Readiness code

The readiness code appears as an 8-digit display in measuring value block 086, display field 1. Each of the 8 digits is allocated to a specific exhaust related system.

During a test sequence (which must be carried out in its entirity), On Board Diagnostic (OBD) checks the function of each of these systems and then changes the character assigned to it in the 8-digit display from a "1" to a "0".

When the readiness code is generated after a successfully completed test sequence, it reads "0 0 0 0 0 0 0 0" (measuring value block 086, display field 1).

If a single test is completed entirely, but indicated as "not OK", a DTC will be stored in DTC memory. Check DTC Memory ⇒ Page 01-15 .

01-77

Readiness code is returned to "0 1 1 0 1 1 0 1" if:

- DTC memory was erased,
- a new Engine Control Module (ECM) was installed

In this case, readiness code must be re-generated ⇒ Page 01-82 .

Note:

During driving operation in various load conditions, exhaust relevant tests are performed by the control module within a "short trip" and readiness code is generated on its own. In this case, however, concluding control possibilities are not available, meaning that it will not be indicated whether all positions of the readiness code are set to "0".

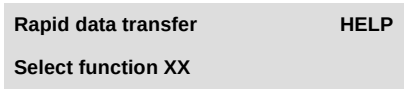
01-78

Readiness code, checking

Test sequence

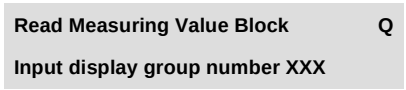
- Connect VAS5051 tester or VAG1551 scan tool and select the control module for engine electronics using "address word" 01 ⇒ Page 01-9 .

Ignition must remain switched on for this.



When indicated on display:

- Press buttons -0- and -8- to select "Read Measuring Value Block" and press -Q- button to confirm input.



When indicated on display:

- Press buttons -0-, -8- and -6- to select "display group number 086" and press -Q- button to confirm input.

When indicated on display:

- Check readiness code in display field 1
  - Specification: 0 0 0 0 0 0 0 0

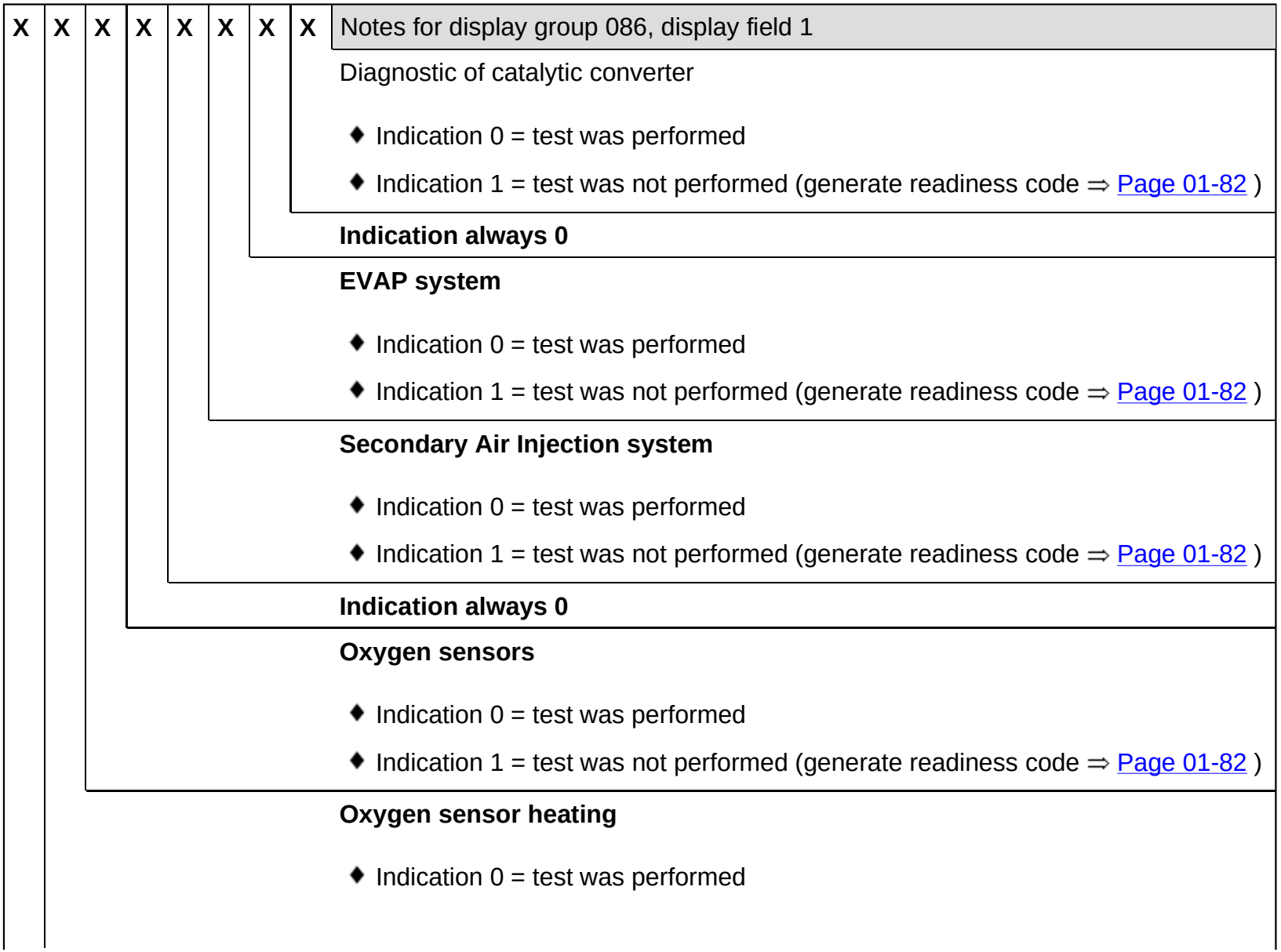
01-79

	Display fields			
	1	2	3	4
Display group 086: Readiness code				
Display	**0 0 0 0 0 0 0 0**	X X X X X X X X	X X X X X X X X	**X X X X X X X X**
Indicated	**Status-digits** **completed tests**	individual tests carried out	individual tests carried out	individual tests carried out
Functional range	**1 = not completed** **0 = completed**	1 = not completed 0 = completed	1 = not completed 0 = completed	1 = not completed 0 = completed
Specified value	**0 0 0 0 0 0 0 0**	X X X X X X X X	X X X X X X X X	X X X X X X X X
Notes	**Meaning of readiness code ⇒ Page 01-80**			

Note for display field 1:

Display field 1 is the most important. This indicates which system was checked via On Board Diagnostic (OBD) since the last time DTC memory was erased or a new control module was implemented. After DTC memory is erased, all testable values are set to 1, after the test is performed, the values are set to 0.

01-80


X X X X X X X X
Notes for display group 086, display field 1
Diagnostic of catalytic converter
♦ Indication 0 = test was performed
♦ Indication 1 = test was not performed (generate readiness code ⇒ Page 01-82)
Indication always 0
EVAP system
♦ Indication 0 = test was performed
♦ Indication 1 = test was not performed (generate readiness code ⇒ Page 01-82)
Secondary Air Injection system
♦ Indication 0 = test was performed
♦ Indication 1 = test was not performed (generate readiness code ⇒ Page 01-82)
Indication always 0
Oxygen sensors
♦ Indication 0 = test was performed
♦ Indication 1 = test was not performed (generate readiness code ⇒ Page 01-82)
Oxygen sensor heating
♦ Indication 0 = test was performed

- Indication 1 = test was not performed (generate readiness code ⇒ Page 01-82)

Indication always 0

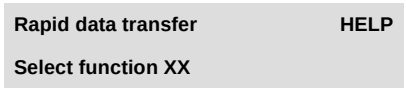
Note:

Readiness code is not generated until all indications in display field 1 show "0"

01-81

Once the specified value "0 0 0 0 0 0 0 0" is reached in display field 1:

- Press →button.



Indicated on display (function selection):

- Check DTC memory as a control measure ⇒ Page 01-15 (no malfunctions may be stored).

