SK-08 Catalyst Operation Emulator

The SK-08 emulator is designed to be installed on vehicles with a front broadband oxygen sensor and, in most cases, allows you to replace the faulty rear oxygen sensor. If necessary, the settings can be changed directly on the vehicle.

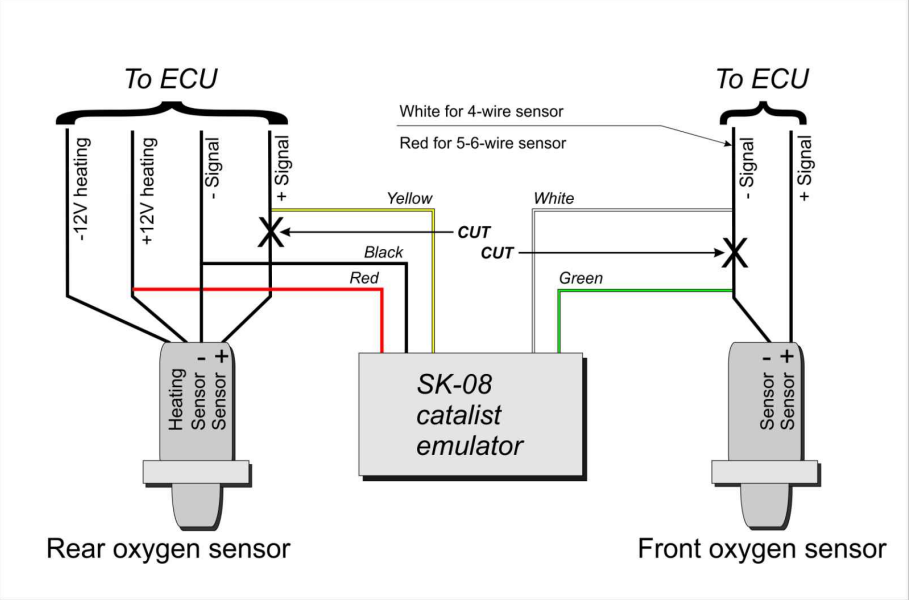
Installation

It is carried out according to the diagram in the figure. The emulator is connected to 2 Oxygen sensors, before and after the catalyst. The emulator is powered from the Oxygen sensor or ignition coil heating circuit through the red wire (power should be supplied when the ignition is on only).

The yellow wire is connected to the break of the signal wire of the 2nd Oxygen sensor. The voltage on this wire is in the range of 0.02 to 0.9 Volts.

The green and white wires are connected to the signal plus the break of the broadband Oxygen sensor. ***When the white and green wires are connected correctly, the emulator led should glow when the gas pedal is pressed and fade when it is released.***

For Audi, Chrysler and Dodge vehicles, the +12V power supply must be taken from another location.



* - For 5-wire and 6-wire sensors, the colours of the wires may vary depending on the manufacturer.

Before connecting the emulator, make sure that you connect to the signal wire.

The voltage on the correct wire is 2.5 ... 3.5 Volts, practically without oscillation on idle.

Incorrect connection leads to a breakdown of the emulator.

For proper operation of the device, it is necessary, that the front Oxygen sensor is in good condition since the emulator relies on its readings.

The Oxygen sensor must have direct access to the exhaust gases. No obstacles must be there.

Emulator Operation

With a normally working emulator, the voltage at its output will be mainly in the range of 0.6...0.8 Volts on idle. On modern vehicles, the voltage at the emulator output is determined by the vehicle control unit to maintain the specified air-fuel mixture. For this reason, the emulator can also affect fuel consumption. Therefore, when checking the emulator, make a test trip of about 5 km and pay attention to the fuel corrections for the rear Oxygen sensors. Fuel corrections should be in the range of -4... 4%.

Single voltage dips up to 0.15 Volts are possible, with a period of at least 2 seconds. During normal operation, the blue indicator located on the end of the emulator blinks. The glowing of the indicator means that the air-fuel mixture is rich (lambda value is less than 1.0). Lack of glow is a poor air-fuel mixture.

Problem Solving, If Any

All measurements shall be made with the engine running hot. Measurements are carried out relative to the signal minus the Oxygen sensor.

