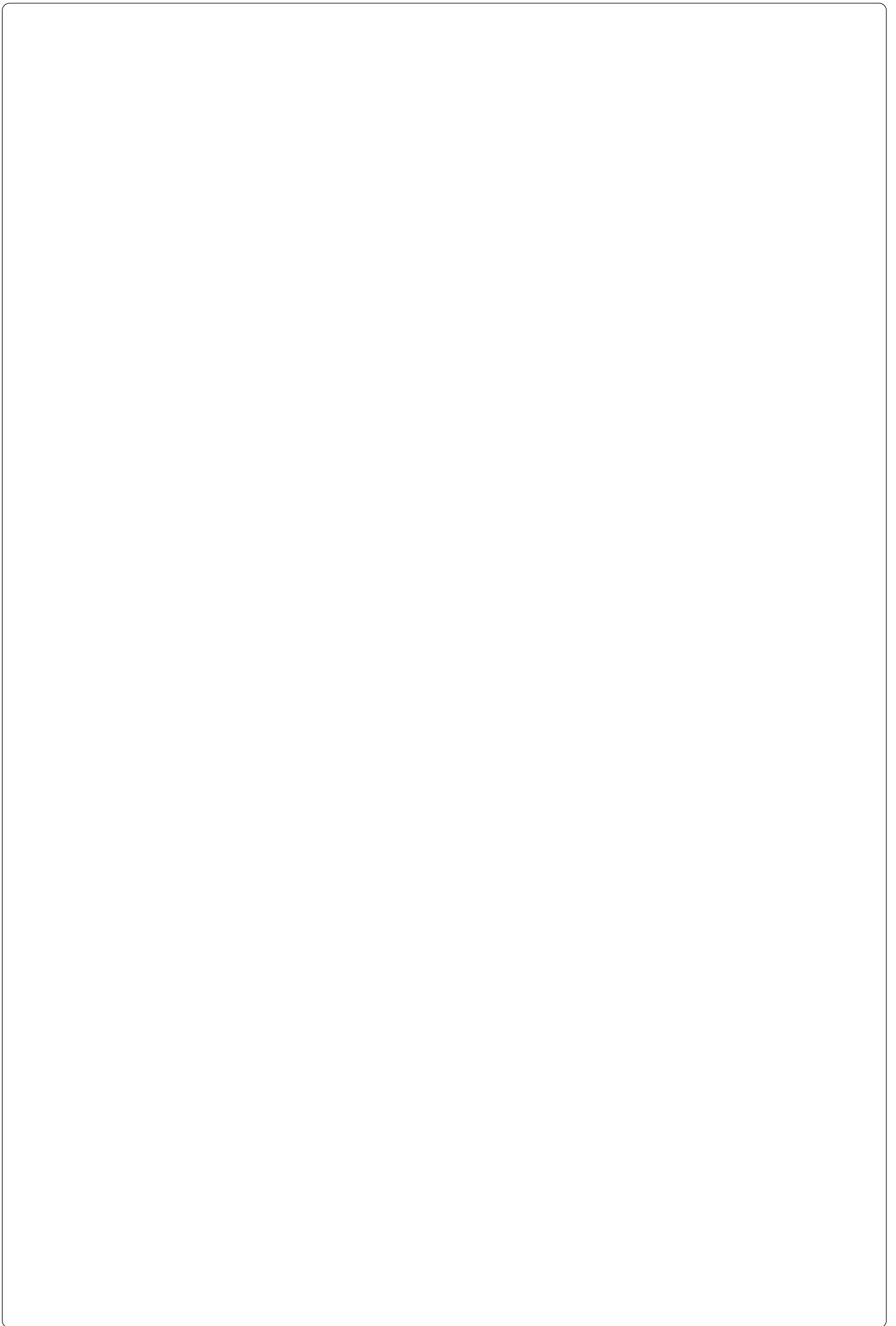Beyond the previously described products that are used to emulate and not to create problems to the gasoline system, A.E.B. has also other devices that we can classify as "Various Devices", because they are used to improve the car gas running or to interrupt the gasoline injection, nevertheless without any kind of emulation.

In terms of safety, the "Various Devices" of A.E.B. switch on during the gas running and switch off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking**.**

In the following pages we will see in details the various types of A.E.B. "Various Devices".
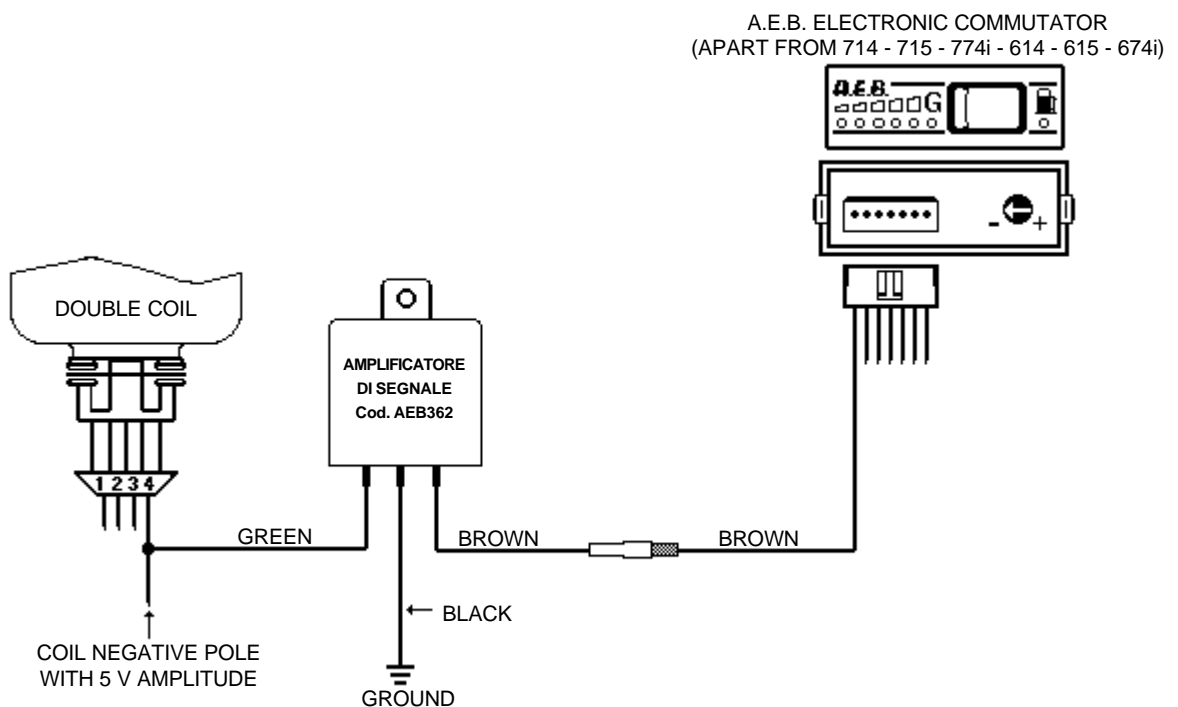
In order to establish correctly and use the type of emulator which is necessary on each car, we recommend to read the information supplied by A.E.B. before starting the conversion.

