

## Diagnosis - Diagnostic Trouble Code (DTC) Memory

Preliminary work: ..... Engine Test, Adjustment, Engines, Volume 1

### Note regarding diagnostic trouble code (DTC) readout:

The engine control module (N3/4) for the HFM-SFI system is equipped with diagnostic trouble code (DTC) memory. Malfunctions are recognized and stored as trouble codes and are distinguished as follows:

- Malfunctions which are constantly present,
- Malfunctions which occur longer than 3 seconds,
- Intermittent contact malfunctions which have occurred 5x during a trip.

The DTC memory remains active even if the vehicle's battery is disconnected.

Malfunctions which are no longer present, are automatically erased again after a maximum of 19 trips. A trip has occurred if:

- Vehicle speed >4 km/h (2.5 mph),
- Engine speed >700 rpm,
- Engine shut off for 30 seconds.

The stored diagnostic trouble codes (DTCs) can be read at the data link connector (X11/4) with the ignition switched "ON" or with the "engine running".

Diagnosis via an on-off ratio readout has been eliminated.

### Note regarding mixture preparation self-adaptation:

The Lambda control system determines fuel injection duration precisely so that the fuel/air ratio is kept constant at Lambda level 1 (equals 14.7 kg air to 1 kg fuel) under all operating conditions.


Should malfunctions occur in the form of:

- Intake air leaks,
- Injector wear or carbon build-up,
- Engine wear,
- Contact resistance in MAF sensor,
- Defective diaphragm pressure regulator,
- Defective purge control valve,

the engine control module automatically performs a mixture adjustment. The degree of correction is calculated constantly and stored permanently. The self-adaptation is performed at idle and under partial load. Maximum correction towards rich or lean is 25%. After repair work is performed, the engine control module will automatically adapt itself again after approx. 10 trips. After eliminating a malfunction or after trial installation of an engine control module from another vehicle, the self-adaptation feature must be reset to its mean value (see "Resetting and Reactivating Engine Control Module Memory" 11/5).

**Diagnosis - Diagnostic Trouble Code (DTC) Memory****Note regarding automatic recognition of vehicle equipment and/or version on vehicles up to 02/94 (up to HHT Diagnosis Version 42):**

The engine control module recognizes and stores the following equipment and/or version information during the vehicle's initial operation:

- Catalytic converter/non-catalytic converter,
- Manual/automatic transmission,
- 4-Speed/5-speed automatic transmission,
- Cruise control,
- Electronic accelerator,
-  version.

After replacing the engine control module or after trial installation of an engine control module from another vehicle, the stored data must be erased and the recognition feature reactivated (see "Resetting and Reactivating Engine Control Module Memory" 11/5).

**Initial programming of engine control module.**

Prerequisite for initial programming process:

- Battery voltage ⇒ 11 Volt minimum
- Vehicle speed signal ⇒ V = 0
- Engine rpm signal ⇒ n = 0
- Transmission range ⇒ P/N = 1
- Idle speed contact closed ⇒ CTP = 1  
(Caution: Vehicle can not be moved during initial programming process)
- Drive vehicle ⇒ V = > 5 km/h (3 mph)  
(Only then will the transmission version be recognized).

**Note regarding version coding on vehicles as of 03/94 (as of HHT Diagnosis Version 45):**

The engine control module is equipped with a version coding feature as of 03/94. The coding must be performed with the Hand-Held Tester (automatically or manually, see Notes for HHT 11/4) upon installation of a new control module.

The following vehicle version data must be determined for coding:

- Vehicle model,
- Catalytic converter (TWC),
- Non-catalytic converter (non-TWC),
- 5-speed manual transmission,
- 4-speed automatic transmission,
- 5-speed automatic transmission,
- Cruise control (CC),
- Acceleration slip regulation (ASR),
- Electronic traction system (ETS),
- Country version.

### Diagnosis - Diagnostic Trouble Code (DTC) Memory

#### Note regarding drive authorization system (DAS):

- Up to the end of model year 1995, a starter lock-out system is installed which interrupts circuit 50 to the starter.
- On vehicles starting model year 1996 (HHT Diagnosis Version 46), the RCL system is enhanced with a so-called drive authorization system stage 2.

The activation of the drive authorization system (DAS) is initiated by the RCL control module and transmitted to the engine control module via the CAN data bus.

After activation of the drive authorization system (DAS), the fuel injection system is rendered inoperative by the engine control module. The drive authorization system (DAS) can be activated or deactivated with the infrared remote control transmitter or the master key.

The engine control module and RCL control module are permanently locked with one another by an identification code. This identification code can not be erased (see HHT actual values "DAS" menu selection 3/6).