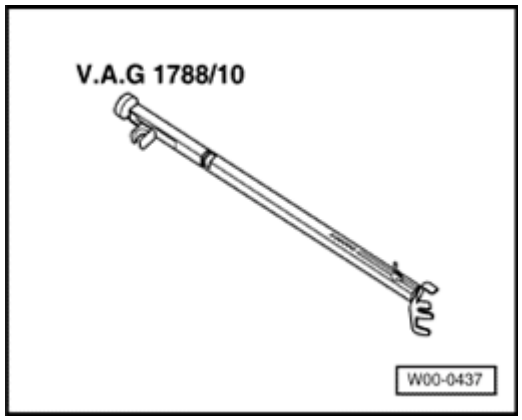
If specified value is not obtained:

- Generate readiness code ⇒ Page 01-82 .

01-82

Readiness code, generating

Special Tools and Equipment



- VAG1788/10 RPM adjuster

Requirements

- Electrical consumers switched off (radiator fan must NOT run during test).
- A/C system switched on.
- Vehicles with automatic transmission Selector lever in P or N.
- Coolant temperature at least 80 ° C ⇒ Display group 4, display field 3. Important: Drive engine warm via road test if possible.

Note:

If, during a work step, the test result is indicated as "OK" immediately after selecting a display group, the test has already been carried out and it is OK to continue on to the next work step.

01-83

Work step 1: Check DTC Memory

Test requirement

- Ignition switched on.

- Connect VAS5051 tester or VAG1551 scan tool and select the control module for engine electronics using "address word" 01 ⇒ Page 01-9 .

Rapid data transfer HELP **Select function XX**	When indicated on display:

- Press buttons -0- and -2- to select "Check DTC memory" and press -Q- button to confirm input.

X DTC recognized	Number of stored DTCs or "No DTC recognized" will be indicated on display.

If a DTC is stored:

- Repair malfunction, erase DTC memory. Road test vehicle and then check DTC memory as a control measure.

If no DTCs are stored:

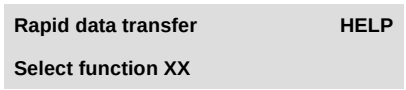
- Press →button.

01-84

Work step 2: Erase DTC Memory

Test requirement

- Engine not running, ignition switched on.

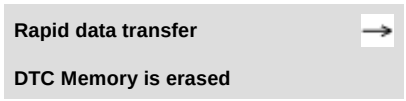


When indicated on display:

- Press buttons -0- and -5- to select "Erase DTC memory" and press -Q- button to confirm input.

Note:

When DTC memory is erased, readiness code is reset and must therefore be re-generated.



When indicated on display:

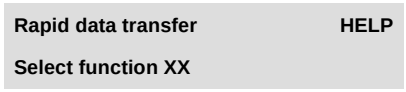
- Press →button.

01-85

Work step 3: Adapt throttle valve control module to Engine Control Module (ECM)

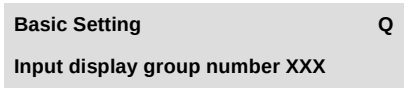
Test requirement

- Engine not running, ignition switched on.



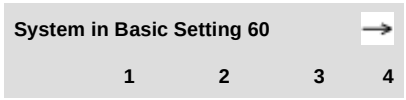
When indicated on display:

- Press buttons -0- and -4- to select "Initiate basic setting" and press -Q- button to confirm input.



When indicated on display:

- Press buttons -0-, -6- and -0- to select "display group number 060" and press -Q- button to confirm input.



When indicated on display:

- Check specified value in display field 4.

01-86

	Display fields			
	1	2	3	4
Display group 060: Adaptation of throttle valve control module				
Display	xx %	xx %	**x**	**---**
Indicated	Throttle valve angle (angle sensor 1)	Throttle valve angle (angle sensor 2)	**Adaptation step counter**	**Adaptation condition**
Functional range	0 to 100 %	0 to 100 %	**0 to 8**	**ADP in progress** **ADP OK** **ADP ERROR**
Specified value	3 to 93 %	97 to 3 %	**8**	**ADP OK**
Notes			**After adaptation, the adaptation step counter reaches the number 8 (it is OK for numbers to be skipped).**	**If "ADP ERROR." is displayed: Check DTC memory ⇒ Page 01-15 .** **If specified value is not obtained: ⇒Note, page ⇒ Page 24-147 .**

Note for display field 3:

Different numbers are shown in display field 3 during adaptation that represent the current adaptation condition. It is not particularly important how the adaptation step counter (display field 3) behaves during adaptation, but rather that display field

4 indicates the specification "ADP OK" after adaptation.

