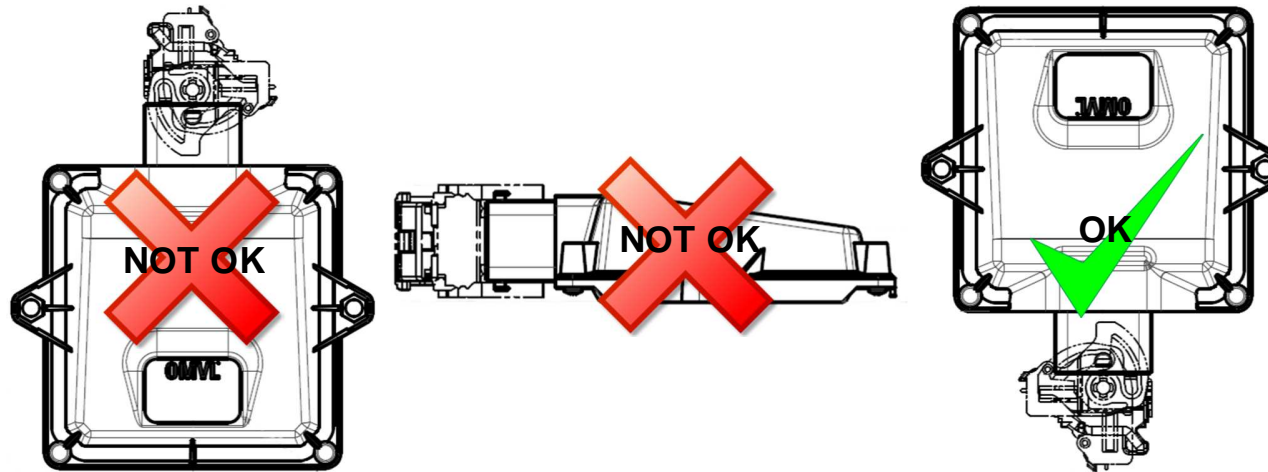


# OMVL<sup>™</sup>



## DREAM ECU INSTALLATION

- Install ECU in the engine or passenger compartment, away from any possible water infiltration
- Do not fix the ECU to the engine, or excessive vibration could damage it; always fix ECU to the chassis
- Install ECU and its wiring harness as far as possible from exhaust manifolds and catalyst. Excessive heat could damage ECU or melt its wires
- Install ECU and its wiring harness as far as possible from high-voltage cables of ignition system. Electro-magnetic interference could disturb ECU
- Always install ECU with its connector facing downwards, for best possible water protection:



## GENERAL GUIDELINES

- Always make good & sound electric connections, by soldering wires together and properly insulating with heat shrink or tape. Do not use wire-tap or twist-on connectors.
- In case the GAS system's fuses blow, it is mandatory to replace them with new ones of same current rating; higher rating may cause irreparable damage and voids warranty.
- Inform final user that, in case the GAS system's fuses blow, original connection of perol injectors and all other devices will be restored.
- Do not try to open the ECU for any reason, no user serviceable parts inside. You will cause irreparable damage and void the warranty.
- When servicing the gas system, always turn ignition key off and disconnect battery negative terminal.
- OMVL will not be held responsible for any direct or indirect damage to property or injuries to persons, caused by unauthorised personnel tampering with our products; in any case, tampering invalidated the WARRANTY.

## NOZZLES FOR SUPERLIGHT & GEMINI INJECTORS

Follow this table to select the right injection nozzle size to install on gas rail, depending on engine power per cylinder.  
If you install the wrong nozzle, software calibration process might take longer and end with erratic results.

