

DIAGNOSTIC FUNCTIONS OF THE ABS-SLS SLABS (DiscoveryII)

All the diagnostic functions have to be performed with the Ignition turned on to the second step and the engine may be running or stopped. In many vehicles the communication with this module can be noisy and this will not allow the Nanocom to communicate with this module when the engine is running. It is possible to perform the diagnostic function also with the engine stopped, moving the wheel by hand; the only parameters that results unreadable are the engine speed and the engine torque.

This problem can be in some case fixed by checking the ecu's ground connection and the OBD socket's ground connection. If the ground is well connected and the problem is still present we suggest to ask us the hardware adaptor that improves the noise reduction of the Nanocom OBD port.

FAULTS FUNCTIONS

The SLABS ecu has the READ FAULTS and CLEAR FAULTS to read and clear the fault codes. We don't give any faults explanation or suggestions, in order to avoid giving the user wrong information, we in fact think that the faults codes must be collocated in the context of the car which they come from.

SETTINGS FUNCTIONS

Test status ENABLED-DISABLED – This setting is only an indication to inform that the ecu has been tested
Transport mode ENABLED-DISABLED – This setting enables or disables the transport mode (see workshop manual)

ECU calibrated YES – This setting is only an indication to inform that the ecu has been calibrated

Suspension type AIR-COIL

Left stored height – Reference value of the standard height of the left air suspension

Right stored height – Reference value of the standard height of the right air suspension

INPUTS FUNCTIONS

The VABCO ecu has the READ ABS-SLS INPUT functions to read dynamically the parameters. The parameters can be analogue-numeric or digital-ON/OFF.

Front right sens(V) – Front left sens(V) – Rear right sens(V) – Front left sens(V) –

These voltages must be between 2.2V and 2.4V

Front right wheel speed(Km/h) - Front left wheel speed(Km/h) – Rear right wheel speed(Km/h) – Rear left wheel speed(Km/h) –

These speed values must be 1.7-1.8Kmh when the car is stopped and increase when the speed is higher.

Front right outlet valve(V) – Front left outlet valve(V) – Rear right outlet valve(V) – Rear left outlet valve(V) – Front right inlet valve(V) – Front left inlet valve(V) – Rear right inlet valve(V) – Rear left inlet valve(V)

These voltage must be 0V with valves off and 12V with valve on (the valves are active for short times only during the modulation).

Engine speed(rpm)- Engine torque(N/m)- Throttle position(%)

Shuttle switch(V)-

The modulator has 2 valves that change their state when the two cylinder master pump of the brake pedal is pressed. The two valves are connected to a resistor net composed by 3 resistors. The opening of one or both valves changes the resistance of the net. When both valves are open, the current goes through all the 3 resistors; when one of the two switches is closed, one of the 3 resistors is excluded by the net, and when both valves are closed only one resistor is connected. This current is read by the SLABS to detect the activity of the master cylinder and to check the circuit integrity.

The values that the shuttle switch should have are:

255-160 Open circuit (possible fault)

130-180 Pedal released (open switch)

61-129 Transition (only one switch is closed)

30-60 Pedal fully pressed (both switches are closed)

0-29 Short to ground (possible fault)

Note: these values are only indicative, so if your shuttle gives values different from the table, we suggest to evaluate carefully how the shuttle switches work before considering it faulty.

Brake light relay(V)-Pump relay(V)-Ignition supply(V)-Valve supply(V)- Pump monitor(V)
Ground reference(V) – This value must be near to 0V it should not be more than +/-1V

Left sensor value – Right sensor value

These values must increase with the increasing of the car's height. Normally they must be between 150 and 180 when the car is in the standard height.

Left sensor supply(V) – Right sensor supply(V)

These values must be near to 5V

Left valve(V)-Right valve(V)-Exhaust valve(V)-Compressor relay(V)

Neutral switch CLOSE-OPEN –HDC switch CLOSE-OPEN – Low range switch CLOSE-OPEN –Reverse switch CLOSE-OPEN –Diff lock switch CLOSE-OPEN –Any door switch CLOSE-OPEN –Plip signal(not used)

OUTPUTS TESTS

These functions activate the relative outputs for a few seconds allowing you to check them.

Front right inlet valve

Front right outlet valve

Front left inlet valve

Front left outlet valve

Rear right inlet valve

Rear right outlet valve

Rear left inlet valve

Rear left outlet valve

Pump relay

Valve relay

SLS left valve

SLS right valve

SLS exhaust valve

SLS compressor

Brake warning LED- HDC warning LED-T.C. lamp-Speedo- HDC Info LED- HDC fault LED- SLS lamp- Offroad lamp- HDC brake lamp- SLS Buzzer

UTILITY FUNCTIONS

POWER BLEED

This function allows to perform the oil bleeding of the main circuit. The function activates the pump for a few seconds, and you must repeat the function until the oil reaches the brake. The same work can be done by pushing the brake pedal.

MODULATOR BLEED

This function allows to perform the oil bleeding of the modulator circuit. The function must be performed with the pipes closed, pushing the pedal with the maximum strength during the function. Once the function is performed, release the pedal and repeat the function until the pedal stroke is normal.

FRONT RIGHT TEST - FRONT LEFT TEST - REAR RIGHT TEST - REAR LEFT TEST

This function activates the modulation of the brake on the desired wheel. During the function if you turn the wheel by hand, you can see that it is blocked several times for few seconds.

RAISE LEFT - RAISE RIGHT - LOWER LEFT - LOWER RIGHT

This function allows to set the car heights increasing and decreasing it in both sides separately, and so it also tests the air suspension.

STORE HEIGHTS

This function allows to store as standard height the height currently set.

HOW TO SET AND CALIBRATE THE AIR SUSPENSIONS

If you need to replace a sensor or you want to modify the suspension heights, you have to follow the following procedure:

- 1 Set the car height with the RAISE LOWER functions
- 2 Verify with the SLS INPUT function that the values of the sensors are consistent
- 3 Perform the STORE HEIGHTS function once the height is set
- 4 Turn off the ignition for 60 seconds as Nanocom ask
- 5 Verify with the READ SETTING function that the stored height values correspond or are very closed to the values read with the SLS INPUT inputs

HOW TO DISABLE THE SLS MANAGEMENT

If the air suspensions are replaced with coil you need to disable the SLS management

- 1 Perform the READ SETTING function
- 2 Modify the suspension type from AIR to COIL
- 3 Write the modified values with the WRITE SETTING function
- 4 Turn off the ignition for 60 seconds.