If specified value "ADP OK" is obtained:

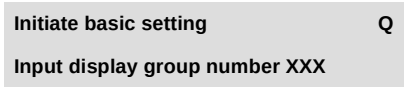
- Press -C- button.

01-87

Work step 4: Kick down function, adapting

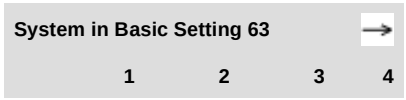
Test requirement

- Engine not running, ignition switched on.



➢ When indicated on display:

- Press buttons -0-, -6- and -3- to select "display group number 063" and press -Q- button to confirm input.



➢ When indicated on display:

Note:

There will be a prompt: "Activate kick-down"

- Depress accelerator pedal completely, past kick down point, and hold down.

Note:

During adaptation of the kick down point, the VAG1551 will display "Kick down ADP in progress". After successful adaptation of the kick down point, the VAG1551 will display "Kick down ADP OK".

- Check specified value in display field 4.

01-88

	Display fields			
	1	2	3	4
Display group 063: Kick down function, adapting				
Display	xx %	xx %	**Kick down**	**---**
Indicated	Sensor 1 for Pedal position	Sensor 2 for Pedal position	**Kick down**	**Adaptation condition**
Functional range	0 to 100 %	0 to 50 %	**Kick down**	**operate** **ADP in progress** **ADP OK** **ADP ERROR**
Specified value	12 to 97 %	4 to 49 %	**Kick down**	**ADP OK**
Notes				**If "ADP ERROR." is displayed: Check DTC memory ⇒ Page 01-15 .**

Note for display field 4:

"ERROR" can be indicated, for example, if the accelerator pedal is not immediately pressed in response to a request by the tester or if the accelerator pedal is released while adaptation is running despite the fact that adaptation is not yet complete.

In both cases, "Basic Setting" must be exited and the adaptation must be performed again.

If specified value "ADP OK" is obtained:

- Press -C- button.

01-89

Work step 5: Check operating condition of oxygen sensor control

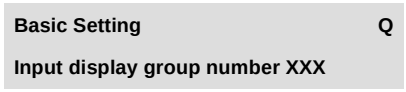
- Start engine (for a vehicle with manual transmission: engage clutch).

Note:

After starting engine, it may be necessary to select the Engine Control Module (ECM) again using "address word" 01 and the function "Initiate basic setting" using "04".

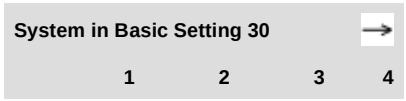
- Install VAG1788/10 RPM adjuster on the accelerator pedal and raise the engine speed.

  - Specification: 2200 RPM



When indicated on display:

- Press buttons -0-, -3- and -0- to select "display group number 030" and press -Q- button to confirm input.



When indicated on display:

- Check oxygen sensor status in display fields 1 to 4.

Note:

A few minutes may pass until a diagnostic result is reached.

01-90

	Display fields			
	1	2	3	4
Display group 030: Oxygen sensor status with engine at idle				
Display	**X X X**	**X X X**	**X X X**	**X X X**
Indicated	**Oxygen sensor status, bank 1, sensor 1**	**Oxygen sensor status, bank 2, sensor 1**	**Oxygen sensor status, bank 2, sensor 1**	**Oxygen sensor status, bank 2, sensor 2**
Functional range	**0 = off** **1 = on**	**0 = off** **1 = on**	**0 = off** **1 = on**	**0 = off** **1 = on**
Specified value	**1 1 1**	**1 1 0**	**1 1 1**	**1 1 0**

Significance of 3 digit indications in display group 030

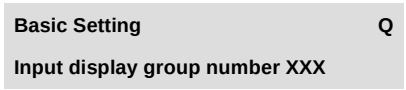
X	X	X	**Display fields 1 to 4**
		X	Oxygen sensor control 0= not active 1 = active
	X		Operational readiness of oxygen sensor 0= not active 1 = active
X			Condition of oxygen sensor heating

			0= not active 1 = active

Work step 6: Diagnostic of oxygen sensor aging before catalytic converter

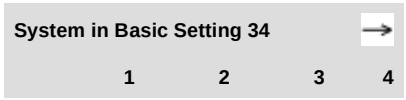
Test requirement

- Engine continues to run at 2200 RPM.



