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 VAG 1598/22 test box)*
- *When the battery is disconnected*

Required special tools and test equipment

- VAG 1551 Scan Tool (ST) with adapter cable VAG 1551/3

Checking

- Connect VAG 1551/ VAG 1552 Scan Tool (ST) and press buttons -0- and -1- to insert "Engine Electronics" address word 01 (with ignition switched on) ⇒ Page 01-7 .

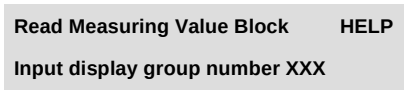
Rapid data transfer HELP

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.

01-60



Indicated on display

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

Indicated on display (1-4 = display fields)

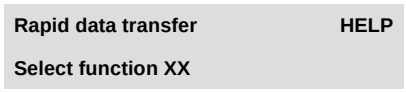
- Check readiness code values in display field 1.

  Specified value: 00000000

Note:

The readiness code is generated as soon as only zeros ("0") are shown in display field 1.

- Press →button to advance program sequence.



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 01-62 .

- Check readiness code ⇒ Page 01-59 . If DTC memory has been erased, or ECM has been disconnected from B+, generate readiness code again ⇒ Page 01-62 .

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 (not applicable / always "0")
			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")

01-62

Readiness code, generating

Required special tools and test equipment

- VAG 1551 Scan Tool (ST) with adapter cable VAG 1551/3

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 VAG 1551/ VAG 1552 Scan Tool (ST) and press buttons -0- and -1- to insert "Engine Electronics" address word 01 (with ignition switched on) ⇒ Page 01-7 .

01-63

Step 1: Check DTC memory

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

- Press buttons -0- and -2- to select the "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.
- Check DTC memory again and erase.

If no DTCs were recognized:

- Press →button to advance program sequence.

01-64

Step 2: Erase DTC memory

Rapid data transfer **HELP** **Select function XX**	Indicated on display - Press buttons -0- and -5- to select the "Erase DTC Memory" function 05, and press -Q- button to confirm input.

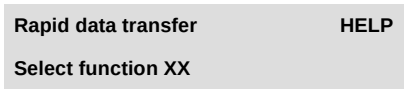
Note:

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

Rapid data transfer → **DTC Memory is erased**	Indicated on display - Press → button to advance program sequence.

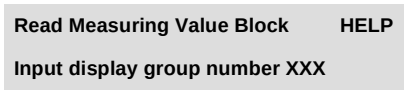
01-65

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.

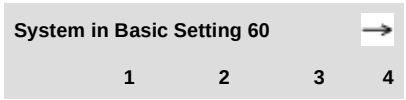


Indicated on display

- Press buttons -0-, -6- and -0- to input display group number 60, 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)

- Check specified values in display fields 3 and 4:

01-66

	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 valve actuator angle	Operational status	Adaptation status
Specified value	---	---	Idle	ADP. OK

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

- Check DTC memory ⇒ Page 01-15 .

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

- Press →button to advance program sequence.

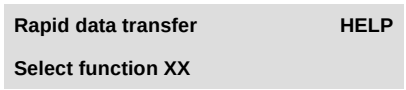
01-67

Step 4:

- Start engine and let run at idle.

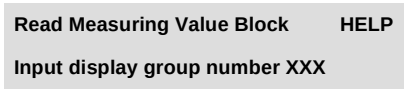
01-68

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, 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 of "111" is reached in display field 1
  - Specified value of "110" is reached in display field 2

01-69

	Display fields			
	1	2	3	4
Display group 30: Oxygen Sensor (O2S) control operating condition				
Display	xxx	xxx		
Indicated	Status of Heated Oxygen Sensor (HO2S), bank 1, before TWC (B1-S1)	Status of Heated Oxygen Sensor (HO2S), bank 1, after TWC (B1-S2)		
Specified value	111	110	---	---
	Evaluation ⇒ Page 01-70	Evaluation ⇒ Page 01-70		

If the specified values are not indicated:

- Check DTC memory ⇒ Page 01-15 .