**Therefore, trial installation of an engine control module or RCL control module from another vehicle is no longer possible.**

#### CAUTION!

If a **new** engine control module is installed for test purposes only, a maximum of 40 engine starts can be performed before the control modules are **permanently** locked with one another. **After 40 engine starts, the engine control module can no longer be used in any other vehicle.**

Additionally, the code number and VIN must be entered (see HHT actual values "DAS", menu selection 3/6).

**Diagnosis - Diagnostic Trouble Code (DTC) Memory****Notes for HHT****• Fault search with HHT**

Diagnostic trouble code (DTC) memory: Select "Current DTC's".

If the actual condition changes, e.g. when wiggling a connector, the change is reported optically and acoustically so that troubleshooting can be performed directly with the HHT.

**• Loose connections**

Loose connections are stored if they occur several times in a certain time period. Therefore, they can appear only as "Stored DTC's" and never as "Current DTC's".

**• Nominal values**

All nominal values relative to the actual values shown on the HHT are listed in the Diagnostic Manual, Engines, Volume 1, section A.

**• Actual values for engine coolant temperature, intake air temperature and air mass**

In case of an open or short circuit, the actual value is immediately replaced by a substitute value which is very close to the actual value. Therefore, a fault can not be recognized clearly. A readout of the fault is possible only via the diagnostic trouble code (DTC) memory.

**• Actual value for engine rpm**

In case of the engine rpm's, the HHT display indicates the closed throttle (idle) speed nominal value calculated by the control module on the left and on the right, the rpm actual value. Both values should differ from each other only slightly. The permissible tolerances are not yet determined.

**• Version coding with HHT as of 03/94 (as of HHT Diagnosis Version 45).**

- a) Before replacement of the engine control module, the existing code number must be read and stored with the HHT (menu selection 6 "Version coding"). After installation of the new control module, the previously read code number must be entered.

**Note:**

If returning a new control module to a PDC, the code number must be erased.

- b) If the code number can **not** be read, the vehicle equipment/version must be determined, the corresponding code number obtained from the Spare Parts Microfiche, Group 54 and manually entered with the HHT.
- c) When performing a trial installation of a control module with the same part number from another vehicle (to end of model year 1995), but with a different code number, the following must be observed:
- Read and record code number from vehicle with complaint.
  - Exchange control modules.
  - Read and record code number from the exchanged control module.
  - Enter the code number from the original control module into the exchange control module.
  - Perform function test.
  - Before returning control module to other vehicle, enter recorded code number into exchange control module.
  - Exchange control modules.

### Diagnosis - Diagnostic Trouble Code (DTC) Memory

#### Notes for HHT (continued)

- **Drive authorization system (DAS)**  
Upon replacement the engine control module must be version coded using the HHT. Additionally, the code number and VIN must be entered (see HHT nominal values "DAS", menu selection 3/6).

#### Preparation for Test with Impulse Counter Scan Tool

##### Note:

The DTC memory readout, DTC memory clearing as well as resetting and reactivating the engine control module can be performed with the impulse counter scan tool only on vehicles up to HHT Diagnosis Version 46. On vehicles as of HHT Diagnosis Version 49, it is possible only with the HHT.

- Connect impulse counter scan tool to data link connector (X11/4) according to connection diagram.

#### Reading Diagnostic Trouble Code (DTC) Memory

- Ignition: **ON**
- Press start button for 2 to 4 seconds.
- Read and record DTC.
- Press start button again.
- Read and record DTC.  
Repeat steps d) and e) until the first DTC reappears.

#### Clearing Diagnostic Trouble Code (DTC) Memory

- Press start button for 2 to 4 seconds (DTC appears).
- Press start button for 6 to 8 seconds, thereby clearing the previously displayed malfunction (DTC) from memory.
- Repeat steps a) and b) until the number "I" appears (no malfunctions stored).

#### Resetting and Reactivating Engine Control Module Memory

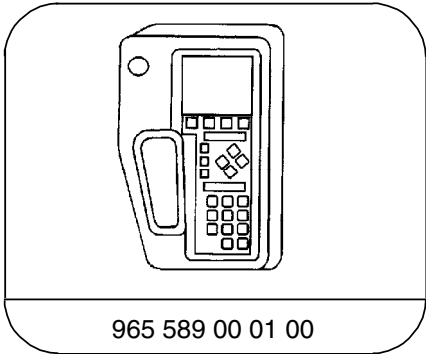
- Clear diagnostic trouble code (DTC) memory.
- After the number "I" appears, press start button for 6 to 8 seconds.
- Switch ignition **OFF** and wait a minimum of 2 seconds.
- Turn ignition **ON**, wait a minimum of 10 seconds and then start engine.