SIGNAL AMPLIFIERS Code AEB362. This device is used on those cars that have a coil negative signal - also called "weak" signal - that is to say with an amplitude of 5 V, on which you wish to install an **A.E.B. electronic commutator.** This type of "weak" signal is a feature of some Opel or General Motors cars on which, if you install an A.E.B. electronic commutator, it is necessary also to use AEB362, because the coil negative pole with amplitude of 5 V (weak signal) is not compatible for most AEB electronic commutator that, without AEB362, would not sense the rpm. **Only if you install an AEB714 - AEB715 - AEB774i - AEB614 - AEB615 - AEB674i commutator you must not install AEB362**, because these commutators have already inside an amplifier and therefore are capable of running both with normal signals with 12 V amplitude and with "weak signals" with 5 V amplitude.

To install the emulator on different devices from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB362:

A.E.B. ELECTRONIC COMMUTATOR
(APART FROM 714 - 715 - 774i - 614 - 615 - 674i)

DOUBLE COIL

AMPLIFICATORE DI SEGNALE Cod. AEB362

GREEN   BROWN   BROWN

BLACK

COIL NEGATIVE POLE WITH 5 V AMPLITUDE

GROUND

AEB362 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

TIMING RELAY Code AEB370. This device is a simple normally closed relay that can be used for various purposes, for instance to stop injection on those cars that do not need injector emulators or to cut the wire of the engine failure warning light. AEB370 has not installation wiring, but has some male faston that are inserted directly in the circuit and for the installation it is enough to follow the instruction of the label on the product.
AEB370 has also a non - recordable overlapping time.

DOUBLE TIMING RELAY Code AEB371. This device is a combination of two AEB370 in the same product; it has the same features of the previously described operation and can be used in case on the same car you need to cut two wires, for instance the wire of the engine failure warning light and the injection wire.
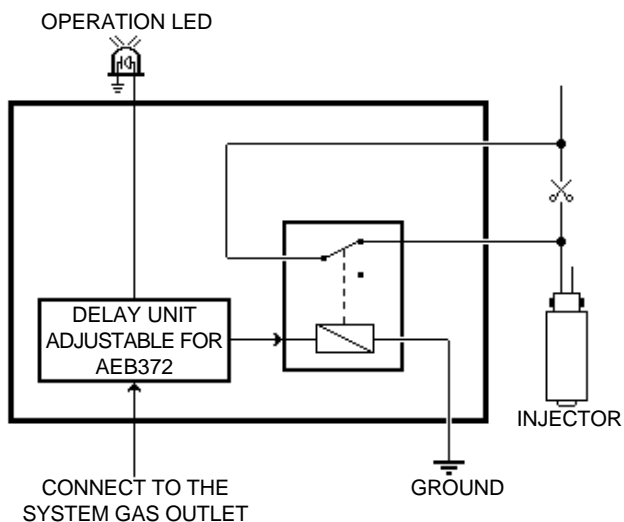Unlike AEB370, AEB371 has an installation wiring.

TIMING RELAY REGISTRABILE Code AEB372. This device is the same that AEB370; the only difference is that AEB372 has a recordable overlapping time through a trimmer located under the product.

DOUBLE TIMING RELAY REGISTRABILE Code AEB376. This device is the same that AEB371; the only difference is that AEB376 has a recordable overlapping time through a trimmer located under the product.
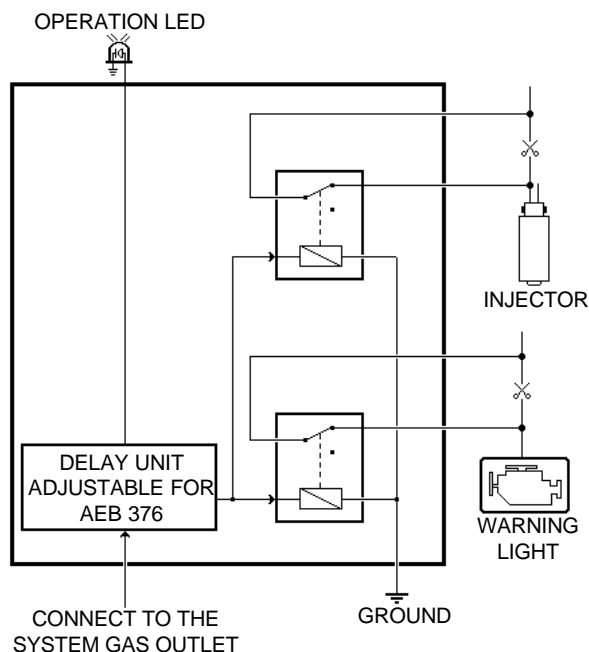
The AEB447, AEB448 and AEB449 show a LED inside the box that indicates their operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Block diagram Code AEB370 and AEB372

OPERATION LED

DELAY UNIT ADJUSTABLE FOR AEB372

INJECTOR

CONNECT TO THE SYSTEM GAS OUTLET

GROUND

Block diagram Code AEB371 and AEB376

OPERATION LED

INJECTOR

DELAY UNIT ADJUSTABLE FOR AEB 376

WARNING LIGHT

CONNECT TO THE SYSTEM GAS OUTLET

GROUND

The AEB370, AEB371, AEB372 and AEB376 switch on during the gas running and switch off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

INJECTOR - DISCONNECTING WIRING, 4 CYLINDERS WITH TIMING RELAY Code AEB370 - 4. This is only a timing relay (Code AEB370) combined with an interface wiring with the same connectors as the injector original ones (Bosch type). It can be used to ease the injection interruption on those cars where the same injectors are easily accessible and where it is not necessary to install an injector emulator, because there are no problems in terms of engine failure warning light. With this device, you interrupt the positive pole which is common to any injector; anyway, you need to check that in all the injectors the positive pole is on the same side and coincides with No. 1 of the A.E.B. wiring plug that must be inserted on the injector.

INJECTOR - DISCONNECTING WIRING, 4 CYLINDERS WITH TIMING RELAY Code AEB370 - B. This article has the same operating and installation features of Code AEB370 - 4; the only difference is in the wiring that is suitable for cars with Boxer engine:
Ex. Alfa Romeo 33 1.3i catalysed

INJECTOR - DISCONNECTING WIRING, 4 CYLINDERS WITH TIMING RELAY Code AEB370 - 6. This article has the same operating and installation features of Code AEB370 - 4; the only difference is in the wiring that is suitable for cars with 6 cylinder engine:
Ex. BMW 520i injection L - Jetronic.