Tab. scelta ugello d'uscita: LPG@1,4barg±0,2barg Outlet nozzles choice table LPG@1,4barg±0,2barg				
	Power/Cylinder [KW/cyl]			
CC/ cylinder	<15	15-20	20-25	>25
200-250	1,5-1,75	1,75		
260-320	1,75-2,0	2	2,0-2,5	
330-400	2	2,0-2,5	2,5	2,5-3,5
410-500			2,5	2,5-3,5
Higher than 510			2,5-3,5	3,5

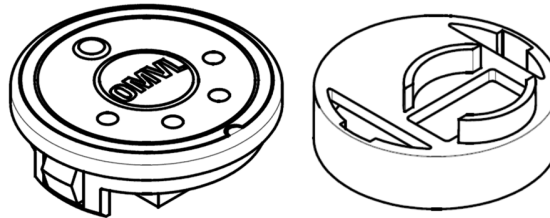
Tab. scelta ugello d'uscita: CNG@2barg±0,1barg Outlet nozzles choice table CNG@2barg±0,1barg				
	Power/Cylinder [KW/cyl]			
CC/ cylinder	<15	15-20	20-25	>25
200-250	1,75	1,75		
260-320	2	2	2,0-2,5	
330-400	2,5	2,0-2,5	2,5	2,5-3,5
410-500		2,5-3,5	2,5	2,5-3,5
Higher than 510			3,5	3,5

## ONE-TOUCH SWITCH

The change over switch should be installed inside passenger compartment, on instrumentation dashboard or other location, where the driver can easily see and operate it.

### INSTALLATION

Bore a hole in desired location, then pass wiring loom from engine bay, thru firewall and finally to hole.



- **Flush mount:** bore a **ø23mm hole**, connect switch to wiring, then push it into location. Its tabs will retain it into position. Switch will stick out of surface just 3mm.
- **Optional adapter: PL3000058** adapter (sold separately), requires a **ø13mm hole**; it sticks to surface, and switch can be installed into it. It will stick out of surface by 9mm.



## FUNCTIONS

- **Button:** push the button to switch between petrol and gas. When you select gas, ECU waits the programmed conditions, before switching automatically to gas.
- **Gas/Petrol indicator:** the top most bi-color led shows which fuel is selected
  - **Petrol:** top led is **red**, while the bottom gage display is off
  - **Waiting to switch to gas:** when you push the button, the ECU stays a while on petrol, waiting to meet conditions to switch to gas. The top led is **red**, and bottom gage display is on.
  - **Transiton:** while switching from petrol to gas a cylinder at a time, top led will be **orange**
  - **Gas:** top led is **green**
- **Gas level display:** the 4 bottom green leds represent the level of gas left in the tank. The last led blinks when you've reached the programmed reserve level, and you should refill as soon as possible.
- **Buzzer alarm:** it beeps when tank is empty, warning the user to re-fill. ECU switches automatically to petrol.

## DIAGNOSTIC

In case the ECU detects a trouble code, it will switch to petrol. Change over switch will blink the top red led, and beep 3 times repeatedly every 50sec.

To cancel the alarm, simply push the button.

## EMERGENCY START

In case of emergency, you can crank and start the engine on gas, in most cases even if petrol fuel system is not working:

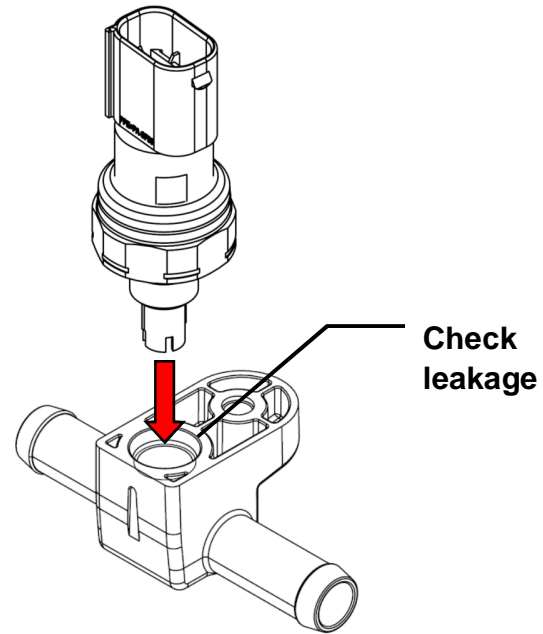
- Take care to have the switch in Petrol mode
- Push the button and keep it pressed
- Turn ignition key to on position (do not crank yet)
- Wait at least 4 seconds, until the buzzer alarm beeps. Then you can release the button
- Crank the engine. It will start directly on gas
- Please consider that the ECU allows only a **limited number** of emergency starts on gas

Note: emergency start requires a **stable ignition voltage**, during cranking. If a timed relay turns off the ignition voltage, the ECU would power off, and cranking on gas will not be possible.