##### Note:

Control modules manufactured by Bosch up to 8/93, the start button must be pressed 5 to 6 seconds to clear the DTC memory and 8 to 9 seconds to reset and reactivate the engine control module memory.

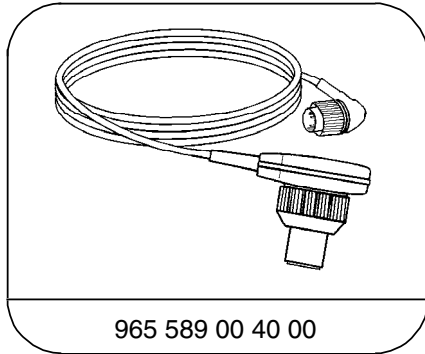
Diagnosis - Diagnostic Trouble Code (DTC) Memory

Special Tools



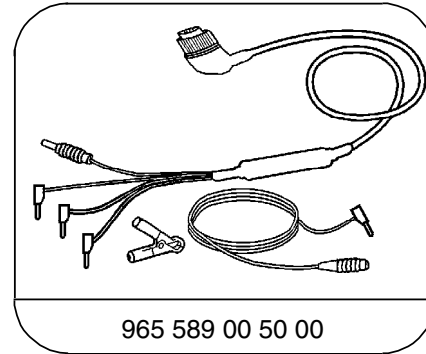
965 589 00 01 00

Hand-Held-Tester



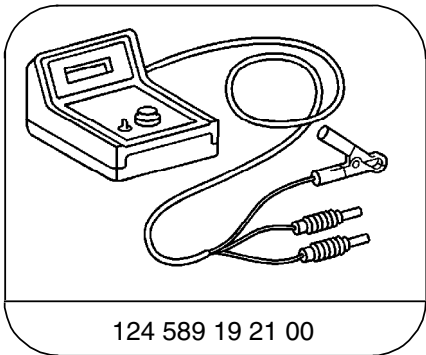
965 589 00 40 00

Test cable



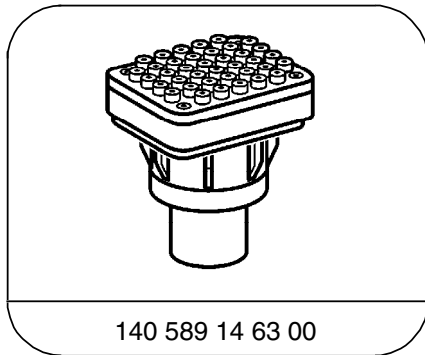
965 589 00 50 00

Adapter cable



124 589 19 21 00

Pulse counter



140 589 14 63 00

Adapter

Diagnosis - Diagnostic Trouble Code (DTC) Memory

Connection Diagram - Impulse Counter Scan Tool/  
Hand-Held Tester (HHT)

Model 124

Impulse counter scan tool

Black wire circuit 31 (ground)      Socket 1  
Red wire circuit 15 (ignition)      Socket 16

Hand-Held Tester (HHT)

