Readiness code

Readiness code, checking

Note:

The readiness code will be erased:

- *When Diagnostic Trouble Code (DTC) memory is erased*
- *When the Engine Control Module (ECM) harness connector is disconnected (e.g. to connect VAG1598/22 test box)*
- *When the battery is disconnected*

Required special tools and test equipment

- VAG1551 Scan Tool (ST) with VAG1551/3 adapter cable

Checking

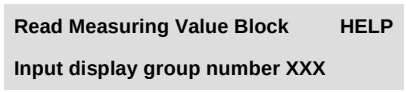
- Connect VAG1551/VAG1552 Scan Tool (ST) and press buttons -0- and -1- to insert "Engine Electronics" address word 01 (with ignition switched on) ⇒ page 01-8 .

Rapid data transfer HELP

Indicated on display

Select function XX

- Press buttons -0- and -8- to select "Read Measuring Value Block" function 08, and press -Q- button to confirm input.



Indicated on display

- Press buttons -0-, -8- and -6- to input display group number 86 (086), and press -Q- button to confirm input.

Indicated on display (1-4 = display fields)

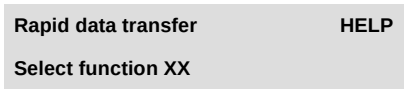
- Check readiness code values in display field 1.

  Specified value: 00000000

Note:

The readiness code is generated as soon as only zeros are shown in display field 1.

- Press → button.



Indicated on display

- Press buttons -0- and -6- to select "End Output" function 06, and press -Q- button to confirm input.

If the readiness code was not generated, generate readiness code again ⇒ page 01-73 .

- Check readiness code ⇒ page 01-70 . If DTC memory has been erased, or ECM has been disconnected from B+, generate readiness code again ⇒ page 01-73 .

Explanation of 8-digit readiness code

Readiness code is generated only when all display values = 0								
1	2	3	4	5	6	7	8	Diagnosis
							0	Three Way Catalytic Converter (TWC)
						0		TWC heating (not applicable / always "0")
					0			EVAP system and fuel tank leak detection test
				0				Secondary Air Injection (AIR) system
			0					Air conditioning system (diagnosis not applicable / always "0")
		0						Oxygen Sensor (O2S) control
	0							Oxygen Sensor (O2S) heating
0								Exhaust Gas Recirculation (EGR) system (not applicable / always "0")

01-73

Readiness code, generating

Required special tools and test equipment

- VAG1551 Scan Tool (ST) with VAG1551/3 adapter cable

Test requirements

- No malfunctions stored in DTC memory
- Engine not stopped (ignition not switched off) during the test
- Vehicle not moving
- All electrical consumers switched off (coolant fan must not run during test)

Test sequence

- Connect VAG1551/VAG1552 Scan Tool (ST) and press buttons -0- and -1- to insert "Engine Electronics" address word 01 (with ignition switched on) ⇒ page 01-8 .

01-74

Step 1: Check DTC memory

Rapid data transfer HELP **Select function XX**	Indicated on display

- Press buttons -0- and -2- to select "Check DTC Memory" function 02, and press -Q- button to confirm input.

No DTC recognized	Indicated on display

If one or more DTCs are stored:

- Repair cause of malfunction.
- Erase DTC memory.
- Stop engine, start engine again, and road test.

⇒ Safety precautions for road testing vehicle page 24-9

- Check DTC memory again and erase.

If no DTCs were recognized:

- Press → button.

01-75

Step 2: Erase DTC memory

Rapid data transfer HELP **Select function XX**	Indicated on display

- Press buttons -0- and -5- to select "Erase DTC Memory" function 05, and press -Q- button to confirm input.

Note:

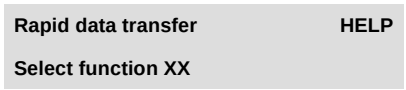
When erasing DTC memory, the readiness code is also erased.

Rapid data transfer → **DTC Memory is erased**	Indicated on display

- Press → button.

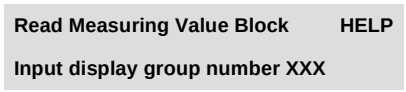
01-76

Step 3: Adaptation of throttle valve control module to ECM



Indicated on display

- Press buttons -0- and -8- to select "Read Measuring Value Block" function 08, and press -Q- button to confirm input.

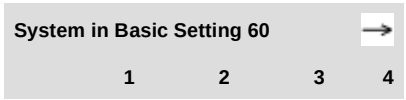


Indicated on display

- Press buttons -0-, -6- and -0- to input display group number 60 (060), and press -Q- button to confirm input.