## GAS PT SENSOR

Install gas pressure & temperature sensor DE525005 into 405109 plastic fitting (supplied in the kits): tighten the sensor with 24mm Hex wrench, taking care not to overtighten. Check eventual gas leakage after installation.

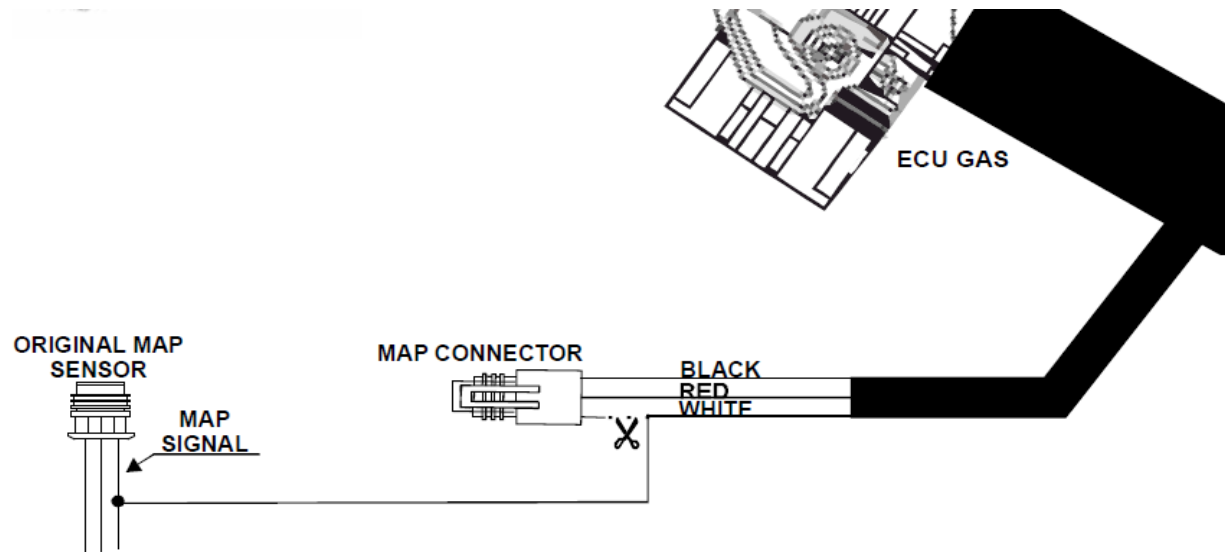
Connect the assembled unit to pressure reducer and injection rail, downstream eventual filter.



## MAP SENSOR

MAP sensor is **required for software calibration**:

- **DE802060** sensor (sold separately, not included in kits): remove protection cap of Delphi 4pins connector of gas wiring harness, and connect the sensor.  
It's nozzle should be connected to plenum of intake manifold with a rubber hose.  
You can disconnect after calibration, and remove the sensor.
- **OEM**: if available, tap white wire to original MAP sensor of engine, following diagram below.  
Check that tapped signal swings 0-5V, while moving the throttle with engine on.



## RPM SIGNAL: BROWN WIRE

For mandatory safety features, Dream ECU needs to have either a MAP sensor permanently connected, or the brown wire connected to some source. In any case, it is warmly suggested to have the brown wire connected.