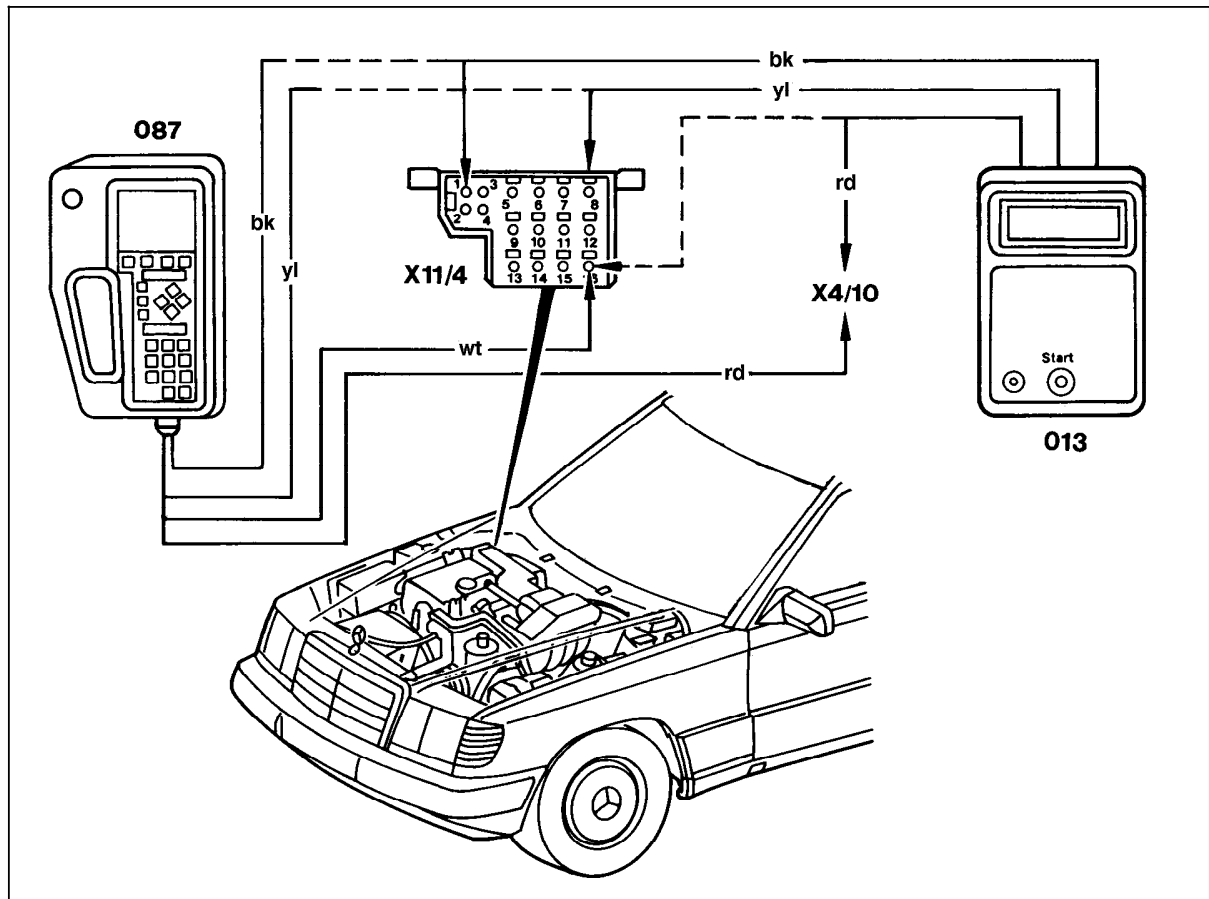
Black wire circuit 31 (ground)      Socket 1  
White wire circuit 15 (ignition)      Socket 16  
Red wire circuit 30                      Battery +  
or X4/10

Connect yellow wire of impulse counter scan tool/  
Hand-Held Tester (HHT) as follows:

Engine control module                  Socket 8  
EA/CC/ISC control module              Socket 14  
Diagnostic module                        Socket 3

Figure 1

- 013      Impulse counter scan tool  
          (Hand-Held Tester 087 optional)
- 087      Hand-Held Tester  
          (Impulse counter scan tool 013 optional)
- X11/4    Data link connector (DTC readout) (16-pole)



U07-5730-57A

Diagnosis - Diagnostic Trouble Code (DTC) Memory

Connection Diagram - Impulse Counter Scan Tool/  
Hand-Held Tester (HHT)  
Models 129, 140, 202 and 210