The AEB370 - 4, AEB370 - B, AEB370 - 6 show a LED inside the box that indicates their operation:

a) LED ON = gas running
b) LED OFF = gasoline running

Example of installation for AEB370 - 4, AEB370 - B and AEB370 - 6:
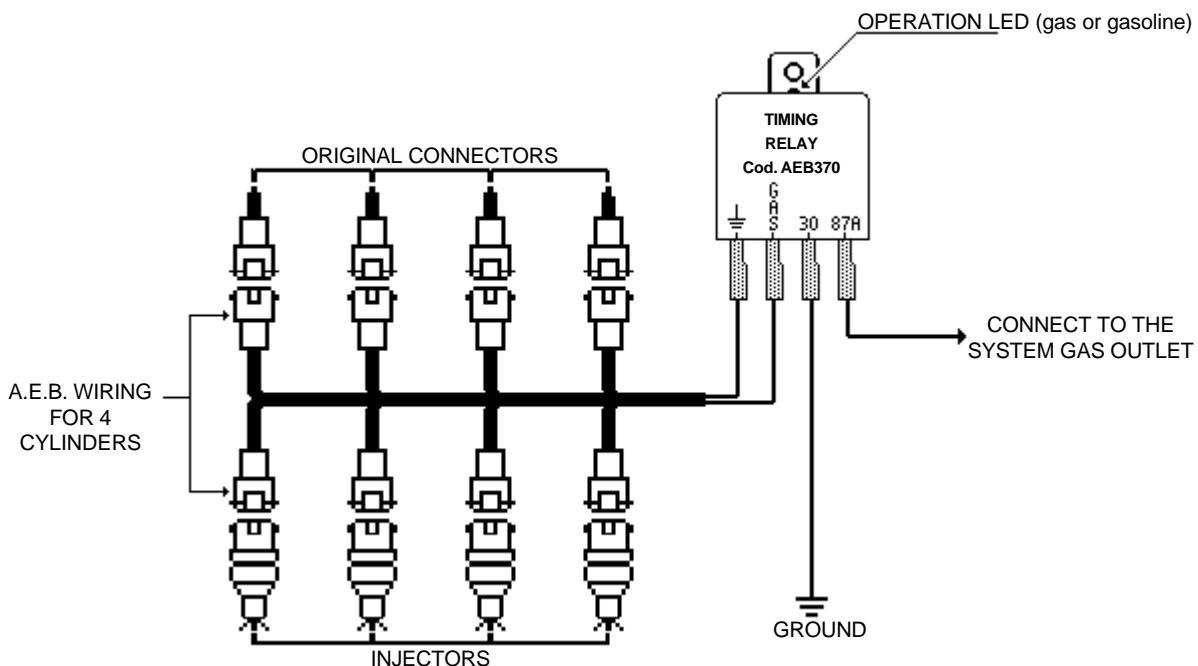
The AEB370 - 4, AEB370 - B, AEB370 - 6 switch on during the gas running and switch off during the gasoline running, thus automatically resetting the connections to the car original electrical system; this applies also in case of failure, thus allowing the user to drive the car with gasoline and reach a service point for checking.

ELECTRONIC RELAY Code AEB375. This device is used to perform the memory reset of the gasoline injection central unit of the car in case it shows wrong gasoline carburations after the gas running or in case the engine failure warning light switches on both with gas and gasoline and remains on also by switching off and on again the car. The AEB375 emulator disconnects the memory wire after 40 second from the car switching off. This delay is necessary because in some Fiat or Citroen cars there are some original anti - theft alarms that, when switching off the car, for some seconds communicate with the injection central unit that, during this period, must be supplied.

AEB375 shows a LED inside the box that indicates its operation:

a) LED ON = device active (memory wire connected)
b) LED OFF = device inactive (memory wire disconnected "memory reset")

Example of installation of the emulator Code AEB375:
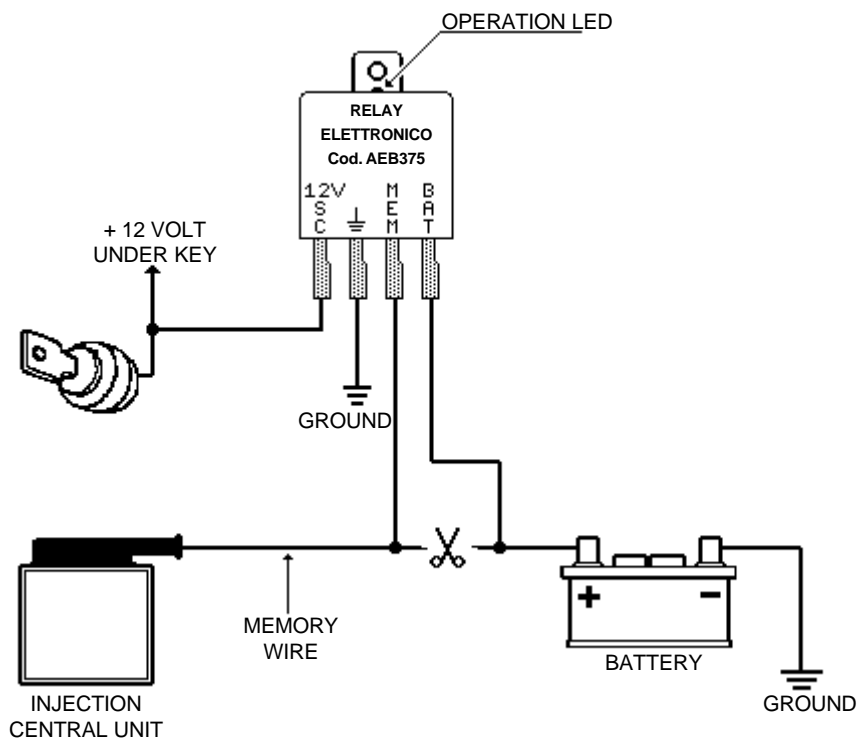
AEB375 is connected directly to the original + 12 V under key of cars, therefore also in case of failure to the gas electric system it cannot be damaged, thus allowing the user to use the car both with gasoline and to reach a service point for checking.

OVERDRIVE AND REVOLUTION AMPLIFIER Code AEB387. The AEB387 emulator is used to solve reading problems of the "REVOLUTIONS" signal on 4 cylinder cars where it is not possible to draw it directly from the injection central unit (revolution counter) and that have an ignition system which is formed by a coil per cylinder inside which there is the power transistor piloting the coil. The signal with which the injection central unit drives the power transistor for the consequent spark has a voltage value that ranges from $0 \div 3$ V, a value that cannot be "read" by most commutators and feedback central units currently on the market.