Indicated on display (1-4 = display fields)

- Press -4- button to select "Basic Setting" function 04 (adaptation of throttle valve control module to ECM)



Indicated on display (1-4 = display fields)

01-77

- Check specified values in display fields 3 and 4:

	Display fields			
	1	2	3	4
Display group 60: Adaptation of throttle valve control module to Engine Control Module (ECM)				
Display	xxx ∠ °	xxx ∠ °	Idle Part Throt Full Throt Decel Enrich	ADP.runs ADP. OK ADP.ERROR
Indicated	Throttle valve angle	Throttle drive angle	Operating condition	Adaptation status
Specified value	---	---	Idle	ADP. OK

If "ADP. ERROR" is indicated in display field 4:

- Check DTC memory ⇒ page 01-16 .

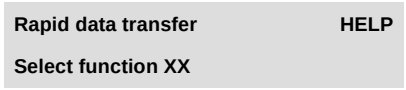
If the specified value "ADP. OK" is indicated in display field 4:

- Press → button.

Step 4:

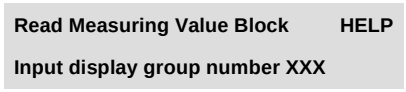
- Start engine and let run at idle.

Step 5: Oxygen Sensor (O2S) control operating condition



Indicated on display

- Press buttons -0- and -8- to select "Read Measuring Value Block" function 08, and press -Q- button to confirm input.



Indicated on display

- Press buttons -0-, -3- and -0- to input display group number 30 (030), and press -Q- button to confirm input.

Indicated on display (1-4 = display fields)

- Increase engine speed to 1800-2200 RPM.

- Hold at 1800-2200 RPM until specified value "111" is shown in all of display fields 1 - 4 (⇒ table).

	Display fields			
	1	2	3	4
Display group 30: Oxygen Sensor (O2S) control operating condition, Bank 1 and Bank 2				
Display	xxx	xxx	xxx	xxx
Indicated	Status of Heated Oxygen Sensor (HO2S), bank 1, sensor 1, before TWC	Status of Heated Oxygen Sensor (HO2S) 2, bank 1 sensor 2, after TWC	Status of Heated Oxygen Sensor (HO2S), bank 2, sensor 1, before TWC	Status of Heated Oxygen Sensor (HO2S) 2, bank 2 sensor 2, after TWC
Specified value	111	111	111	111
Evaluation ⇒ page 01-80				

If one of the specified values is not indicated:

- Check DTC memory ⇒ page 01-16 .

If the specified values for display fields 1-4 are not indicated:

- Continue to hold engine speed at 1800-2200 RPM.

01-80

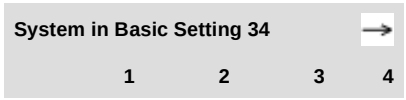
Explanation of 3-digit value in display fields 1 and 2:

When display = 1			
1	2	3	
		1	Oxygen Sensor (O2S) control active
	1		Heated Oxygen Sensor (HO2S) operational
1			Oxygen Sensor (O2S) heater ON

Step 6: Oxygen sensor aging (time period)

- Press button -4- to select "Basic Setting" function 04.

- Press button -3- four times to advance to display group number 34.



Indicated on display (1-4 = display fields)

- Hold engine speed at 1800-2200 RPM until display changes from "Test OFF" to "Test ON" in display field 4.

01-81

- Continue to hold at 1800-2200 RPM until specified value "B1-S1. OK" is indicated in display field 4.

	Display fields			
	1	2	3	4
Display group 34: Oxygen sensor aging, Bank 1 (time period of oxygen sensor)				
Display	xxxx RPM	xx.xx ms	xx.xx s	Test OFF/Test ON B1-S1 OK/ B1-S1 n. OK
Indicated	Engine speed (increments of 40 RPM)	Engine load	Time period of HO2S before TWC, bank 1, sensor 1	Diagnostic status Diagnostic result
Range	0-6800 RPM	0.00-12.75 ms	0.00-5.00 s	---
Specified value	1800-2200 RPM	0.80-2.00 ms	0.20-2.10 s	B1-S1 OK

If "B1-S1 n. OK" is indicated in display field 4:

- Check DTC memory ⇒ page 01-16 .

If the specified value "B1-S1 OK" is indicated in

display field 4:

- Continue to hold engine speed at 1800-2200 RPM.

- Press button -3- once to advance to display group number 35.

01-82

System in Basic Setting 35 →

1 2 3 4

Indicated on display (1-4 = display fields)

- Hold engine speed at 1800-2200 RPM until display changes from "Test OFF" to "Test ON" in display field 4.
- Continue to hold at 1800-2200 RPM until specified value "B2-S1 OK" is indicated in display field 4.