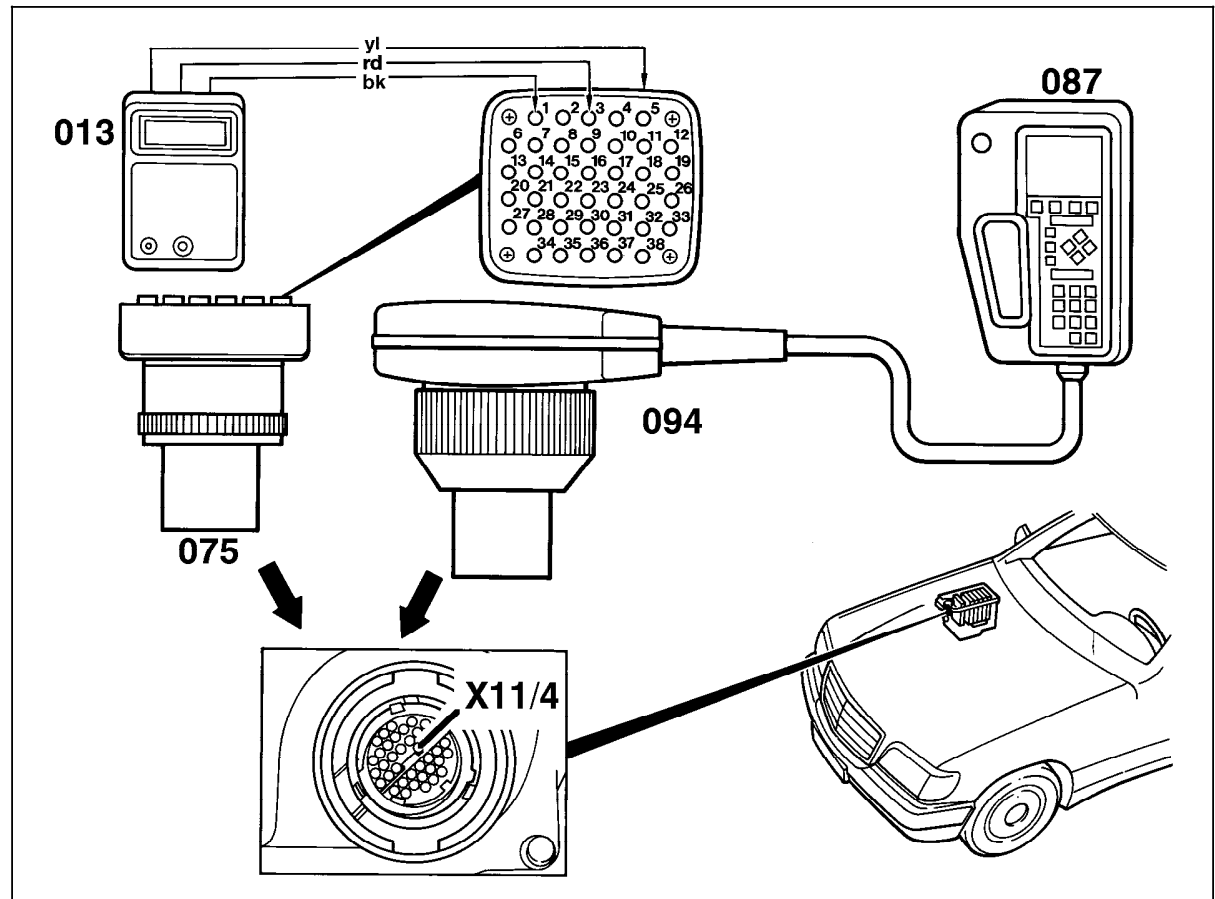
**Note:**  
The DTC memory can be read with the impulse counter scan tool only on vehicles up to HHT diagnosis code 46. On vehicles starting HHT diagnosis code 49 it can be read only with the HHT.

Connect red wire of Impulse counter scan tool to socket 3, black wire of impulse counter scan tool to socket 1, and connect yellow wire as follows:

Engine control module (HFM-SFI)	Socket	4
EA/CC/ISC control module	Socket	7
Base module (except models 202, 210)	Socket	8
Rpm signal (TN output, except models 202, 210)	Socket	13
Rpm signal (TN output, model 202, 210)	Socket	17
Diagnostic module	Socket	19

Figure 2



- 013 Impulse counter scan tool  
(Hand-Held Tester 087 optional)
- 075 Impulse counter scan tool adapter
- 087 Hand-Held Tester  
(Impulse counter scan tool 013 optional)
- 094 Multiplexer
- X11/4 Data link connector (DTC readout) (38-pole)



U07-5925-57





## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC  <sup>7)</sup> 	Possible cause	Test step/Remedy <sup>1)</sup>
1	–	–
2	002	23⇒ 8.0
2	003	23⇒ 8.0
2	004	23⇒ 8.0
2	005	Contacts in connector of B11/3 or N3/4.
3	006	23⇒ 9.0
3	007	23⇒ 9.0
3	008	Contacts in connector of B17 or N3/4.
4	009	23 ⇒ 4.0 – 5.0 Engine friction excessive.
4	010	23 ⇒ 4.0 – 5.0
5	011	23⇒ 11.0
5	012	23⇒ 11.0
5	013	23⇒ 11.0
6	014	–
6	015	–
6	016	–

<sup>1)</sup> Observe Preparation for Test, see 22.

<sup>7)</sup> Only possible up to end of model year 1995.

## Diagnosis – Diagnostic Trouble Code (DTC) Memory



DTC  <sup>7)</sup>		Possible cause	Test step/Remedy <sup>1)</sup>
7	017	<i>Not applicable for U.S.A. version vehicles</i>	–
7	018	<i>Not applicable for U.S.A. version vehicles</i>	–
7	019	<i>Not applicable for U.S.A. version vehicles</i>	–
8	020	ISC system at lower control stop	Intake air leak, throttle body binding, CC or EA operating in “limp-home” mode.
8	021	ISC system at upper control stop	Intake air leak, throttle body binding, CC or EA operating in “limp-home” mode.
8	022	CC or EA indicates “limp-home” mode	Intake air leak, throttle body binding, adjust throttle linkage, erase DTC's in HFM-SFI control module.
9 <sup>2)</sup>	023	O2S 1 (before TWC) (G3/2) sensor voltage too high	23 ⇒ 14.0
9 <sup>2)</sup>	024	O2S 1 (before TWC) (G3/2) cold or open circuit	23 ⇒ 14.0
9 <sup>2)</sup>	025	O2S 1 (before TWC) (G3/2) sensor voltage implausible	23 ⇒ 14.0
10	026	Except model 124 O2S 2 (after TWC) (G3/1) sensor voltage too high	23 ⇒ 16.0
10	027	Except model 124 O2S 2 (after TWC) (G3/1) cold or open circuit	23 ⇒ 16.0
10	028	Except model 124 O2S 2 (after TWC) (G3/1) sensor voltage implausible	23 ⇒ 16.0

1) Observe Preparation for Test, see 22.