With AEB387 this problem has been solve, because it draws the 4 signals arriving to the 4 ignition coils, units them through a special circuit thus obtaining on the output the same signal of a revolution counter signal of any car, by amplifying it up to a voltage value ranging from $0 \div 12$ V.

AEB387 draws and unites all the four coil signals in order to obtain on the output a wider and more precise signal, because you obtain the sum of the 4 coil signals (this type of signal can be comparedto the one of a revolution counter).

For the moment, AEB387 is only used on some cars:

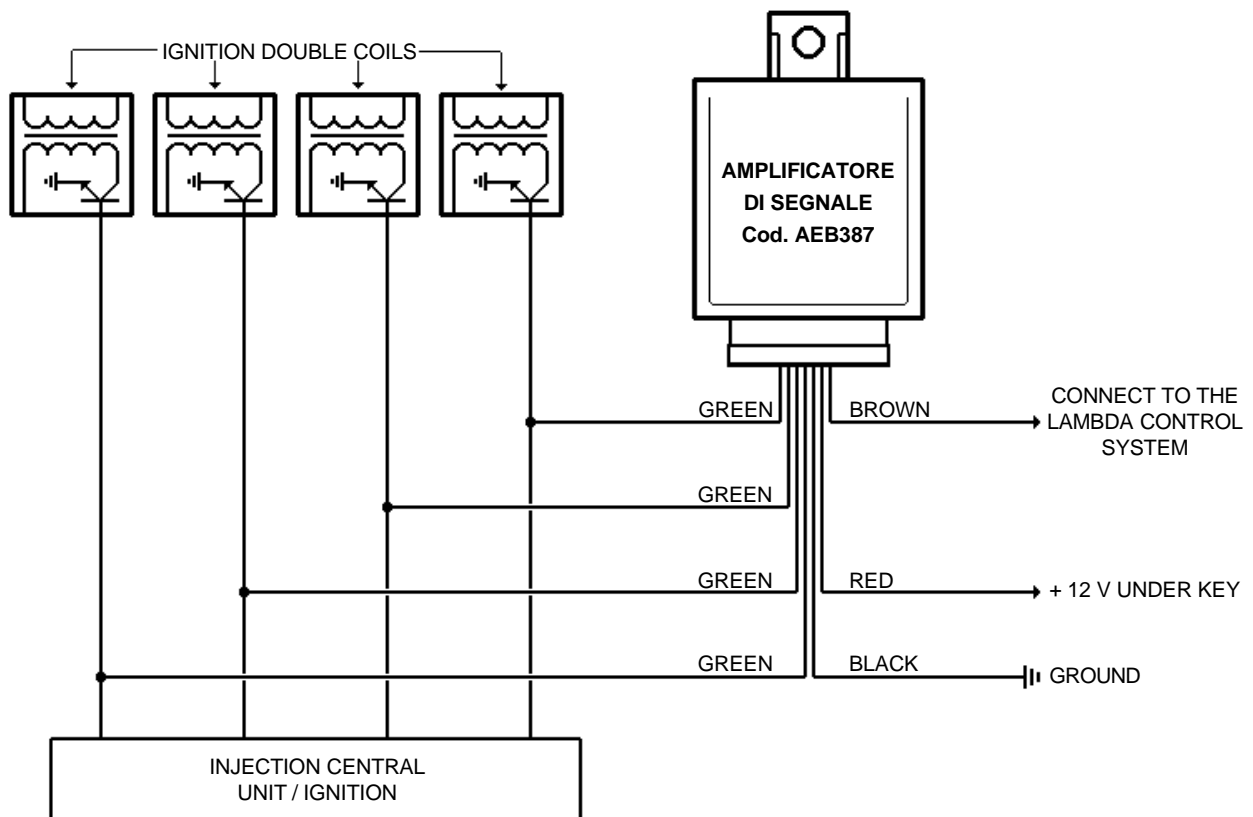**4 cylinder cars with ignition system with a coil per cylinder and built - in power transistor type:**

> **Fiat -** Punto 1.8i 16v Multipoint Hitachi HCV - models 2000
> **Fiat** - Barchetta 1.8i 16v Multipoint Hitachi HCV - models 2000
> **Fiat** - Marea 1.8i 16v Multipoint Hitachi HCV - models 2000
> **Fiat** - Coupe 1.8i 16v Multipoint Hitachi HCV - models 2000
> **Lancia** - Lybra 1.8i 16v Multipoint Hitachi HCV - models 2000

4 cylinder cars with ignition system with dual coil and built - in power transistor type:
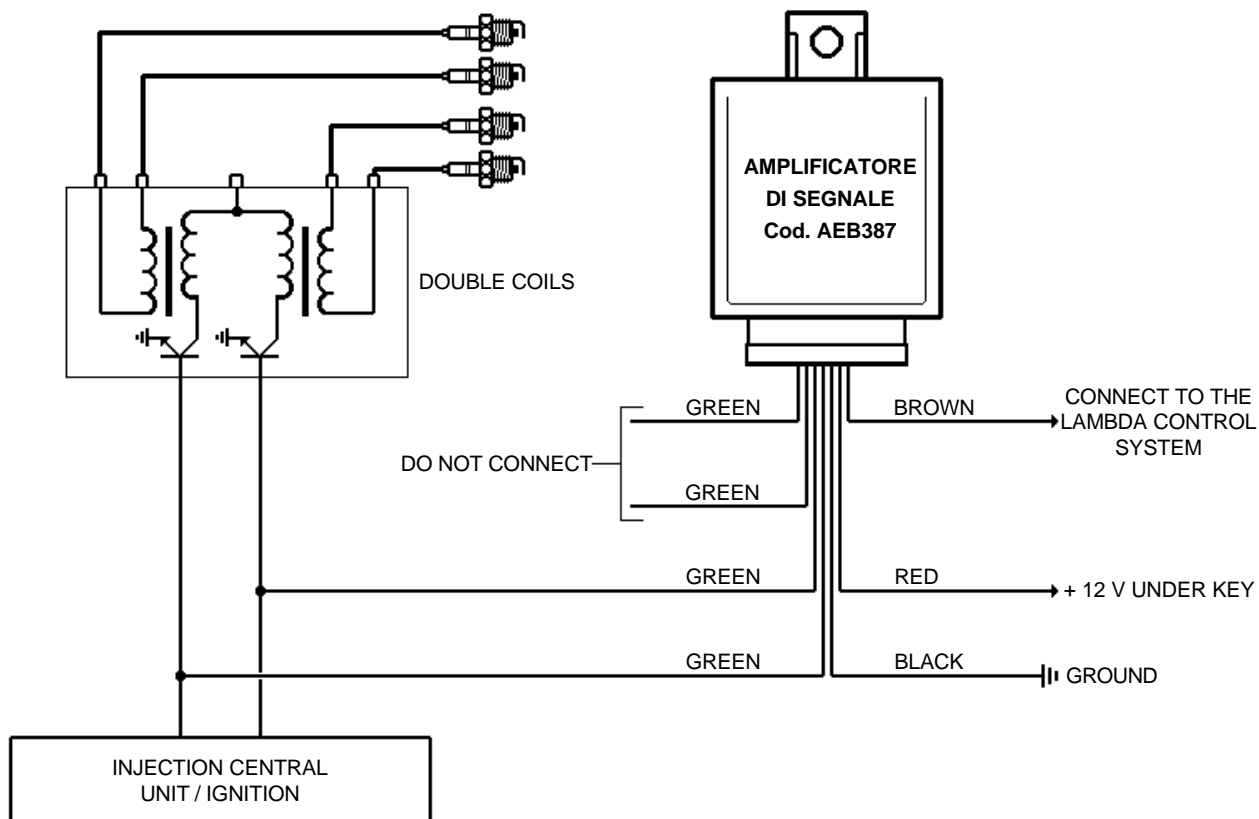
> **Audi, Opel, Seat, Skoda and Volkswagen**