- **Coil**: tap the brown wire to low voltage side of any ignition coil
- **Sensor**: tap the brown wire to output signal of crank shaft position sensor, or cam phase sensor (variable reluctance, Hall effect)

## PETROL INJECTORS CUT-LOOM: 4CYL

- **Dream OBD ECU:** use an additional petrol injector cut-loom, to connect gas ECU to petrol injectors, like 800DE539003 universal cut-loom
- **Dream ECU:** use integrated universal cut loom
- **Cut original negative wires** of petrol injectors, then solder cut-loom wires
- Connect **White/Red wire** to positive voltage of petrol injector
- **Preserve injectors sequence:** gas injector 1 must inject in same cylinder as petrol injector 1, that must be connected to blue & blue/black cut-loom wires, and so on.  
Note: gas injectors numbering is printed directly on wires: 1, 22, 333, 4444

## PETROL INJECTORS CUT-LOOM: 6&8CYL

- Wiring looms for **second bank** of gas & petrol injectors are marked with **red heat-shrink band**
- **Preserve banks:** gas injector 5 must inject in same cylinder as petrol injector 5, connected to blue & blue/black wires of red-banded cut-loom.

## OBD CONNECTIONS

Protocol	Communication line	Wires of OBD connector
type 1 to 3	K-LINE	White wire to <b>pin 7</b>
type 4 or 5	Not available	-
type 6 to 9	CAN BUS	Yellow wire to <b>pin 6</b> Yellow/black wire to <b>pin 14</b>

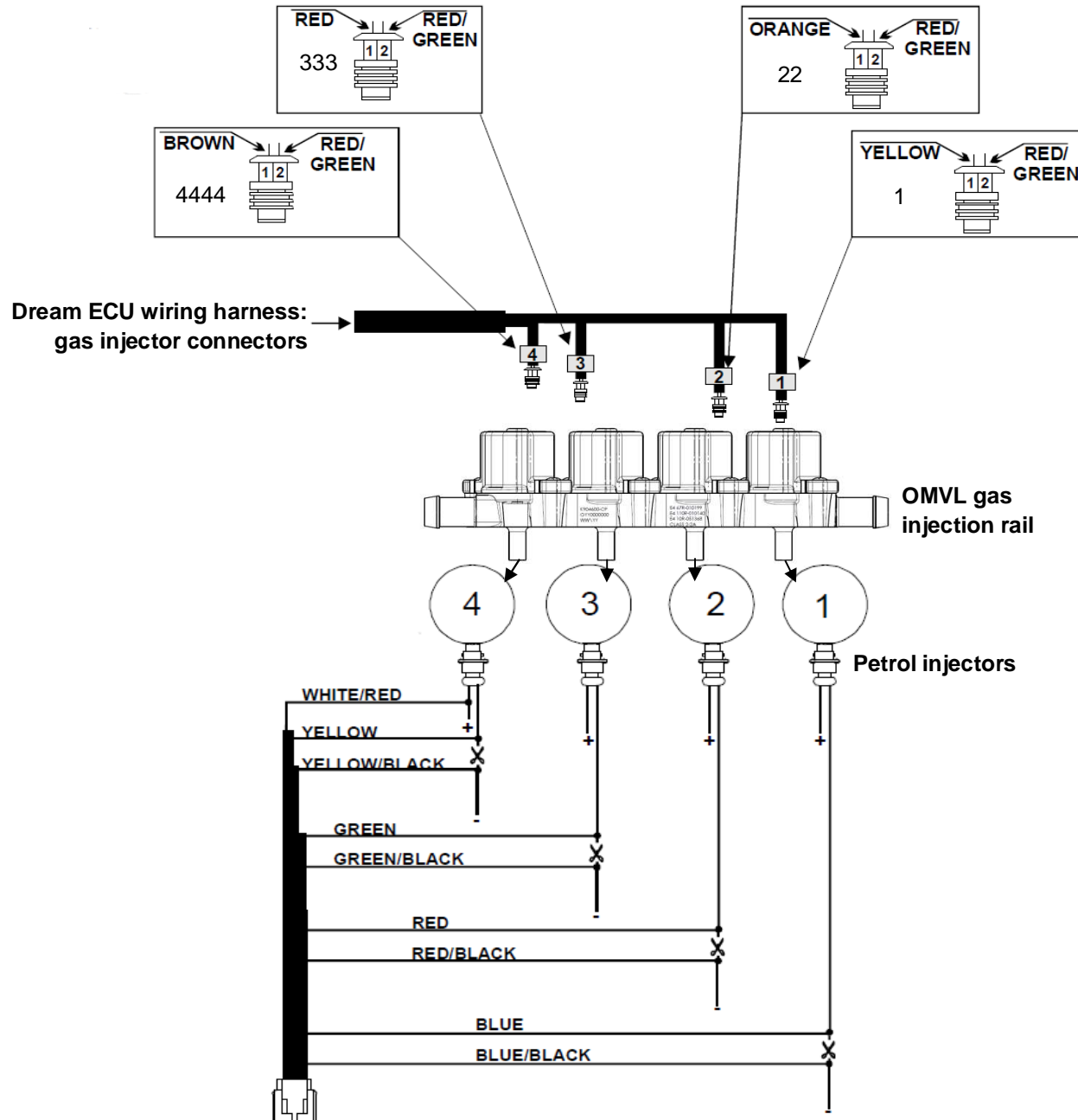
- **Dream 4cyl OBD:** check the diagnostic protocol implemented in the car with an OBD scan-tool (sold separately)
- **Dream 4cyl (non-OBD):** White, Yellow and Yellow/Black wires of OBD are not available
- **Dream 64:** connect 2 red wires and 3 black wires to battery

