



Important!

Please give copies to all your VW Technicians

Technical Bulletin

Subject: Engine Coolant Temperature (ECT) Sensor -G62-
Checking

Group: 24

Number: 04-04

Model(s): See Table

1999 ▶ 2005

Date: Nov. 9, 2004

Service

Use the following when ECT or cooling system faults are present in fault memory.

Applies to vehicle and engine codes listed in the table below.

Vehicle	Eng. Size	Eng. Code	Measuring Block	VAG Test Box	ECT Terminal to Test Socket
Golf, Jetta, NB	2.0	AVH, AZG, BDC, BEV, BGD, BBW	4 - channel 3	1598/31	3 to 93 and 4 to 108
NB	1.8T	AWV, AWP, BKF, BNU	4 - channel 3	1598/31	3 to 93 and 4 to 108
Golf, Jetta	1.8T	AWD, AWP, AWW	4 - channel 3	1598/31	3 to 93 and 4 to 108
Golf, Jetta	2.8	AFP 9M_X_085415>	4 - channel 3	1598/31	3 to 93 and 4 to 108
Golf, Jetta	2.8	BDF	4 - channel 3	1598/31	3 to 93 and 4 to 108
R32	3.2	BJS	4 - channel 3	1598/31	3 to 93 and 4 to 108
Eurovan	2.8	AXK	4 - channel 3	1598/31	3 to 93 and 4 to 108
Passat	1.8T	ATW, AUG, AWM	4 - channel 3	1598/31	3 to 108 and 4 to 93
Passat	2.8	ATQ	4 - channel 3	1598/31	3 to 108 and 4 to 93
Golf, Jetta, NB	1.9	ALH as of M.Y. 2000	7 - channel 4	1598/31	3 to 112 and 4 to 104
Golf, Jetta, NB	1.9PD	BEW	7 - channel 4	1598/42 + Adaptor 1598/39-1 and 1598/39-2	3 to 52 and 4 to 53
Passat	2.0 PD	BHW	7 - channel 4	1598/42 + Adaptor 1598/39-1 and 1598/39-2	3 to 52 and 4 to 53

Engine Coolant Temperature (ECT) sensor, checking

WARNING: *The cooling system is under pressure. Danger of scalding when opening! Allow engine to cool before opening cooling system.*

Important!

Do not use this procedure or replace Engine Coolant Temperature sensor -G62- if no fault codes are stored or fault codes unrelated to coolant system are present. Check vehicle history - if Engine Coolant Temperature sensor -G62- has already been replaced, it is not likely to be defective.

Important!

Before completing repair, refer to note on page 13 about fault code information and other possible causes.

Note:

The Engine Control Module (ECM) will use a replacement temperature value for an engine start as soon as there is a DTC stored in the DTC memory which affects the Engine Coolant Temperature (ECT) sensor -G62-. The temperature then rises according to a model stored in the ECM. When the engine has reached normal working temperature a fixed replacement value will be displayed after a certain period. This fixed value is also dependent on intake air temperature.

Note:

Only gold-plated terminals must be used to repair the terminals in the connector for the Engine Coolant Temperature (ECT) sensor.

Special tools and equipment

- ◆ VAS 5051 Diagnostic Tool or vehicle system tester VAS 5052
- ◆ VAG Test box (See table on page 1 for correct test box)
- ◆ Hand multimeter VAG 1526 or multimeter VAG 1715 or equivalent
- ◆ Test instrument adapter VAS 5258
- ◆ Test Adapter set VAG 1594C
- ◆ Appropriate wiring diagram

Checking conditions

- Respective fuses of Motronic Engine Control Module (ECM) -J220- must be OK. See Electrical Wiring Diagrams, Troubleshooting and Component Locations.
- Parking brake must be engaged or daylight running lights will be switched ON.
- For vehicles with automatic transmission, selector lever must be in Park position.
- Ground connections between engine and chassis must be OK.