To install the emulator on different cars from the ones mentioned above, please contact A.E.B. Technical Service.

Example of installation of the emulator Code AEB387 for 4 cylinder cars with ignition system with a coil per cylinder and built - in power transistor type:

Example of installation of the emulator Code AEB387 for 4 cylinder cars with ignition system with dual coil and built - in power transistor type:

DOUBLE COILS

AMPLIFICATORE DI SEGNALE Cod. AEB387

GREEN   BROWN   CONNECT TO THE LAMBDA CONTROL SYSTEM

DO NOT CONNECT

GREEN

GREEN   RED   + 12 V UNDER KEY

GREEN   BLACK   GROUND

INJECTION CENTRAL UNIT / IGNITION

AEB387 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.
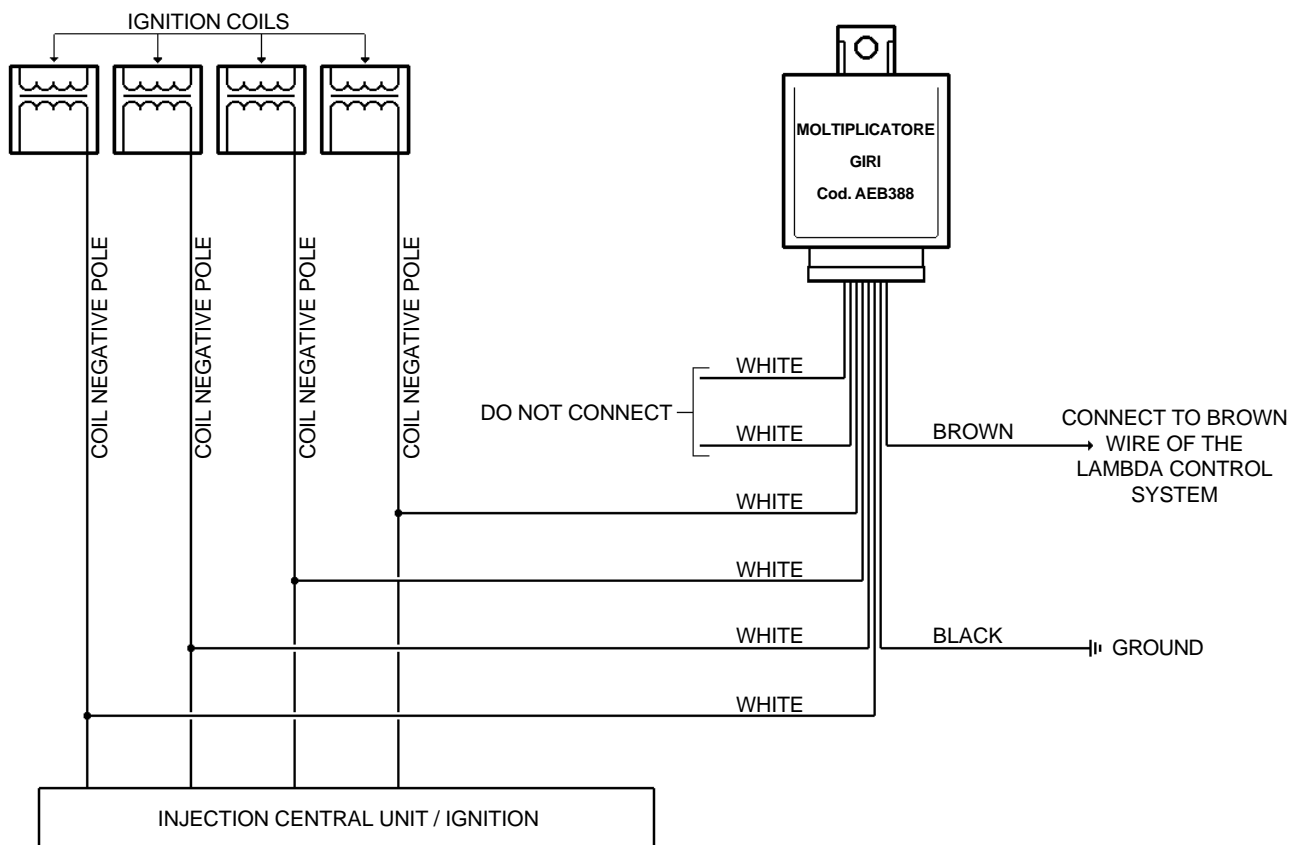
OVERDRIVE Code AEB388. The emulator AEB388 is used to have on the output the exact number of engine revolutions (as a revolution counter) on cars with static ignition with a coil per cylinder or dual coil with 4 or 6 cylinder engines where it is not possible to draw the signal directly from the injection central unit (revolution counter).