## FUSES

ECU	Rating
<b>Dream ECU</b>	15A both for loads and ECU
<b>Dream OBD ECU</b>	15A both for loads and ECU
<b>Dream 64 (5,6,8cyl)</b>	25A fuse for loads, 5A fuse for ECU

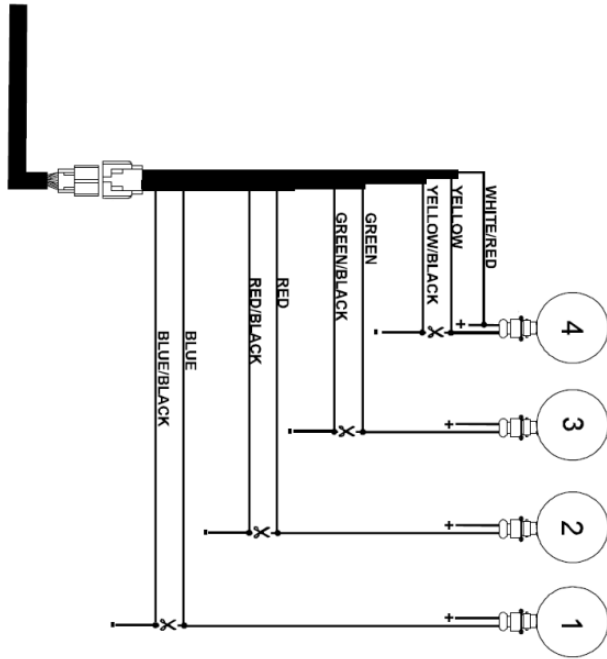


# PETROL INJECTORS CUT-LOOM: 4CYL DIAGRAM