2) The DTC “9” can be displayed up to 12/92 even if no fault exists.

7) Only possible up to end of model year 1995.



## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC  <sup>7)</sup>		Possible cause	Test step/Remedy <sup>1)</sup>
11	029	O2S 1 (before TWC) heater (G3/2) current too low	23 ⇒ 15.0
11	030	O2S 1 (before TWC) heater (G3/2) current too high	23 ⇒ 15.0
11	031	O2S 1 (before TWC) heater (G3/2) short circuit	23 ⇒ 15.0
12	032	Except model 124 O2S 2 (after TWC) heater (G3/1) current too low	23 ⇒ 17.0
12	033	Except model 124 O2S 2 (after TWC) heater (G3/1) current too high	23 ⇒ 17.0
12	034	Except model 124 O2S 2 (after TWC) heater (G3/1) short circuit	23 ⇒ 17.0
13	035	O2S system operating at rich limit, mixture too lean	Intake air leak, fuel injectors, diaphragm pressure regulator.
13	036	O2S system operating at lean limit, mixture too rich	Intake air leak, fuel injectors, diaphragm pressure regulator.
14	037	Injector (Y62y1), cylinder 1 short circuit to plus	23 ⇒ 19.0
14	038	Injector (Y62y1), cylinder 1 open/short circuit to ground	23 ⇒ 19.0
15	039	Injector (Y62y2), cylinder 2 short circuit to plus	23 ⇒ 20.0
15	040	Injector (Y62y2), cylinder 2 open/short circuit to ground	23 ⇒ 20.0

<sup>1)</sup> Observe Preparation for Test, see 22.

<sup>7)</sup> Only possible up to end of model year 1995.



## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC  <sup>7)</sup> 	Possible cause	Test step/Remedy <sup>1)</sup>
16      041	Injector (Y62y3), cylinder 3 short circuit to plus	23 ⇒ 21.0
16      042	Injector (Y62y3), cylinder 3 open/short circuit to ground	23 ⇒ 21.0
17      043	Injector (Y62y4), cylinder 4 short circuit to plus	23 ⇒ 22.0
17      044	Injector (Y62y4), cylinder 4 open/short circuit to ground	23 ⇒ 22.0
18      045	Injector (Y62y5), cylinder 5 short circuit to plus	23 ⇒ 23.0
18      046	Injector (Y62y5), cylinder 5 open/short circuit to ground	23 ⇒ 23.0
19      047	Injector (Y62y6), cylinder 6 short circuit to plus	23 ⇒ 24.0
19      048	Injector (Y62y6), cylinder 6 open/short circuit to ground	23 ⇒ 24.0
20      049	Self-adaptation at idle speed too rich	Intake air leak, fuel injectors, diaphragm pressure regulator, engine wear (reset self-adaptation following repair, see 11/5).
20      050	Self-adaptation at idle speed too lean	Intake air leak, fuel injectors, diaphragm pressure regulator, engine wear (reset self-adaptation following repair, see 11/5).

<sup>1)</sup> Observe Preparation for Test, see 22.

<sup>7)</sup> Only possible up to end of model year 1995.



## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC  <sup>7)</sup>		Possible cause	Test step/Remedy <sup>1)</sup>
20	051	Self-adaptation at lower partial load too rich	Intake air leak, fuel injectors, diaphragm pressure regulator, engine wear (reset self-adaptation following repair, see 11/5).
20	052	Self-adaptation at lower partial load too lean	Intake air leak, fuel injectors, diaphragm pressure regulator, engine wear (reset self-adaptation following repair, see 11/5).
20	053	Self-adaptation at upper partial load too rich	Intake air leak, fuel injectors, diaphragm pressure regulator, engine wear (reset self-adaptation following repair, see 11/5).
20	054	Self-adaptation at upper partial load too lean	Intake air leak, fuel injectors, diaphragm pressure regulator, engine wear (reset self-adaptation following repair, see 11/5).
21	061	Ignition output 3 or ignition coil (T1/3) for cylinder 1 misfires	24 ⇒ 13.0, 16.0 and 19.0
21	062	Ignition output 3 or ignition coil (T1/3) for cylinder 6 misfires	24 ⇒ 13.0, 16.0 and 19.0
21	063	Ignition output 3 or ignition coil (T1/3) current value not obtained	24 ⇒ 13.0, 16.0 and 19.0
22	055	Ignition output 1 or ignition coil (T1/1) for cylinder 2 misfires	24 ⇒ 11.0, 14.0 and 17.0

<sup>1)</sup> Observe Preparation for Test, see 22.