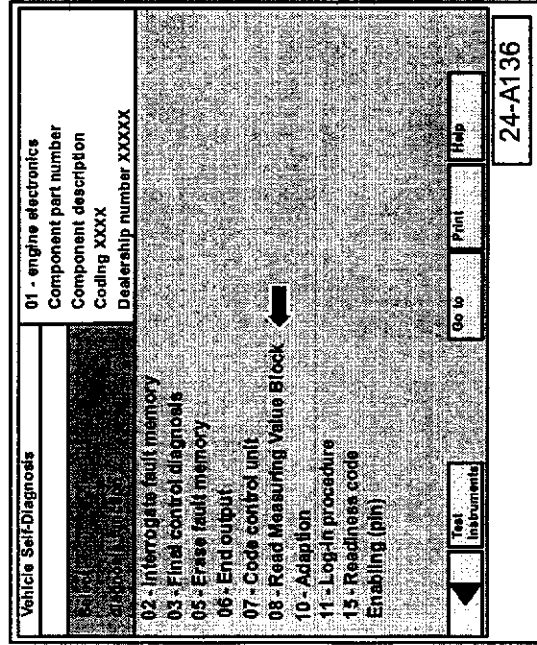
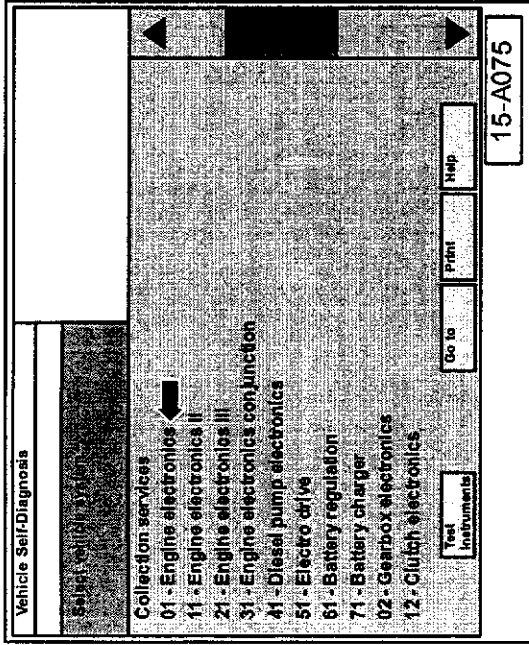
- Engine must be cold (50°C maximum).
- Battery must be fully charged and in good condition.

Test sequence

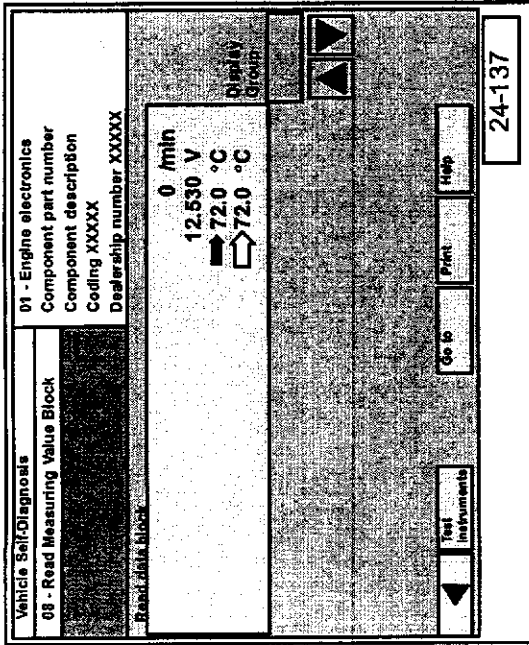
Note:

While following tests in this Technical Bulletin, always visually inspect terminals of electrical connectors for damage, corrosion and secure fit. Replace if necessary.

- Connect VAS 5051/5052 diagnostic tool.
- Switch ignition ON.
- Select "Vehicle Self-Diagnosis".
- Select vehicle system "01 - Engine electronics".



- Select diagnosis function "08 - Read Measuring Value Block".
- Input "4" on keypad to select "Display group 4" or "7" for "Display group 7" (as indicated in table) and
- Confirm with "Q" button.



- Read coolant temperature value in "Field 3" (black arrow) or "Field 4" (white arrow) as applicable in table on page 1.

Specification: approx. coolant temperature

If the specification is not obtained:

- Perform check according to following table:

Display ¹⁾	Cause	Continuation of check
Approx. -40°C	Open circuit or short to positive	⇒ See Page 6 of this Technical Bulletin
Approx. 140°C	Short to Ground	⇒ See Page 8 of this Technical Bulletin

¹⁾ If a temperature is displayed which deviates greatly from the ambient temperature of the sensor; G62 sensor or it's wiring have high resistance or a short to B+.

While observing the displayed temperature, gently wiggle ECT connector. If display fluctuates by more than 3°, replace ECT sensor. If sensor was replaced, repeat wiggle test. If temperature still fluctuates more than 3°, replace connectors.