Malfunction	Possible Cause	Remedy
Voltage from the emulator is more than 1 Volt (when measured between two Oxygen sensor signal wires)	No contact with a mass	The black wire of the emulator must be connected to the vehicle mass (usually via the wire of the Oxygen sensor). The black wire of the emulator should ring with the mass.
Voltage from the emulator is constant at about 0 or 0.45 Volts	No signal from the Oxygen sensor	Check if the front Oxygen sensor is working
The voltage at the output of the emulator is mainly about 0 Volts at idle (by diagnosis)	No power	Check for power on the red wire of the emulator
	You need to switch the program	Increase the program number according to the Operations Manual below. This will increase the output voltage of the emulator.
	Faulty emulator	Contact your dealer to replace the emulator.
	Incorrectly configured Autogas System (AGS)	Check the operation of the emulator on gasoline. If the emulator is working normally on gasoline, set up the AGS
	Problems with the Motor Control System	If the front and rear Oxygen sensor voltages are around 0 Volts, check for intake manifold air suction, fuel rail pressure, nozzles, etc. Note the fuel corrections of the ECU.
At idle voltage from the emulator up to 0.1 Volts or more than 0.8 Volts and does not fluctuate, reacts to a strong over-gassing.	Other Engine Control Systems are faulty	Run a diagnostic.
	Adaptation occurs	On some vehicles, this may be normal once the emulator is installed. After about 5 km of travel, the ECU adapts to the new parameters and the readings should normalize.

If all of the above are normal, check for deception. Measure the voltage between the black and yellow wire or look at the diagnostics. With the engine idling, the voltage should be in the region of 0.6 ... 0.75V, occasionally it is possible to drop to 0 V. When pressing and releasing the gas pedal sharply, the voltage at the emulator output should drop to about 0.1 volts 1 ... 2 seconds after fuel cut-off.

Warranty Obligations

The Manufacturer guarantees the working ability of the device at observance of the Rules of operation laid down in the User's Guide.

The Warranty Period of the product is 2 years from the Date of Sale.

The owner, in the case of system failure, has the right to free repair during the Warranty Period.
Repair is carried out at the expense of the owner if he/she operates the device is not following this User's Guide or if he/she does not comply with the Manufacturer's recommendations during the Warranty Period.

The system is removed from the guarantee in the following cases:

- In the presence of mechanical damage;
- **If the operation is not performed following this User's Guide**.

The SK-08 emulator complies with the specifications and is considered suitable for operation.

Issue Date: _____, 2022

Seller: _____L.S.

Vehicle model (at which the equipment is installed): _____

Installed by _____/_____/

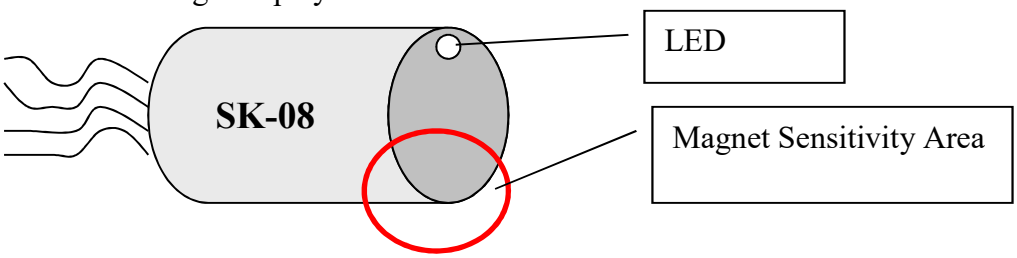
Installation Date:_____

SK-08 Emulator Setup

The emulator can switch Operating Modes. The default emulator settings are suitable for most vehicles.

1. When the emulator magnet touches, the air-fuel mixture quality tables are switched. The higher the number of the table, the richer the air-fuel mixture will be shown to the control unit (more efficient catalyst operation) and the fuel corrections will be reduced. Table No. 2 is set by default. (Total: 4 tables)
2. When connecting the white wire to the red (or touching the emulator magnet) for 1 ... 2 seconds, the response time of the Oxygen sensor (the amount of stored oxygen in the catalyst) is switched. The default mode is Mode No. 3. (Total: 4 modes)

When the white wire touches the red wire (or the emulator magnet touches it), the led indicator switches to the Current Settings Display Mode for 40 seconds.



The number of indicator blinks corresponds to the Table number. The number of 'intermittent - - - -' indicator blinks corresponds to the Oxygen sensor response time delay.

The catalyst efficiency is influenced by: the quality of the air-fuel mixture and the response time. These parameters are interrelated. The richer the air-fuel mixture and the longer the response, the more efficient the catalyst is. But do not set too large values at once, as the parameters may not fit into the valid corridor, which is determined by the vehicle manufacturer.

To evaluate the correctness of the setup, make a test trip of about 5 km. Fuel corrections on the rear probes should aim at zero. If fuel corrections are not available, the voltage of the emulator can be evaluated. The no-load voltage should preferably be in the range of 0.6 ... 0.8 Volts. Single dips below 0.6 Volts are allowed no more than once every few seconds. If the gas pedal is pressed and released hard, the voltage should drop to 0.15 Volts with some delay (Delay from fuel cut-off).

All measurements must be taken after warming up the Oxygen sensor. This is evidenced by the blinking of the led at the end of the emulator following the operation of the Oxygen sensor. After switching on the led indication, it still takes 0.5 to 2 minutes to establish the normal internal resistance (impedance) of the Oxygen sensor, after which measurements can be made.