	Display fields			
	1	2	3	4
Display group 35: Oxygen sensor aging, Bank 2 (time period of oxygen sensor)				
Display	xxxx RPM	xx.xx ms	xx.xx s	Test OFF/Test ON B2-S1 OK/ B2-S1 n. OK
Indicated	Engine speed (increments of 40 RPM)	Engine load	Time period of HO2S before TWC, bank 2, sensor 1	Diagnostic status Diagnostic result
Range	0-6800 RPM	0.00-12.75 ms	0.00-5.00 s	---
Specified	1800-2200 RPM	0.80-	0.20-2.10 s	B2-S1 OK

value		2.00 ms		

If "B1-S1 n. OK" is indicated in display field 4:

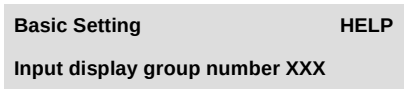
- Check DTC memory ⇒ page 01-16 .

If the specified value "B1-S1 OK" is indicated in display field 4:

- Continue to hold engine speed at 1800-2200 RPM.
- Press -C- button.

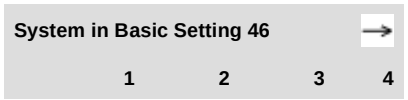
01-83

Step 7: Three Way Catalytic Converter (TWC) diagnosis



Indicated on display

- Press buttons -0-, -4- and -6- to input display group number 46 (046), and press -Q- button to confirm input.



Indicated on display (1-4 = display fields)

- Hold engine speed at 1800-2200 RPM until display changes from "Test OFF" to "Test ON" in display field 4.
- Continue to hold at 1800-2200 RPM until specified value "Cat B1 OK" is indicated in display field 4.

Note:

The test time for TWC diagnosis is approx. 60 seconds.

	Display fields			
	1	2	3	4
Display group 46: Three Way Catalytic Converter (TWC), Bank 1 diagnosis				
Display	x.xx	x	xx.x s	Test OFF/Test ON Cat B1 OK/ Cat B1 n. OK
Indicated	Amplitude ratio	Exceeded diagnosis range	Test time of TWC diagnosis	Diagnostic status Diagnostic result
Range	0.00-1.00	0-9	00.0-60.0	---
Specified value	0.00-0.26	0-2	60.0 s	Cat B1 OK

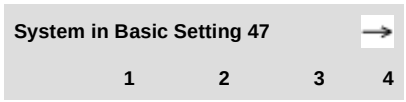
If "Cat B1 n. OK" is indicated in display field 4:

- Check DTC memory ⇒ page 01-16 .

If specified value "Cat B1 OK" is indicated in display field 4:

- Continue to hold engine speed at 1800-2200 RPM.

- Press button -3- once to advance to display group number 47.



< Indicated on display (1-4 = display fields)

01-85

- Hold engine speed at 1800-2200 RPM until display changes from "Test OFF" to "Test ON" in display field 4.

- Continue to hold at 1800-2200 RPM until specified value "Cat B2 OK" is indicated in display field 4.

Note:

The test time for TWC diagnosis is approx. 60 seconds.

	Display fields			
	1	2	3	4
Display group 47: Three Way Catalytic Converter (TWC), Bank 2 diagnosis				
Display	x.xx	x	xx.x s	Test OFF/Test ON Cat B2 OK/ Cat B2 n. OK
Indicated	Amplitude ratio	Exceeded diagnosis range	Test time of TWC diagnosis	Diagnostic status Diagnostic result
Range	0.00-1.00	0-9	00.0-60.0	---
Specified value	0.00-0.26	0-2	60.0 s	Cat B2 OK

If "Cat B2 n. OK" is indicated in display field 4:

- Check DTC memory ⇒ page 01-16 .

If specified value "Cat B2 OK" is indicated in display field 4:

- Press -C- button.

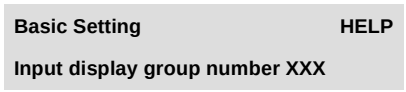
01-86

Step 8: Evaporative Emissions (EVAP) system and fuel tank leak detection

Note:

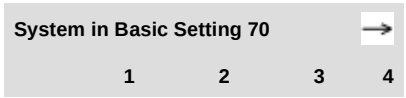
During this diagnosis there should be no engine load, otherwise the diagnosis is interrupted and can only be restarted after pressing the accelerator pedal momentarily.

- Start engine and let run at idle.



➢ Indicated on display

- Press buttons -0-, -7- and -0- to input display group number 70 (070), and press -Q- button to confirm input.