AEB388 draws the 4 signals arriving to the 4 ignition coils, units them through a special circuit thus obtaining on the output the same signal of a revolution counter signal of any car, ranging from 0 ÷ 12 V.
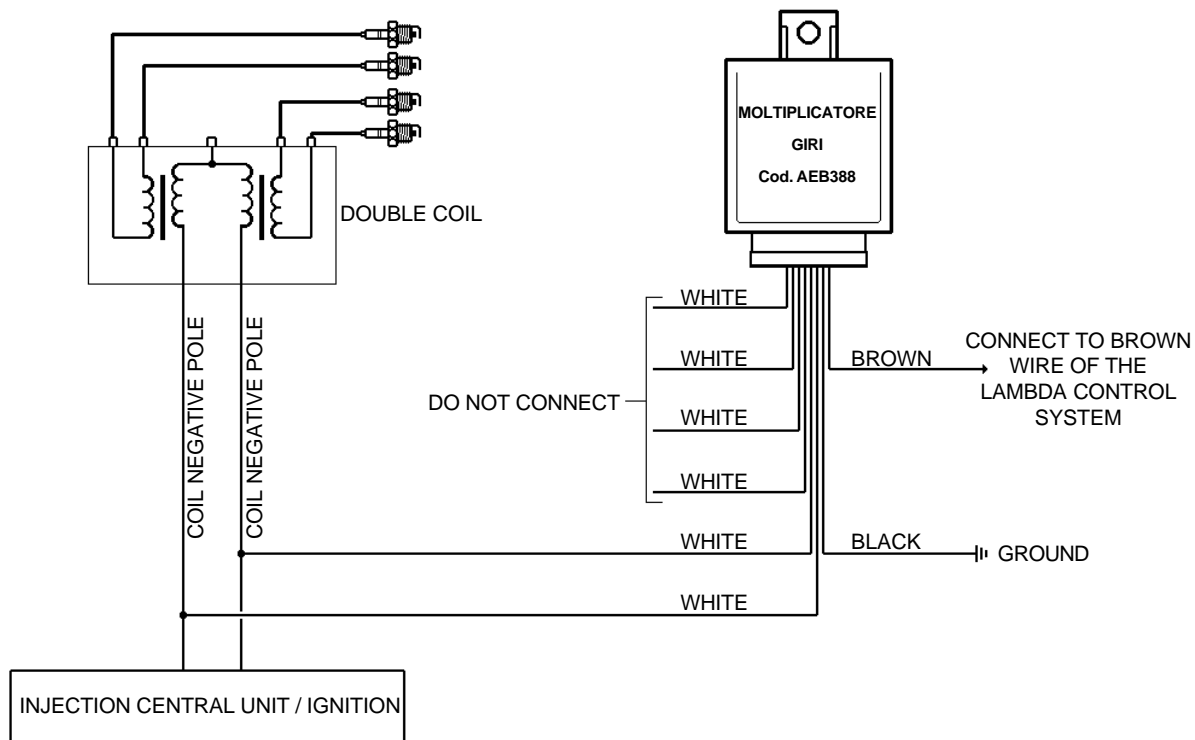
AEB388 is used on 4 or 6 cylinder cars with static ignition system with a coil per cylinder or double coil with an ignition signal from 0 ÷ 12 V.

To know on which cars it is possible to install the emulator, see the list supplied with the instructions.

Example of installation of the emulator Code AEB388 for 4 cylinder cars with ignition system with a coil per cylinder:

IGNITION COILS

COIL NEGATIVE POLE   COIL NEGATIVE POLE   COIL NEGATIVE POLE   COIL NEGATIVE POLE

MOLTIPLICATORE
GIRI
Cod. AEB388

WHITE

DO NOT CONNECT

WHITE   BROWN   CONNECT TO BROWN WIRE OF THE LAMBDA CONTROL SYSTEM

WHITE

WHITE

WHITE   BLACK   GROUND

WHITE

INJECTION CENTRAL UNIT / IGNITION

Example of installation of the emulator Code AEB388 for 4 cylinder cars with ignition system with double coil:

DOUBLE COIL

COIL NEGATIVE POLE

COIL NEGATIVE POLE

MOLTIPLICATORE
GIRI
Cod. AEB388

WHITE

WHITE

DO NOT CONNECT

WHITE

WHITE

BROWN → CONNECT TO BROWN WIRE OF THE LAMBDA CONTROL SYSTEM

WHITE   BLACK   ⊥ GROUND

WHITE

INJECTION CENTRAL UNIT / IGNITION

AEB388 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

STARTING PROTECTION Code AEB553/2. This device is used to solve the unpleasant problem of backfire events during the gasoline ignition due to the gas residue which is present in suction manifolds. When switching off the car, the Starting Protection maintains the feeding to the ignition system, nevertheless by closing immediately the gas solenoid valves thus letting the engine continue to rotate until there is has in the suction manifolds (for a max. time of 3,5 seconds) and then stops. When it is necessary to start up, in the manifolds there is not more residue of gas and the car starts up correctly without backfire. To work correctly the Starting Protection needs the 12 V under key supplying the coils; anyway it must be the same supplying also the ignition central unit, that can be integrated in the injection central unit; in the cars in which this condition is not respected, the Starting Protection cannot be installed because it does not work. When you install an AEB553/2, the gas system undergoes some variations in comparison to normality, because the gas solenoid valves are not more managed by the usual gas organs (blue wires) but directly by AEB553/2 (green wire); the same gas organs are managed by the Starting Protection. It is therefore very important to carefully follow the diagrams in the instructions supplied with the product to guarantee a good operation of the device.