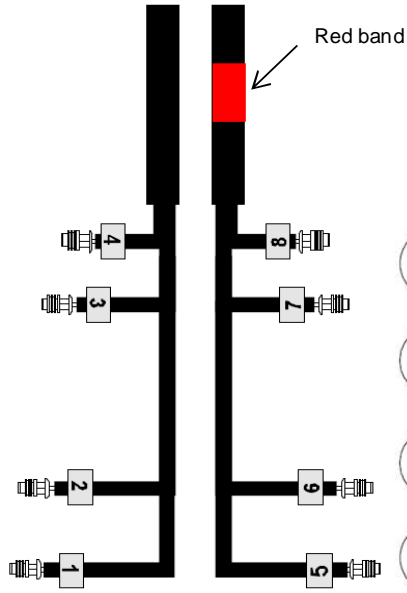


# PETROL INJECTORS CUT-LOOM: 8CYL DIAGRAM

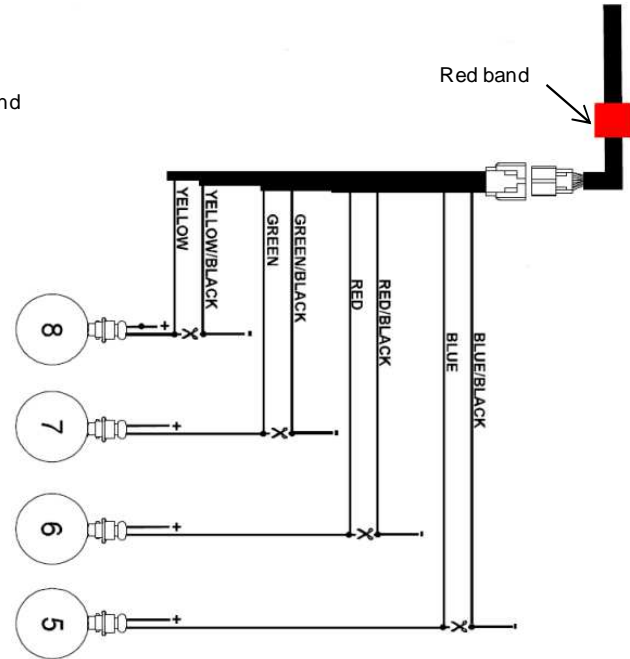
**Petrol injectors cut-loom,  
Bank 1**



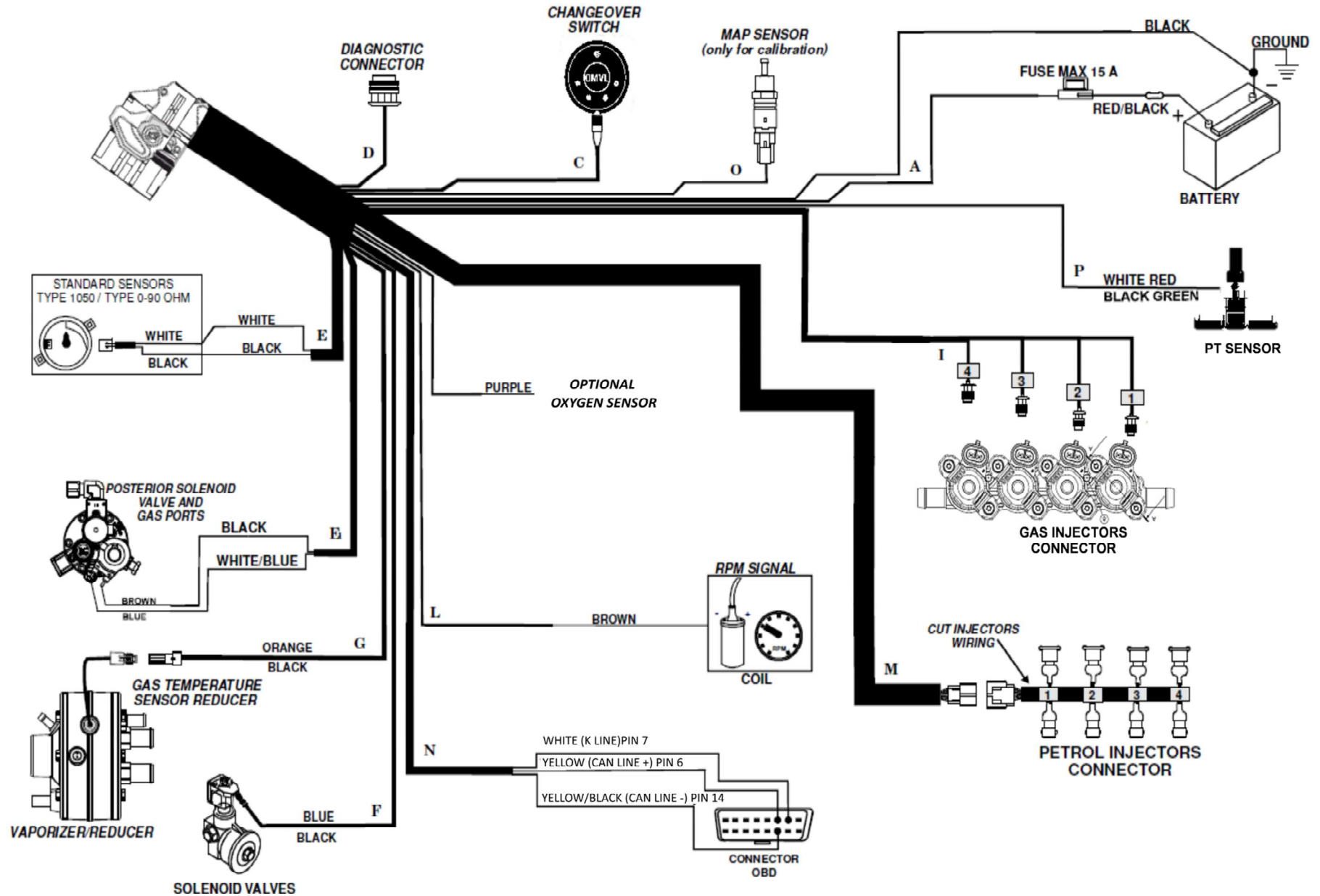
**Gas injectors looms,  
Bank 1 Bank 2**