Note:

Refer to component locations in VESIS for location of ECT sensor -G62-

Continued:

- Start engine and run at idling speed. Observe temperature value for uniform consistent increase until 85 °C is attained.

Note:

- ◆ The temperature rises in steps of 1.0 °C.
- ◆ Temperature may drop slightly as thermostat opens. This is normal.
- ◆ If irregular engine running occurs in certain temperature ranges or the temperature figure changes erratically, the temperature signal is temporarily interrupted and the sensor must be replaced.

- Select backward arrow ◀ on navigation bar.

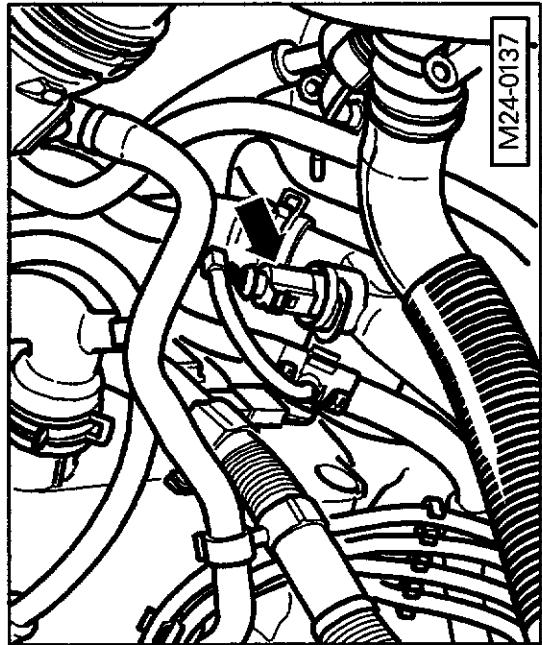
- Select diagnosis function "06 - End output".

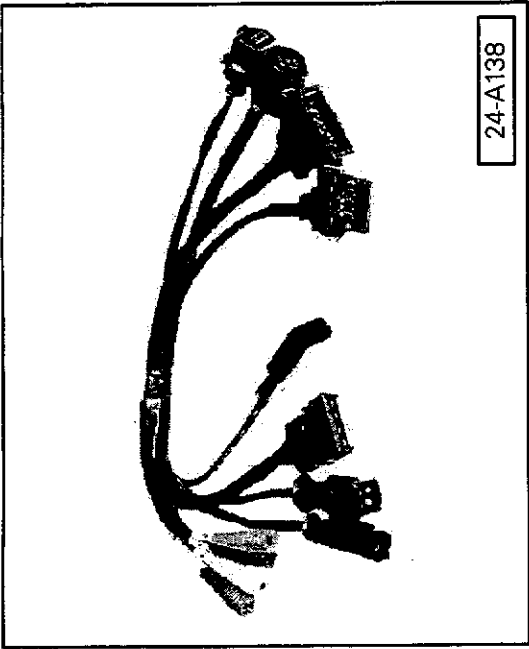
Note

If temperature display rises uniformly and all specifications are normal, see "G62 Resistance Measurement" (page 12).

Continuation of check when display approx. -40°C:

- Pull 4-pin connector from Engine Coolant Temperature (ECT) sensor -G62- with ECT sensor -G2- -arrow-





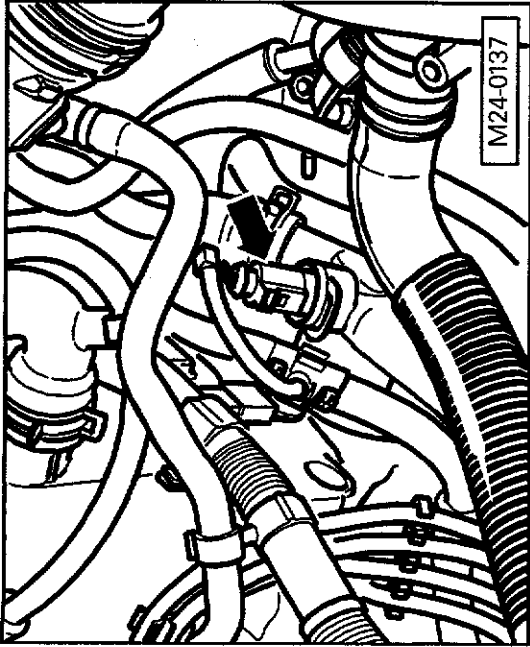
- Connect VAS 5258 to 4 pin -G62- connector from vehicle engine harness. ECT sensor remains disconnected.
- Bridge VAS 5258 test probes 3 + 4 using auxiliary cables from VAG 1594C and observe display.