<sup>7)</sup> Only possible up to end of model year 1995.



## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC  <sup>7)</sup>		Possible cause	Test step/Remedy <sup>1)</sup>
22	056	Ignition output 1 or ignition coil (T1/1) for cylinder 5 misfires	24 ⇒ 11.0, 14.0 and 17.0
22	057	Ignition output 1 or ignition coil (T1/1) current value not obtained	24 ⇒ 11.0, 14.0 and 17.0
23	058	Ignition output 2 or ignition coil (T1/2) for cylinder 3 misfires	24 ⇒ 12.0, 15.0 and 18.0
23	059	Ignition output 2 or ignition coil (T1/2) for cylinder 4 misfires	24 ⇒ 12.0, 15.0 and 18.0
23	060	Ignition output 2 or ignition coil (T1/2) current value not obtained	24 ⇒ 12.0, 15.0 and 18.0
	061, 062, 063	see 11/13	
24	064	CKP sensor (L5) signal not recognized/implausible	24 ⇒ 7.0
24	065	CKP sensor (L5) magnet is missing (segment control) CKP sensor (L5) number of teeth implausible (increment control)	24 ⇒ 7.0
24	066	CKP sensor (L5) rpm implausibly high	24 ⇒ 7.0
25	067	CMP sensor (L5/1) implausible/not recognized (segment control) Camshaft Hall-effect sensor (B6/1) implausible/not recognized (increment control)	24 ⇒ 8.0 24 ⇒ 9.0
26	068	<i>Not applicable for U.S.A. version vehicles</i>	–
26	069	<i>Not applicable for U.S.A. version vehicles</i>	–
27	070	TN-signal output (rpm signal), short circuit to ground	23 ⇒ 10.0
27	071	TN-signal output (rpm signal), short circuit to plus	23 ⇒ 10.0
28	072	VSS not recognized	23 ⇒ 27.0

<sup>1)</sup> Observe Preparation for Test, see 22.

<sup>7)</sup> Only possible up to end of model year 1995.



## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC  7)		Possible cause	Test step/Remedy <sup>1)</sup>
28	073	VSS implausibly high	23 ⇒ 27.0
29	075	<i>Not applicable for U.S.A. version vehicles</i>	–
30	076	FP relay module (K27) open/short circuit	23 ⇒ 6.0
31	077	<i>Not applicable for U.S.A. version vehicles</i>	–
	078	<i>Not applicable for U.S.A. version vehicles</i>	–
32	079	KS 1 (A16) open circuit	Replace knock sensors (KS).
32	080	KS 2 (A16) open circuit	Replace knock sensors (KS).
33	081	Maximum retard setting on at least one cylinder has been reached	Increased tendency to knock due to poor fuel quality, combustion chamber carbon build-up or mechanical damage.
33	082	Ignition angle deviation between the individual cylinders is > 6° CKA.	Increased tendency to knock due to poor fuel quality, combustion chamber carbon build-up or mechanical damage.
34	083	Knock control evaluation circuit in engine control module (N3/4) defective	N3/4.
	084	Momentary fault in self-adaptation of closed throttle speed/partial load	Momentary malfunction in fuel mixture preparation.
35	085	Model 124, 129 and 140: AIR pump switchover valve (Y32) and/or electromagnetic AIR pump clutch (Y33), model 202: AIR pump switchover valve (Y32) and/or AIR relay module (K17) open/short circuit	23 ⇒ 28.0
36	086	Purge control valve (Y58/1) open/short circuit	23 ⇒ 29.0 – 30.0

<sup>1)</sup> Observe Preparation for Test, see 22.

<sup>7)</sup> Only possible up to end of model year 1995.