➢ Indicated on display (1-4 = display fields)

If the diagnosis is initiated by the ECM, the display changes from "Test OFF" to "Test ON" in display field 4.

- Let engine continue to run at idle until the specified value "EVAP OK" is indicated in display field 4.

Note:

If the display changes from "Test ON" to "Test OFF" during the diagnosis, briefly accelerate the engine to reset and repeat the test.

01-87

	Display fields			
	1	2	3	4
Display group 70: Evaporative Emissions (EVAP) canister purge regulator valve diagnosis				
Display	xxx %	xx.x %	xx.xx g/s	Test OFF/Test ON EVAP OK/ EVAP n. OK
Indicated	Opening of EVAP canister purge regulator valve during diagnosis	Oxygen sensor control deviation during diagnosis	Idle Air Control (IAC) valve deviation during diagnosis	Diagnostic status Diagnostic result
Range	0 - 100 %	-25.0 to +25.0 %	-2.78 to +2.85 g/s	---
Specified value	0 - 93 %	-15.0 to +15.0 %	-1.00 to 0.00 g/s	EVAP OK

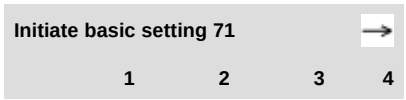
If "EVAP n. OK" is indicated in display field 4:

- Check DTC memory ⇒ page 01-16 .

If the specified value "EVAP OK" is indicated in display field 4:

- Press -3- button to input display group number 71.

01-88



Indicated on display (1-4 = display fields)

- Start engine and let run at idle.

If the diagnosis is initiated by the ECM, the display changes from "Test OFF" to "Test ON" in display field 4.

- Let engine continue to run at idle until the specified value "Syst. OK" is indicated in display field 4.

	Display fields			
	1	2	3	4
Display group 71: Fuel tank leak detection				
Display	Reed op. Reed cl.	Small leak/large leak disconnection	Syst.Test Check Check end	Test OFF/Test ON Syst. OK/ Syst. n.OK
Indicated	Status: Reed contact	Error message	System status	Diagnostic status Diagnostic result
Range	---	---	---	---
Specified value	Reed op.	---	Check end	Syst. OK

01-89

Notes:

If display field 4 changes from "Test ON" to "Test OFF" and "Abort" appears in display field 2, repeat the diagnosis of fuel tank leak detection. Shut the engine off, start the engine again and repeat the leak detection test.

Diagnosis conditions for fuel tank leak detection:

- *Intake Air Temperature (IAT) must be less than 60° C (140° F) ⇒display group 4, display field 4 (the temperature can be reduced by opening the hood).*
- *The throttle valve angle for vehicles with automatic transmissions must be smaller than 10∠° ⇒ display group 3, display field 3*
- *The throttle valve angle for vehicles with manual transmissions must be smaller than 10∠° ⇒ display group 3, display field 3*

If "Syst. n. OK" is indicated in display field 4:

- Check DTC memory ⇒ page 01-16 .

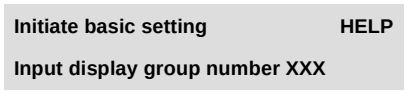
If the specified value "Syst. OK" is indicated in display field 4:

- Press → button.

01-90

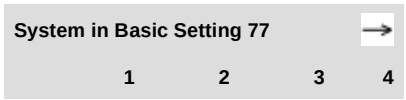
Step 9: Secondary Air Injection (AIR) system diagnosis

- Start engine and let run at idle.



➢ Indicated on display

- Press buttons -0-, -7- and -7- to input display group number 77 (077), and press -Q- button to confirm input.



➢ Indicated on display (1-4 = display fields)

If the diagnosis is initiated by the ECM, the display changes from "Test OFF" to "Test ON" in display field 4.

- Let engine continue to run at idle until the specified value "Syst. OK" is indicated in display field 4.

	Display fields			
	1	2	3	4
Display group 77: Secondary air injection system diagnosis				
Display	xx.x %	xx. x %	xx.x ° C	Test OFF/Test ON Syst. OK/ Syst. n.OK
Indicated	O2S control deviation during diagnostics Bank 1	O2S control deviation during diagnostics Bank 2	Coolant temperature	Diagnostic status Diagnostic result
Range	---	---	-46.5 to +141.5 ° C	---
Specified value	---	---	greater than 70.0 ° C	Syst. OK

If "Syst. n. OK" is indicated in display field 4:

- Check DTC memory ⇒ page 01-16 .

If the specified value "Syst. OK" is indicated in display field 4:

- Press → button.

Step 10: Check readiness code

- Check readiness code ⇒ page 01-70 .