Diagnosis – Diagnostic Trouble Code (DTC) Memory

The individual test steps (e. g. ignition coils, distributor cap etc.) are organized into a test program.
If a complaint is determined through engine diagnosis in Engines, Volume 1, which refers to a specific test step, only the specific test step should be performed and not the entire test program.

Diagnostic Trouble Code (DTC) Readout with Impulse Counter Scan Tool
The ignition control modules (N1/4 and N1/5) are equipped with diagnostics, including DTC memory.
Malfunctions which occur with the engine running are counted by the respective malfunction counter. A DTC is recorded into the respective control unit‘s memory only if the same fault has occurred after 8 sequential engine starts.
This prevents a DTC from being recorded if, for example, it occurred only once. If, for example, a fault occurred only 7 times, then the DTC memory will be cleared again after a certain number of engine starts.
The DTC memory can be read with the impulse counter scan tool.
The memory remains active even if the vehicle‘s battery is disconnected.

The following malfunction is stored immediately:
– Crankshaft position sensor defective (DTC readout 17)

Malfunctions can be recalled from memory using the impulse counter scan tool with engine off and ignition “ON“. DTC‘s ranging from 1 to 39 may appear on the display of the impulse counter scan tool.

The DTC 1 indicates: No fault recognized in system.
All further DTC‘s refer to a particular malfunction source. If there are multiple system malfunctions, the malfunction assigned with the lowest DTC will be displayed first.
If the DTC indicated first reappears after more than two DTC readouts, then no further malfunctions are present in the system. After eliminating all faults, they must be **cleared individually**.

In case of engine complaints, the DTC memory must be read and the fault must be eliminated before proceeding with any additional repairs.

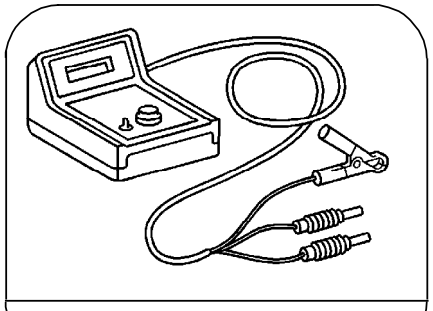
⚠
The DTC readout must be performed on both ignition control modules (N1/4 and N1/5).
Possible indicated faults of the left or right control module must be checked with the socket box tester.
If the engine does not run, both ignition systems must be checked, one after another, with the socket box tester.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

Preparation for Test with Impulse Counter Scan Tool

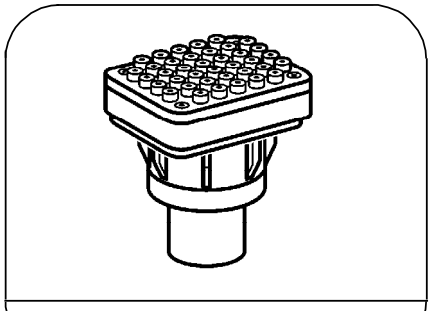
- Connect impulse counter scan tool according to connection diagram (see section 0),
- Perform DTC readout (see section 0).

Special Tools



124 589 19 21 00

Pulse counter



140 589 14 63 00

Adapter

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC	Possible cause	Test step/Remedy [1]
1	No fault in system	–
2	Maximum retard setting on at least one cylinder has been reached.	Increased knock tendency, i.e. due to poor fuel quality, carbon build-up, mechanical damage.
3	Not used	–
4	Load sensor in ignition control module (N1/4 or N1/5) defective.	Check vacuum supply to ignition control module (N1/4 or N1/5), Ignition control module (N1/4 or N1/5).
5	Knock sensors (A16) 1 and/or 2 defective.	Knock sensor not plugged in at ignition control module (N1/4 or N1/5), Knock sensor (A16).
6	Camshaft position sensor (L5/2 or L5/3) defective	24 ⇒ 1.0
7	Knock control–output switch in ignition control module (N1/4 or N1/5) defective.	Ignition control module (N1/4 or N1/5).
8	Transmission overload protection switch, brake band B1 (S65) and/or B2 (S65/1) does not close	24 ⇒ 4.0
9	Transmission overload protection switch, brake band B1 (S65) and/or B2 (S65/1) does not open	24 ⇒ 5.0
10	Not used	–
11	Left or right reference resistor (DI) (R16/3 or R16/4) defective	24 ⇒ 3.0
12	TN engine speed signal is outside the tolerance range	24 ⇒ 7.0
13	Not used	–

[1] Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC	Possible cause	Test step/Remedy [1]
14	Not used	–
15	Ignition coil output from left or right ignition control module (N1/4 or N1/5) defective or primary winding of ignition coil has open circui	23 ⇒ 7.0
16	Not used	–
17	Left or right crankshaft position sensor (L5/4 or L5/5) defective	23 ⇒ 4.0
18	Not used	–
19	Ground, coding from left ignition control module (N1/4) not present	24 ⇒ 8.0
20	Left or right ignition control module (N1/4 or N1/5) DTC memory defective	Ignition control module (N1/4 or N1/5).
21	Load sensor in left or right ignition control module (N1/4 or N1/5) defective (recognized with engine running)	Ignition control module (N1/4 or N1/5).
22	Not used	–
23	Not used	–
24	Not used	–
25	Not used	–

[1] Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC	Possible cause	Test step/Remedy [1]
26	Left or right ignition control module (N1/4 or N1/5) data exchange malfunction	24 ⇒ 9.0 - 10.0
27	Left or right LH-SFI control module (N3/2 or N3/3) data exchange malfunction	24 ⇒ 9.0
28	EA/CC/ISC control module (N4/1) data exchange malfunction	24 ⇒ 9.0
29 – 33	Not used	–
34	Ignition misfire, cylinder 7 (left cylinder bank) or 1 (right cylinder bank)	2)
35	Ignition misfire, cylinder 11 (left cylinder bank) or 5 (right cylinder bank)	2)
36	Ignition misfire, cylinder 9 (left cylinder bank) or 3 (right cylinder bank)	2)
37	Ignition misfire, cylinder 12 (left cylinder bank) or 6 (right cylinder bank)	2)
38	Ignition misfire, cylinder 8 (left cylinder bank) or 2 (right cylinder bank)	2)
39	Ignition misfire, cylinder 10 (left cylinder bank) or 4 (right cylinder bank)	2)
40 – 41	Not used	–

1) Observe Preparation for Test, see 22.