If display jumps to approx. 140°C:

- Select backward arrow ◀ on navigation bar.
- Select diagnosis function "06 - End output".
- Switch ignition OFF.
- Replace Engine Coolant Temperature (ECT) sensor -G62-.
- Check DTC memory, if necessary, repair any malfunctions and then erase DTC memory.
- Read readiness code. If DTC memory has been erased, readiness code must be generated again.

If display remains at approx. -40°C:

- Select backward arrow ◀ on navigation bar.
- Select diagnosis function "06 - End output".



- Switch ignition OFF.
- Proceed to checking wiring on page 9.

Continuation of check when display approx. 140°C:

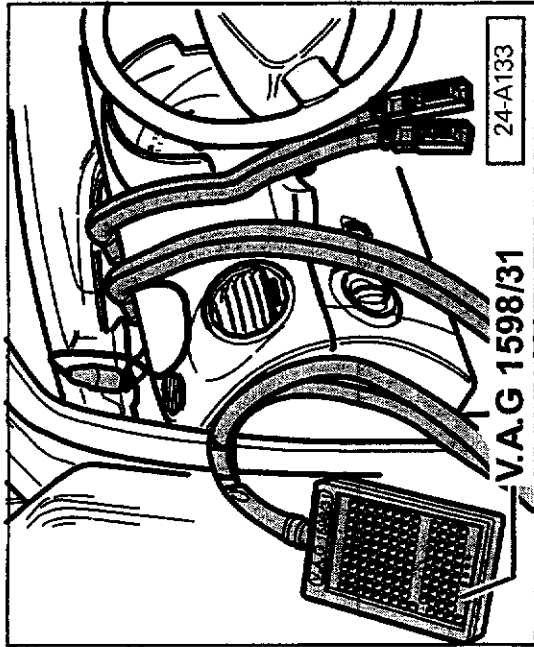
- Disconnect 4-pin connector from Engine Coolant Temperature (ECT) sensor -G62- with ECT sensor -G2- -arrow-

If display jumps to approx. -40°C:

- Select backward arrow ◀ on navigation bar.
- Select diagnosis function "06 - End output".
- Switch ignition OFF.
- Replace Engine Coolant Temperature (ECT) sensor -G62-/ECT sensor -G2-.
- Check DTC memory, if necessary, repair any malfunctions and then erase DTC memory.
- Read readiness code. If DTC memory has been erased, readiness code must be generated again.

If display remains at approx. 140°C:

- Select backward arrow ◀ on navigation bar.
- Select diagnosis function "06 - End output".
- Switch ignition OFF.



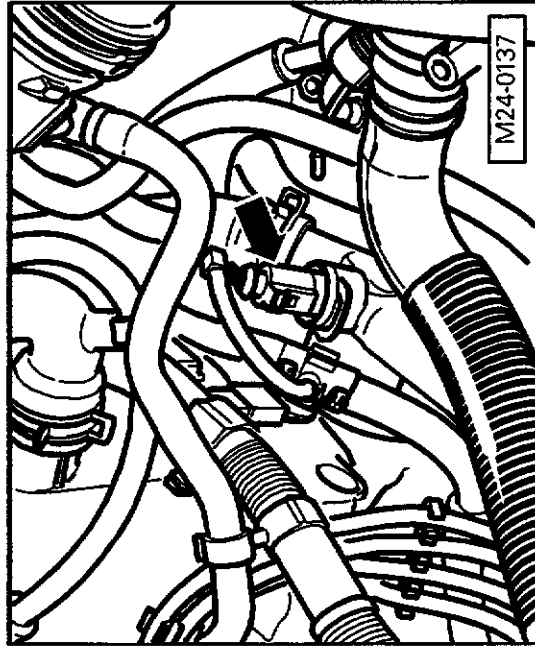
- Proceed to checking wiring.

Checking wiring

Note

Refer to applicable *Repair Manual* section for instructions regarding engine or diesel control module access.

- Connect correct VAG 1598 test box according to table on page 1, to control module wiring harness. Engine control module is not connected by this action.



- Disconnect 4-pin connector from Engine Coolant Temperature (ECT) sensor -G62- with ECT sensor -G2- -arrow-.
- Connect VAS 5258 connector to 4 pin -G62- connector from vehicle engine harness. ECT sensor remains disconnected.