**Petrol injectors cut-loom,  
Bank 2**



# WIRING DIAGRAM



## DIAGNOSTIC TROUBLE CODES

Error code	Description
<b>P0006</b>	Rear Shut-off solenoid valve coil shorted to GND or open circuit
<b>P0007</b>	Rear Shut-off solenoid valve coil shorted to battery voltage
<b>P01A5</b>	Circuit Low Voltage: Short to GND or open circuit on the Gas Rail Pressure Sensor input
<b>P01A6</b>	Circuit High Voltage: Short to high source or open circuit on the Gas Rail Pressure Sensor input
<b>P01B5</b>	Performance: The difference of the Gas temperature and the engine coolant temperature is over a calibrated threshold
<b>P01B6</b>	Circuit Low voltage: Short to GND on the Gas rail temperature sensor input
<b>P01B7</b>	Circuit High voltage: Short to high source or open circuit on the Gas rail temperature sensor input
<b>P2146</b>	Low Supply Voltage to main loads (12V line)
<b>P16B4</b>	Low Supply Voltage to sensors (5V line)
<b>P22DA</b>	Control Circuit Low: GAS injector #1, short to GND or open circuit
<b>P22DB</b>	Control Circuit High: GAS injector #1, short to high source
<b>P22DE</b>	Control Circuit Low: GAS injector #2, short to GND or open circuit
<b>P22DF</b>	Control Circuit High: GAS injector #2, short to high source
<b>P22E2</b>	Control Circuit Low: GAS injector #3, short to GND or open circuit
<b>P22E3</b>	Control Circuit High: GAS injector #3, short to high source
<b>P22E6</b>	Control Circuit Low: GAS injector #4, short to GND or open circuit
<b>P22E7</b>	Control Circuit High: GAS injector #4, short to high source
<b>P22EA</b>	Control Circuit Low: GAS injector #5, short to GND or open circuit
<b>P22EB</b>	Control Circuit High: GAS injector #5, short to high source
<b>P22EE</b>	Control Circuit Low: GAS injector #6, short to GND or open circuit
<b>P22EF</b>	Control Circuit High: GAS injector #6, short to high source
<b>P22F2</b>	Control Circuit Low: GAS injector #7, short to GND or open circuit
<b>P22F3</b>	Control Circuit High: GAS injector #7, short to high source
<b>P22F6</b>	Control Circuit Low: GAS injector #8, short to GND or open circuit
<b>P22F7</b>	Control Circuit High: GAS injector #8, short to high source
<b>P2666</b>	Front Shut-off solenoid valve coil shorted to GND or open circuit
<b>P2667</b>	Front Shut-off solenoid valve coil shorted to battery voltage
<b>P15AE</b>	Low Supply Voltage of the ECU
<b>P15AF</b>	High Supply Voltage of the ECU
<b>P2115</b>	Unplausible signal of engine coolant temperature sensor