When indicated on display:

- Press buttons -0-, -3- and -4- to select "display group number 034" and press -Q- button to confirm input.



When indicated on display:

- Check specified value in display field 4 after indication "Test ON" appears:

Note:

A few minutes may pass until a diagnostic result is reached.

01-92

	Display fields			
	1	2	3	4
Display group 034: Oxygen sensor aging diagnostic, oxygen sensor before catalytic converter (bank 1)				
Display	xxxx/min	xxx °C	x.x s	**---**
Indicated	Engine speed (RPM)	Exhaust temperature	Period duration Oxygen sensor before Catalytic converter	Diagnostic condition
Functional range	630 to 6800 RPM	70 to 850 °C	0 to 3.0 s	Test OFF Test ON B1-S2 OK B1-S2 not OK
Specified value	2200 RPM	above 380 °C	0.1 to 1.8 s	B1-S2 OK
Notes				**If "B1-S1 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory ⇒ Page 01-15**

If specified value "B1-S1 OK" is obtained:

- Press -C- button.

Basic Setting Q

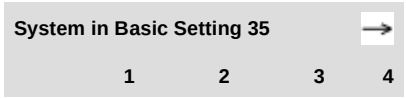
Input display group number XXX

When indicated on display:

- Press buttons -0-, -3- and -5- to select "display group number 035" and press -Q- button to confirm input.

01-93

If specified value "B2-S1 OK" is obtained:



When indicated on display:

- Check specified value in display field 4.

	Display fields			
	1	2	3	4
Display group 035: Oxygen sensor aging diagnostic, oxygen sensor before catalytic converter (bank 2)				
Display	xxxx/min	xxx °C	x.x s	**---**
Indicated	Engine speed (RPM)	Exhaust temperature	Period duration Oxygen sensor before Catalytic converter	Diagnostic condition
Functional range	630 to 6800 RPM	70 to 850 °C	0 to 3.0 s	Test OFF Test ON B2-S2 OK B2-S2 not OK
Specified value	2200 RPM	above 380 °C	0.1 to 1.8 s	B2-S2 OK
Notes				**If "B2-S1 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory ⇒ Page 01-15**

- Press -C- button.

01-94

Work step 7: Diagnostic of operational readiness of oxygen sensors behind catalytic converter

Test requirement

- Engine continues to run at 2200 RPM.

Basic Setting Q
Input display group number XXX

When indicated on display:

- Press buttons -0-, -3- and -6- to select "display group number 036" and press -Q- button to confirm input.

System in Basic Setting 36 →
1 2 3 4

When indicated on display:

- Check specified values in display fields 2 and 4.

01-95

	Display fields			
	1	2	3	4
Display group 036: Operational readiness of the oxygen sensor behind catalytic converter (bank 1 and bank 2)				
Display	x.xxx V	**---**	x.xxx V	**---**
Indicated	Voltage of oxygen sensors behind catalytic converter, bank 1	**Diagnostic condition**	Voltage of oxygen sensors behind catalytic converter, bank 2	**Diagnostic condition**
Functional range	0.100 to 1.000 V	**Test OFF** **Test ON** **B1-S2 OK** **B1-S2 not OK**	0.100 to 1.000 V	**Test OFF** **Test ON** **B2-S2 OK** **B2-S2 not OK**
Specified value	smaller than 0.4 V or larger than 0.5 V	**B1-S2 OK**	smaller than 0.4 V or larger than 0.5 V	**B2-S2 OK**
Notes		**If "B1-S2 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory** ⇒ **Page 01-15**		**If "B2-S2 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory** ⇒ **Page 01-15**

If specified value "B1-S1 OK" is obtained:

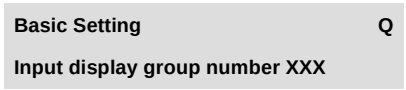
- Press -C- button.

01-96

Work step 8: Diagnostic of oxygen sensor control system

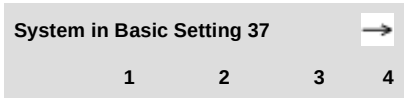
Test requirement

- Engine continues to run at 2200 RPM.



➢ When indicated on display:

- Press buttons -0-, -3- and -7- to select "display group number 037" and press -Q- button to confirm input.