Note:

For all engines except TDI and Passat.

- Check wire for open circuit between VAG 1598 test box and VAS 5258 according to wiring diagram.
- ◆ VAS 5258 probe 3 + Socket 93
- ◆ VAS 5258 probe 4 + Socket 108

Wire resistance: max. 1.5 Ω

Note:

For Passat with engine codes: ATW, AUG, AWM, ATQ.

- Check wires between VAG 1598 test box and VAS5258 for open circuit according to wiring diagram.
- ◆ VAS 5258 probe 3 + Socket 108
- ◆ VAS 5258 probe 4 + Socket 93

Wire resistance: max. 1.5 Ω

Note:

For TDI with engine code ALH.

- Check wires between VAG 1598 test box and VAS 5258 for open circuit using wiring diagram.
- ◆ VAS 5258 probe 3 + Socket 112
- ◆ VAS 5258 probe 4 + Socket 104

Wire resistance: max. 1.5 Ω

Note:

For TDI-PD vehicle with engine codes BEW, BHW.

- Connect adapter cable (VAG 1598/39-1 and 1598/39-2) to test box (VAG 1598/42).
- Check wires between VAG 1598 test box and VAS 5258 for open circuit according to wiring diagram.
- ◆ VAS 5258 probe 3 + Socket 52
- ◆ VAS 5258 probe 4 + Socket 53

Wire resistance: max. 1.5 Ω

Note:

Continued for all vehicles.

- Using probes 3 and 4 of VAS 5258, check wires for short circuit to each other, to vehicle Ground (GND) and to B+.

Specification: $\infty\Omega$

- Disconnect VAS 5258 from engine harness.

If wiring malfunctions are detected:

- Locate problem using wiring diagram and repair using VAS 1978 repair kit.

If no wiring malfunctions are detected:

- Proceed to "G62 Resistance Measurement"

G62 Resistance Measurement

Note:

If -G62- sensor was already replaced in preceding steps, skip this step and continue to second read readiness code step on page 13.

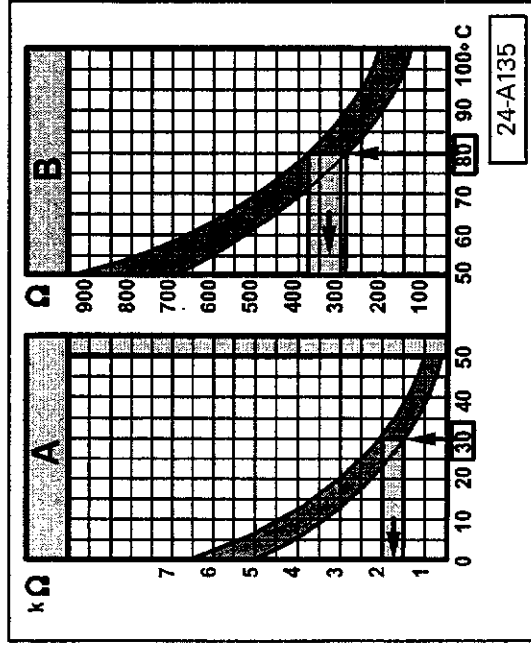
Perform resistance measurement on Engine Coolant Temperature (ECT) sensor.

- Connect correct VAS 5258 connector to ECT sensor.
- Disconnect VAS 5258 from engine harness.
- Connect multimeter to VAS 5258 test probes 3 and 4.

Scale A shows resistance values for temperature range 0-50°C and scale B the values for temperature range 50-100°C.

Examples:

- ◆ 30°C corresponds to a resistance from 1.5 to 2.0 k Ω



- ◆ 80°C corresponds to a resistance from 275 to 375 Ω

If the specification is not obtained:

- Replace Engine Coolant Temperature (ECT) sensor -G62-
- Check DTC memory, if necessary, repair any malfunctions and then erase DTC memory.
- Read readiness code. If DTC memory has been erased, readiness code must be generated.

If there is no malfunction in the wiring and the resistance measurement values are OK:

- Replace coolant temperature sensor.
- Read readiness code. If DTC memory has been erased, readiness code must be generated.

Note:

If DTCs P1296, P2181, P0128 or P3081 are occurring without electrical faults (P0116-P0118) and all preceding steps have been carried out, including replacement of engine coolant temperature sensor -G62- and it's contacts, check thermostat and cooling system for proper operation. Also assure that if the vehicle is equipped with a fan control unit, that the number is correct for that vehicle. See ETKA for the latest information.