Example of installation of the emulator Code AEB553/2:
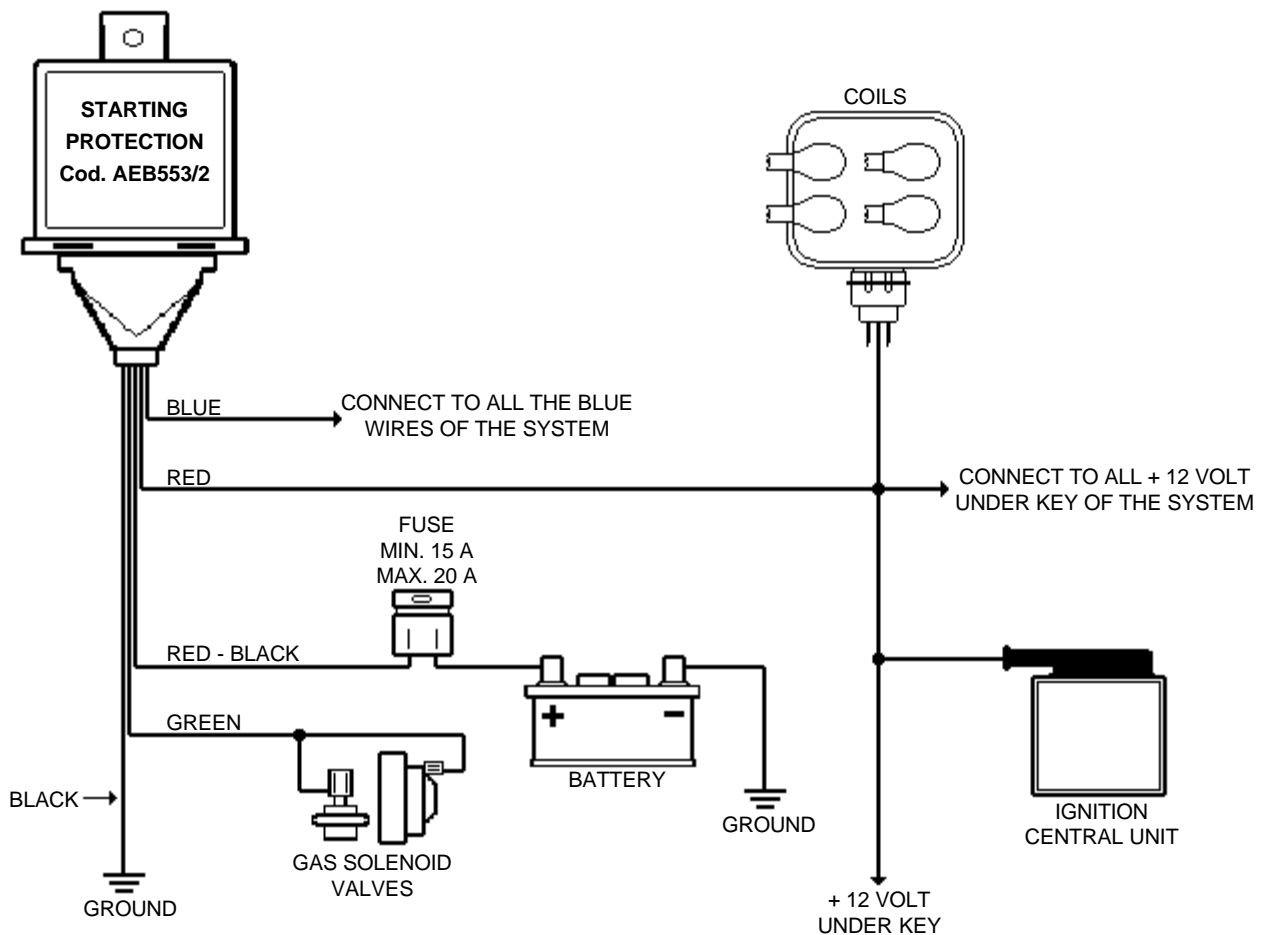
AEB553/2 does not alter the original ignition system of the car, because the installation takes place without any wire cutting and without any auxiliary relay addition; as it has no influence on the car original system, this applies also in case of electrical failure of the GAS system, thus allowing the user to use the car with gasoline and reach a service point for checking.

CUT - OFF DEVICE WITH SOLENOID VALVE Code AEB555. This device is sold with a solenoid valve which is included in the package that must be inserted on the gas pipe, as nearest as possible to the mixer; it is used to solve the unpleasant inconvenience of the slow speed reduction to idling during the car gas running, which is caused by a flow of the air - gas mixture that allows a continuous combustion also while decelerating with a consequent slow reduction of rpm. With gasoline this does not happen because while decelerating the injection central unit removes the negative signal to injectors (CUT - OFF) thus closing the gasoline flow with the consequent reduction of the rpm due to the lack of combustion. Practically, A.E.B. uses the CUT - OFF carried out by the gasoline injection central unit to do it during the gas running; as a matter of fact, it draws the negative signal of injectors and when the gasoline injection central unit removes it to carry out the gasoline CUT - OFF, AEB555 closes the solenoid valve on the gas pipe, thus reducing the flow and allowing a fast reduction of the rpm also while gas running. The solenoid valve on the gas pipe has an adjuster that adjusts its closure; this because it must not close completely the gas passage, but only partially in order to weaken carburation to avoid idling switching - off or holes while accelerating. In those cars where to stop injection you use a relay on the injector negative pole, it is important to connect the AEB555 device on the wire coming from the injection central unit, otherwise it does not work. You must keep in mind that some cars do not carry out the gasoline CUT - OFF when stopped; it is therefore recommendable to test the car on the road. On some recent cars, the gasoline CUT - OFF is not done by removing the negative signal on injectors, but simply by reducing injection, thus maintaining the signal on injectors; **in this case, it is not possible to install AEB555.**

AEB555 has a LED located inside the box indicating its operation:
a) LED ON = gas running
b) LED OFF = gasoline running