## Diagnosis – Diagnostic Trouble Code (DTC) Memory



DTC  7)		Possible cause	Test step/Remedy <sup>1)</sup>
36	087	Purge control valve (Y58/1) short circuit to plus	23 ⇒ 29.0 – 30.0
37	088	Upshift delay switchover valve (Y3/3) open/short circuit	23 ⇒ 34.0
38	089	Adjustable camshaft timing solenoid (Y49) short circuit to plus	23 ⇒ 31.0 – 32.0
38	090	Adjustable camshaft timing solenoid (Y49) open/short circuit to ground	23 ⇒ 31.0 – 32.0
39	091	EGR switchover valve (Y27) short circuit to plus	23 ⇒ 38.0 – 40.0
39	092	EGR switchover valve (Y27) open/short circuit to ground	23 ⇒ 38.0 – 40.0
40	093	Transmission overload protection switch (S65) short circuit to ground	24 ⇒ 10.0
40	094	Transmission overload protection switch (S65) closed and 2nd gear recognized	24 ⇒ 10.0
40	095	Transmission overload protection switch (S65) open and 2nd gear recognized	24 ⇒ 10.0
40	096	Transmission overload protection switch (S65) implausible	24 ⇒ 10.0
41	097	CAN communication from engine control module (N3/4) defective	23 ⇒ 37.0
42	098	CAN communication from ASR control module (N30/1) defective	23 ⇒ 36.0
42	099	CAN communication from EA/CC/ISC control module (N4/1) or CC/ISC control module (N4/3) defective	23 ⇒ 36.0
42	100	CAN communication from diagnostic module (OBD II) (N59/1) defective	23 ⇒ 36.0
43	101	Starter signal (circuit 50) not present	23 ⇒ 7.0
44	102	<i>Not applicable for U.S.A. version vehicles</i>	–
44	103	<i>Not applicable for U.S.A. version vehicles</i>	–

<sup>1)</sup> Observe Preparation for Test, see 22.

<sup>7)</sup> Only possible up to end of model year 1995.



## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC  7)		Possible cause	Test step/Remedy 1)
45	104	Fuel safety shut-off of electronic accelerator or cruise control active	23 ⇒ 12.0 23 ⇒ 13.0
46	105	Resonance intake manifold switchover valve (Y22/6) short circuit to plus	23 ⇒ 33.0
46	106	Resonance intake manifold switchover valve (Y22/6) open/short circuit to ground	23 ⇒ 33.0
	107 4)	Control of ignition coil preloading voltage exceeds limits	24 ⇒ 14.1 and 15.1 Engine control module (N3/4).
48	108	O2S 2 (after TWC) heater relay module (K35) short circuit to plus	23 ⇒ 18.0
48	109	O2S 2 (after TWC) heater relay module (K35) open/short circuit to ground	23 ⇒ 18.0
49	110	Voltage supply circuit 87 U at engine control module (N3/4) implausible	23 ⇒ 2.0
49	111	Voltage supply circuit 87 U at engine control module (N3/4) low voltage	23 ⇒ 2.0
50	112	Engine control module (N3/4)	N3/4.
	113 5)	Engine control module (N3/4) not coded	Code N3/4.
	114 5)	Engine control module identification of N3/4 faulty	Code N3/4, if necessary, replace N3/4.
	115 5)	Engine control module code bytes of N3/4 faulty	Code N3/4, if necessary, replace N3/4.
	116 6)	CAN communication from RCL control module (N54) faulty	23 ⇒ 36.1
	117 6)	Engine starts with RCL system locked	Incorrect operation, clear DTC memory.

1) Observe Preparation for Test, see 22.


4) Starting 06/93

5) Starting 01/94

6) Starting model year 1996, models 140/210, the DTC 116 can be displayed from 09/95 and up to 11/95, even if no fault exists.


7) Only possible up to end of model year 1995.

## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC	Possible cause	Test step/Remedy <sup>1)</sup>
 120	<i>Not applicable for U.S.A. version vehicles</i>	-
121	<i>Not applicable for U.S.A. version vehicles</i>	-
122	<i>Not applicable for U.S.A. version vehicles</i>	-
125 126	Engine control module (N3/4)	N3/4
127	ISC and CC/ISC actuators interchanged	Replace actuator
128 129	Engine control module (N3/4)	N3/4
130	<i>Not applicable for U.S.A. version vehicles</i>	–
131 132	Engine control module (N3/4)	N3/4
133	EA/CC/ISC or CC/ISC actuator	Perform learning process on engine control module with HHT. If the fault is still present, replace actuator.
134	Engine control module (N3/4)	N3/4
135	<i>Not applicable for U.S.A. version vehicles</i>	–
136	<i>Not applicable for U.S.A. version vehicles</i>	–
137	Engine control module (N3/4)	N3/4

1) Observe Preparation for Test, see 22.

## Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC 	Possible cause	Test step/Remedy <sup>1)</sup>
138	EA/CC/ISC or CC/ISC actuator	Perform learning process on engine control module with HHT. If the fault is still present, replace actuator.
139	<i>Not applicable for U.S.A. version vehicles</i>	-
140 141 142	Engine control module (N3/4)	N3/4
143	<i>Not applicable for U.S.A. version vehicles</i>	-
144	Engine control module (N3/4)	N3/4

<sup>1)</sup> Observe Preparation for Test, see 22.