➢ When indicated on display:

- Check specified value in display field 4.

01-97

	Display fields			
	1	2	3	4
Display group 037: Diagnostic of oxygen sensor control system (Bank 1)				
Display	xxx %	x.xxx volts	xxx ms	**---**
Indicated	Load	Voltage of oxygen sensors behind catalytic converter, bank 1	Oxygen sensor correction value between sensor 1 and sensor 2 (bank 1)	Diagnostic condition
Functional range	12 to 100 %	0.100 to 1.000 V	-800 to 800 ms	**Test OFF** **Test ON** **System OK** **System not OK**
Specified value	12 to 26 %	0.100 to 1.000 V	-800 to 800 ms	System OK
Notes				**If "System not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory** ⇒ **Page 01-15**

If specified value "Syst. OK" is obtained:

- Press -C- button.

Basic Setting **Q**

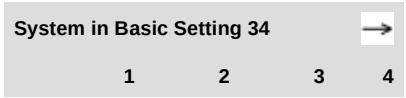
When indicated on display:

Input display group number XXX

- Press buttons -0-, -3- and -8- to select "display group number 038" and press -Q- button to confirm input.

01-98

If specified value "Syst. OK" is obtained:



When indicated on display:

- Check specified value in display field 4.

	Display fields			
	1	2	3	4
Display group 038: Diagnostic of oxygen sensor control system (Bank 2)				
Display	xxx %	x.xxx volts	xxx ms	**---**
Indicated	Load	Voltage of oxygen sensors behind catalytic converter, bank 2	Oxygen sensor correction value between sensor 2 and sensor 2 (bank 1)	Diagnostic condition
Functional range	12 to 100 %	0.100 to 1.000 V	-800 to 800 ms	**Test OFF** **Test ON** **System OK** **System not OK**
Specified value	12 to 26 %	0.100 to 1.000 V	-800 to 800 ms	System OK
Notes				**If "System not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory** ⇒ **Page 01-15**

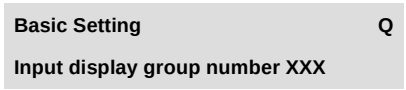
- Press -C- button.

01-99

Work step 9: Diagnostic of oxygen sensor aging behind catalytic converter

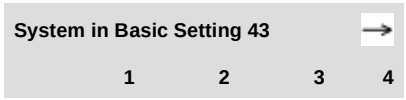
Test requirement

- Engine continues to run at 2200 RPM.



➢ When indicated on display:

- Press buttons -0-, -4- and -3- to select "display group number 043" and press -Q- button to confirm input.



➢ When indicated on display:

- Check specified value in display field 4.

01-100

	Display fields			
	1	2	3	4
Display group 043: Oxygen sensor aging diagnostic, oxygen sensor behind catalytic converter (bank 1)				
Display	xxxx/min	xxx °C	x.x s	---
Indicated	Engine speed (RPM)	Exhaust temperature	Voltage of oxygen sensors behind catalytic converter, bank 1	Diagnostic condition
Functional range	630 to 6800 RPM	70 to 850 °C	0.100 to 1.000 V	Test OFF Test ON B1-S2 OK B1-S2 not OK
Specified value	2200 RPM	above 380 °C	0.100 to 1.000 V	B1-S2 OK
Notes				**If "B1-S2 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory** ⇒ **Page 01-15**

If specified value "B1-S1 OK" is obtained:

- Press -C- button.

Basic Setting **Q**

Input display group number XXX

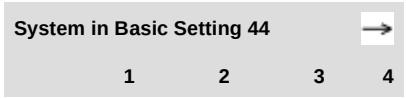
When indicated on display:

- Press buttons -0-, -4- and -4- to select "display group number 044"

and press -Q- button to confirm input.

01-101

If specified value B2-S2 OK" is obtained:



When indicated on display:

- Check specified value in display field 4.