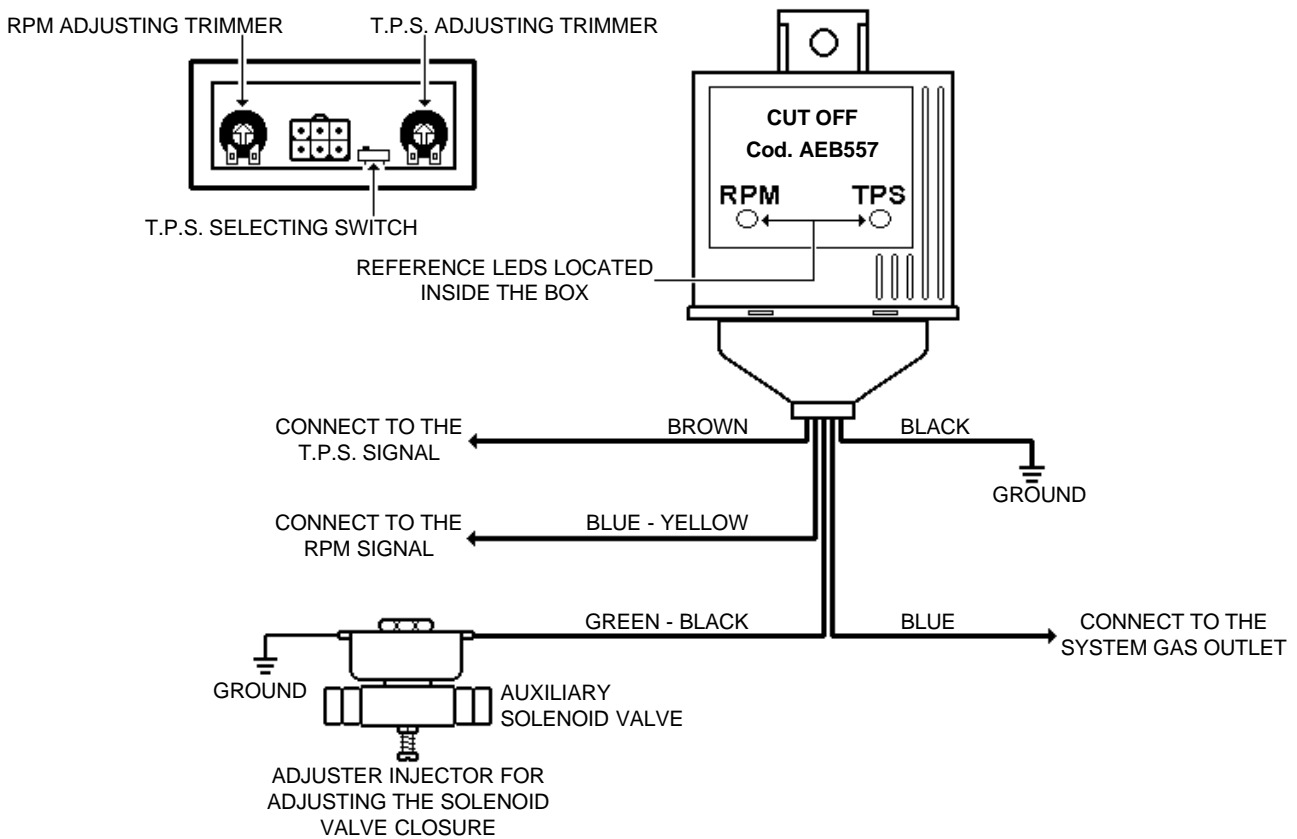Example of installation of the emulator Code AEB555:
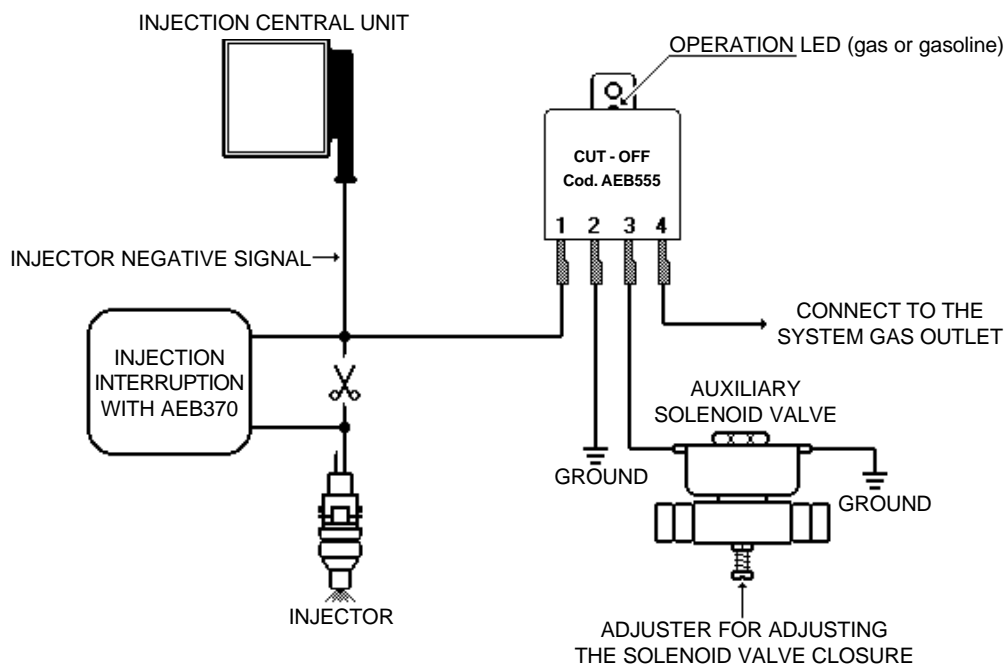
AEB555 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

CUT - OFF DEVICE WITH SOLENOID VALVE Code AEB557. This device is used to solve the unpleasant inconvenience of the slow speed reduction to idling during the car gas running, which is caused by a flow of the air - gas mixture that allows a continuous combustion also while decelerating with a consequent slow reduction of rpm. With gasoline this does not happen because while decelerating the injection central unit removes the negative signal to injectors (CUT - OFF) thus closing the gasoline flow with the consequent reduction of the rpm due to the lack of combustion. AEB557 carries out the CUT - OFF during the car gas running by means of the solenoid valve closure along the gas pipe so that the engine rpm are lowered more rapidly because of the lack of combustion. To carry out the CUT - OFF, AEB557 uses the revolution signal and the T.P.S. signal and, for a correct operation, it is necessary to calibrate the device according to needs and the type of signals. AEB557 has a micro switch to set the type of T.P.S. signal (straight or reversed) and 2 R.P.M. and T.P.S. trimmers that are used respectively as follows: the firs one is used to fix the rpm threshold above which while decelerating the device carries out the CUT - OFF; below this limit, the second makes it possible that the device does not carry out the CUT - OFF. To adjust the device triggering threshold, it is necessary to bring the engine at the wished rpm (ex. approx. 1800 rpm), adjust the R.P.M. trimmer until the YELLOW LED indicating the moment when AEB557 carries out the CUT - OFF switches on; below the set threshold, the LED switches off and the device does not trigger. To adjust the T.P.S., let the engine idle, adjust the trimmer until the RED LED switches on; when adjusted this way, the LED must switch off when you accelerate and switch on when you completely release the gas pedal. The solenoid valve on the gas pipe has an adjuster that adjusts its closure; this because it must not close completely the gas passage, but only partially in order to weaken carburation to avoid idling switching - off or holes while accelerating. This device is sold with a solenoid valve included in the package.

AEB557 shows two LEDs inside the box that indicate its operation:

a) YELLOW LED (R.P.M.) = rpm signal
b) RED LED (T.P.S.) = T.P.S. LED

Example of installation of the emulator Code AEB557:

AEB557 only draws and does not interrupt the wire of the signal on which it works; in this way, during the gasoline the emulator has not influence on the car original system; this applies also in case of failure to the GAS system, thus allowing the user to drive the car with gasoline and reach a service point for checking.

<u>A.E.B. TECHNICAL SERVICE</u>

The several applications produced by our company to meet various technical needs require an accurate selection of the suitable components. For this reason, we offer installation centres a wide range of options to reach our service centre, both to select the suitable components and to solve problem of technical nature.

<u>How to reach the Technical Service</u>

VISIT A.E.B. ON THE INTERNET AT: **http://www.aeb.it** to learn more about our company and to see the range of our products and their application.

AEB On - line software: program for PCs with Windows 95 operating system or higher in which you can find any information on the suitable components for the various application and on their installation (installation wiring diagrams, assembly instructions, etc.).

<u>For further information</u>

SEND US EN E - MAIL TO: **info@aeb-srl.com** to ask information on our products and their applications if they are not present on our site and to receive the A.E.B. On - line software.

SEND US EN E - MAIL TO: **aebasst@tin.it** for technical support, installation problems and to receive the A.E.B. On - line software.

CALL US AT: **(+ 39) 0522 - 942281** for technical support, installation problems and to receive the AEB online software.

Opening time from Monday to Friday:

MORNING   from 9.30 to 12.30
AFTERNOON   from 14.00 to 18.00