If the specified values are indicated in display fields 1 and 2:

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

01-70

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

Note:

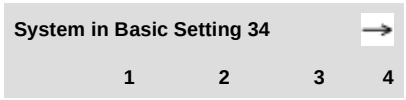
O2S control for bank 1 Oxygen Sensor (O2S) after Three Way Catalytic Converter (TWC), B1-S2), is not active at idle.

01-71

Step 6: Oxygen sensor aging (time period)

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

- Press -3- button 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.
- Continue to hold at 1800-2200 RPM until specified value "B1-S1. OK" is indicated in display field 4.

01-72

	Display fields			
	1	2	3	4
Display group 34: Oxygen sensor aging (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 Heated Oxygen Sensor (O2S) before TWC	Diagnostic status Diagnostic result
Range	0-6800 RPM	0.00-8.50 ms	0.00-5.00 s	---
Specified value	1800-2200 RPM	0.80-2.00 ms	0.00-3.30 s	B1-S1 OK

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

- Check DTC memory ⇒ Page 01-15 .

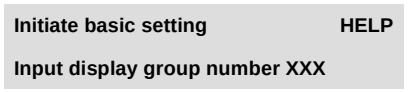
If the specified value "B1-S1 OK" is indicated in display field 4:

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

- Press -C- button.

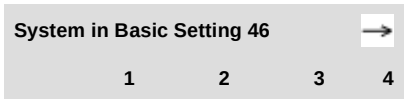
01-73

Step 7: Three Way Catalytic Converter (TWC) diagnosis



Indicated on display

- Press buttons -0-, -4- and -6- to input display group number 46, 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.

01-74

	Display fields			
	1	2	3	4
Display group 46: Three Way Catalytic Converter (TWC) 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	0.00-0.10	0-2	60.0 s	Cat B1 OK

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

- Check DTC memory ⇒ Page 01-15 .

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

- Press -C- button.

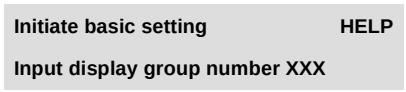
01-75

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

Note:

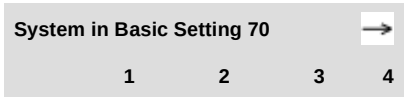
During this diagnosis there should be no engine load, otherwise the diagnosis is interrupted and can only be restarted after a period of acceleration.

- Start engine and let run at idle.



Indicated on display

- Press buttons -0-, -7- and -0- to input display group number 70, 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.

01-76

	Display fields			
	1	2	3	4
Display group 70: Evaporative Emissions (EVAP) canister purge regulator valve				
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	Oxygen sensor control deviation during diagnosis	Diagnostic status Diagnostic result
Range	0-100 %	-25.0 to 25.0 %	-2.70 to 4.16 g/s	---
Specified value	0-100 %	- 5.4 to 9.4 %	0.00 to 0.33 g/s	EVAP OK

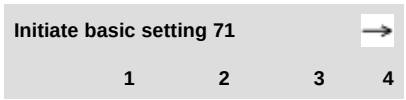
If "EVAP n. OK" is indicated in display field 4:

- Check DTC memory ⇒ Page 01-15 .

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

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

01-77



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 determination	Syst.Test Measurement Measurement 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.	---	Measurement end	Syst. OK

01-78

Note:

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. Repeating the diagnosis can take up to approx. 60 seconds until the display changes from "Test OFF" to "Test ON"in display field 4.

Diagnosis conditions for fuel tank leak detection:

- *Intake Air Temperature (IAT) must be less than 90° C (194° F) ⇒Display group 4, display field 4*
- *Engine Coolant Temperature (ECT) must be less than 95° C (203° F) ⇒ Display group 4, display field 3*
- *Throttle valve angle 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 01-15 .

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

- Press →button to advance program

sequence.

Step 9: Check readiness code

- Check readiness code ⇒ Page 01-59 .