	Display fields			
	1	2	3	4
Display group 044: Oxygen sensor aging diagnostic, oxygen sensor behind catalytic converter (bank 2)				
Display	xxxx/min	xxx °C	x.x s	**---**
Indicated	Engine speed (RPM)	Exhaust temperature	Voltage of oxygen sensors behind catalytic converter, bank 2	Diagnostic condition
Functional range	630 to 6800 RPM	70 to 850 °C	0.100 to 1.000 V	Test OFF Test ON B2-S2 OK B2-S2 not OK
Specified value	2200 RPM	above 380 °C	0.100 to 1.000 V	B2-S2 OK
Notes				**If "B2-S2 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory** ⇒ **Page 01-15**

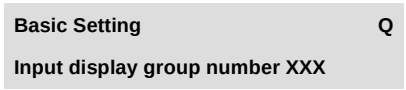
- Press -C- button.

01-102

Work step 10: Diagnostic of catalytic converter

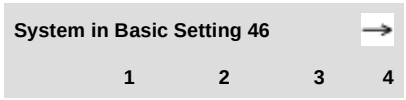
Test requirement

- Engine continues to run at 2200 RPM.



When indicated on display:

- Press buttons -0-, -4- and -5- to select "display group number 046" and press -Q- button to confirm input.



When indicated on display:

- Check specified value in display field 4.

Note:

Catalytic converter diagnostic lasts approx. 60 seconds.

01-103

	Display fields			
	1	2	3	4
Display group 046: Diagnostic of catalytic converter (bank 1)				
Display	xxxx/min	xxx °C	x.x s	---
Indicated	Engine speed (RPM)	Exhaust temperature	Catalytic converter - conversion	Diagnostic condition
Functional range	630 to 6800 RPM	70 to 850 °C	0.00 to 0.99	Test OFF Test ON Cat B1 OK Cat B1 not OK
Specified value	2200 RPM	above 420 °C	0.00 to 0.52 1) 0.00 to 0.47 2)	Cat B1 OK
Notes				**If "Cat B1 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory ⇒ Page 01-15 . If no DTCs are stored, replace catalytic converter.**

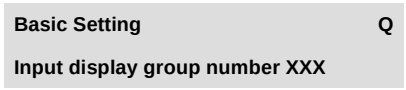
1) Manual transmission

2) Automatic transmission

01-104

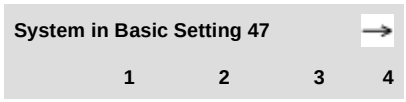
If specified value "Cat B1 OK" is obtained:

- Press -C- button.



When indicated on display:

- Press buttons -0-, -4- and -7- to select "display group number 047" and press -Q- button to confirm input.



When indicated on display:

- Check specified value in display field 4.

01-105

	Display fields			
	1	2	3	4
Display group 047: Diagnostic of catalytic converter (bank 2)				
Display	xxxx/min	xxx °C	x.x s	---
Indicated	Engine speed (RPM)	Exhaust temperature	Catalytic converter - conversion	Diagnostic condition
Functional range	630 to 6800 RPM	70 to 850 °C	0.00 to 0.99	Test OFF Test ON Cat B2 OK Cat B2 not OK
Specified value	2200 RPM	above 420 °C	0.00 to 0.52 1) 0.00 to 0.47 2)	Cat B2 OK
Notes				**If "Cat B2 not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory ⇒ Page 01-15 . If no DTCs are stored, replace catalytic converter.**

1) Manual transmission

2) Automatic transmission

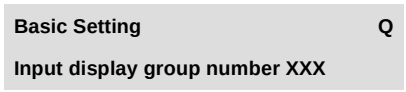
If specified value "Cat B2 OK" is obtained:

- Press -C- button.

01-106

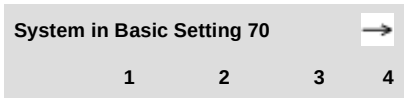
Work step 11: Diagnostic of tank ventilation valve

- Remove the VAG1788/10 RPM adjuster and leave engine running at idle.



When indicated on display:

- Press buttons -0-, -7- and -0- to select "display group number 070" and press -Q- button to confirm input.



When indicated on display:

- Check specified value in display field 4.

Note:

If test is not initiated or if indication switches from "Test ON" to "Test OFF", depress accelerator pedal briefly, test will be repeated.

