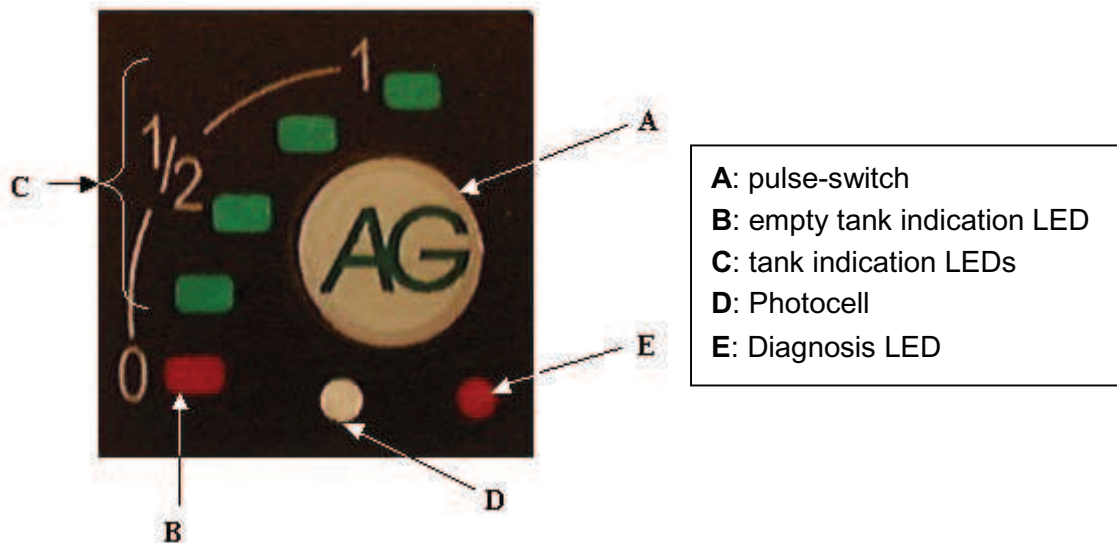


4. The SGI switch.

4.1. General Information.

Physically, the switch has not changed in combination with the SGI ECU, type 2. However, since the connections to the switch have changed, the differences made are being explained in the coming paragraph.

The photograph below shows that the functions of the SGI switch on the dashboard have not changed.



4.2. Working principle SGI switch:

For the sake of completeness, the working principle of the SGI switch is explained, together with its different functions.

□ Switch:

A is the switch itself, with which it is possible to switch over from LPG to petrol and back. Since this is a pulse-switch, a short touch is sufficient to switch between LPG and petrol.

□ Switch-over procedure:

After the ignition is turned on, the ECU will use the fuel which has been used the latest. In petrol mode all LEDs are off, as usual in combination with the first type of SGI ECU.

In LPG mode, the tank indication LEDs (B en C) will be on directly after starting the engine. At the same time, the shut-off valve on the tank is opened directly.

In LPG mode, the engine will first run on petrol before switching over to LPG. The diagnosis LED (E) flashes during this situation until the engine is actually running on LPG.

When the switchover temperature has been reached, the shut-off valve on the SGI vaporizer is first opened, whilst the engine is still running on petrol ("flushing period"). It is not possible to recognise the flushing period on the indications of the SGI switch.

⇒ With some engine types the SGI ECU will only switch over above a certain opening time of the petrol injectors. Therefore, it is possible that in certain cases the system will not switch over to LPG when idling.

¶ Tank indication LEDs:

B and **C** are the LEDs indicating the LPG tank level. When the LPG tank is full all four green LEDs (**C**) light up when driving on LPG. As the LPG tank gets empty the LEDs will gradually go out from top to bottom. When the last green LED goes out the red LED (**B**) will light up, to indicate that only a limited distance can be driven on LPG.

D is not an indication but a photocell to regulate the light intensity of the indication LEDs **B** and **C**. This intensity depends on the intensity of ambient light; in sunlight the LEDs will light up brighter than in the evening, when it is dark.

¶ Automatic switch-over to petrol:

When the SGI computer detects an empty tank, it will automatically switch back to petrol and a pulsating signal can be heard. The signal can be stopped by pressing the switch (the car will continue to run on petrol).

¶ Diagnosis LED:

E is the diagnosis LED. This red LED will be controlled on by the SGI ECU in the following situations:

1. The engine is running on petrol whilst LPG is the selected fuel (diagnosis LED flashes, in case of an empty LPG tank with the beeper on)
2. An error is detected (diagnosis LED is on continuously)

The above-mentioned situations are listed in order of priority. This means, that when an error is detected, together with the recognition of an empty LPG tank, the diagnosis LED will only be flashing.

In case an error is detected while running on LPG, the diagnosis LED will be on continuously (in combination with tank indication LEDs on) as a sign for the driver to contact the dealer to solve the problem immediately.

In this case, there are two different kinds of errors which can be detected; present errors and incidental errors:

§ Present errors:

This type of error is detected by the SGI ECU, and takes place at the moment of running; the diagnosis LED will be on continuously. The error code will be memorised by the SGI ECU.

§ Incidental errors:

When the ignition is turned off, possible error codes are stored in the EEPROM memory of the microprocessor. If the error is not detected anymore after switching the ignition on, the present error will be recognised as an incidental error.