01-107

	Display fields			
	1	2	3	4
Display group 070: Diagnostic of tank ventilation valve				
Display	xx %	xx.x %	g/s	**---**
Indicated	Degree tank ventilation valve is opened	Oxygen sensor control deviation	Deviation of Idle control	**Diagnostic condition**
Functional range	0 to 99 %	-25.0 to 25.0 %		**Test OFF** **Test ON** **TVV OK** **TVV not OK** **Aborted**
Specified value	0 to 99 %	-7.0 to 7.0 %	**x.xx g/s** 1)	**TVV OK**
Notes				**If "TVV not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory ⇒ Page 01-15 . Check Evaporative Emission (EVAP) canister purge regulator valve -N80- ⇒ Page 24-128**

1) An indication is only displayed if diagnostic result falls within a specified range due to deviation of idle control and not due to deviation of an oxygen sensor (e.g. sensor 1 from EVAP canister). Otherwise, display field 3 remains empty.

If specified value "TVV OK" is obtained:

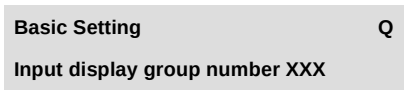
- Press → button.

01-108

Work step 12: Diagnostic of tank seal

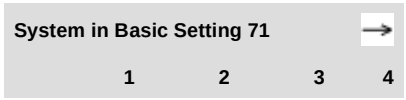
Test requirements

- Engine running at idle:
- Intake Air Temperature (IAT) less than 95 ° C ⇒ display group 004, display field 4.
- Coolant temperature at least 80 ° C ⇒ Display group 4, display field 3
- Fuel filler cap opened briefly (to reduce pressure).



When indicated on display:

- Press buttons -0-, -7- and -1- to select "display group number 071" and press -Q- button to confirm input.



When indicated on display:

Notes:

- *Test lasts approx. 90 seconds.*
- *When the diagnostic of tank seal is performed several times in a row, the fuel filler cap must be opened briefly before each test to release pressure.*

01-109

- Check specified value in display field 4 after indication "Test ON" appears:

	Display fields			
	1	2	3	4
Display group 071: Diagnostic of tank seal				
Display	---	---	---	**---**
Indicated	Condition Reed-Terminal	DTC message	System condition	**Diagnostic condition**
Functional range	Reed open Reed closed	Small leak Large leak System not OK Aborted	System test Measurement END Measurement	**Test OFF** **Test ON** **System OK** **System not OK** **Aborted**
Specified value	Reed open	---	END Measurement	**System OK**
Notes				**If "System not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory ⇒ Page 01-15**

If specified value "Syst. OK" is obtained:

- Press -C- button.

01-110

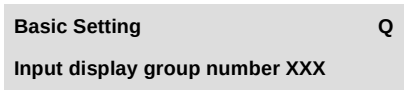
Work step 13: Diagnostic of Secondary Air Injection (AIR) system

Test requirement

- Engine running at idle:

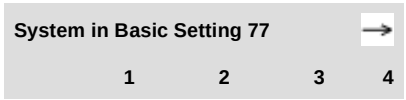
Note:

During diagnostic of the Secondary Air Injection (AIR) system, the Secondary Air Injection (AIR) pump will run for several seconds.



When indicated on display:

- Press buttons -0-, -7- and -7- to select "display group number 077" and press -Q- button to confirm input.



When indicated on display:

- Check specified value in display field 4 after indication "Test ON" appears:

Note:

Secondary Air Injection (AIR) system test lasts approx. 60 seconds.

01-111

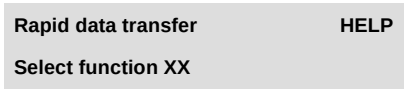
	Display fields			
	1	2	3	4
Display group 077: Secondary Air Injection (AIR) system diagnostic				
Display	xxxx/min	xx.x g/s	%	**---**
Indicated	Engine speed (RPM)	Air mass	Relative air mass Secondary air system	**Diagnostic condition**
Functional range	670 to 6800 RPM			**Test OFF** **Test ON** **System OK** **System not OK**
Specified value	720 to 820 RPM 1) 630 to 730 RPM 2)	0 to 5	-80 to 20	System OK
Notes				**If "System not OK" is displayed: Check Diagnostic Trouble Code (DTC) memory ⇒ Page 01-15**

1) Front Wheel Drive Vehicles

2) All-Wheel Drive Vehicles

If specified value "Syst. OK" is obtained:

- Press → button.



Indicated on display (function selection):

01-112

Work step 14: Readiness code, reading

- Read readiness code ⇒ Page 01-78 .