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BLINK FAULT CODE DIAGNOSTIC REFERENCE
for
VOLKSWAGEN & AUDI
(USA only)

Volkswagen and Audi models, beginning with production year 1988 thru 1995, utilize a system of blink codes for injection, ignition and emissions fault diagnosis. These faults can be easily read with a simple set of tools and this document.

The tools needed consist of a simple LED test light (this is not needed if the vehicle is equipped with a CHECK ENGINE light) and a small jumper wire. (Jumper wires are normally sold in pairs. One can be used to construct the test light below if needed.)

The test light (if needed) can be constructed with an LED, a 330 ohm 1/4 watt resistor and a jumper wire with alligator clips at each end.

1) Solder the resistor to the ground (-) side of the LED.
2) Cut the jumper wire into 2 pieces (make one slightly longer than the other).
3) Solder the shorter of the 2 wires to the resistor and the other to the Positive side of the LED.
4) Insulate between the LED leads and at the solder joints with some electrical tape or shrink wrap tubing.

CAUTIONIf the car is equipped with an Anti-Theft radio do not do any tests on the electrical system without knowing the radio codes.

TESTING PROCEDURE

1988-90 / 4 cylinder / 50 state models - These models have a test connection near the fire wall or directly behind the air sensor plate.
1988 / 5 cylinder / California models - Records permanent faults.
1988 / 5 cylinder / 49 state models - Does not record permanent faults.

The test light should be connected to the POSITIVE (+) side of the battery and this test plug. The light

should now be on, if not reverse the wires. California models will flash the CHECK ENGINE LIGHT for
this test.

Turn the ignition to ON but do not start the engine.

Insert a spare fuse or insert the jumper wire into the fuel pump relay for at least 4 seconds, then remove.

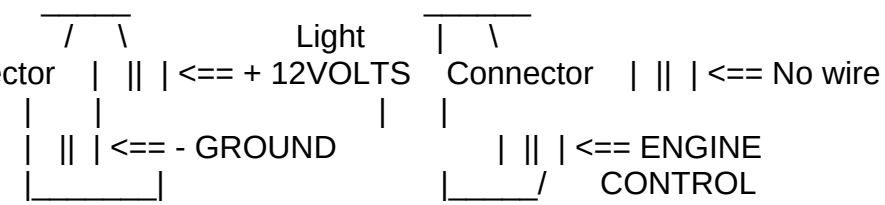
The beginning of the fault code sequence is a single flash followed by a 2.5 second pause. The next
flash series is the first fault code.

Fault codes consist of 4 digits
-1st digit evenly spaced flashes, 2.5sec OFF
-2nd digit evenly spaced flashes, 2.5sec OFF
-3rd digit evenly spaced flashes, 2.5sec OFF
-4th digit evenly spaced flashes, 2.5sec OFF

Each 4 digit code will keep repeating until the fuse is inserted in the fuel pump relay again. When you
remove the fuse the second time the next fault code will flash, this will continue until you insert the fuse
again.

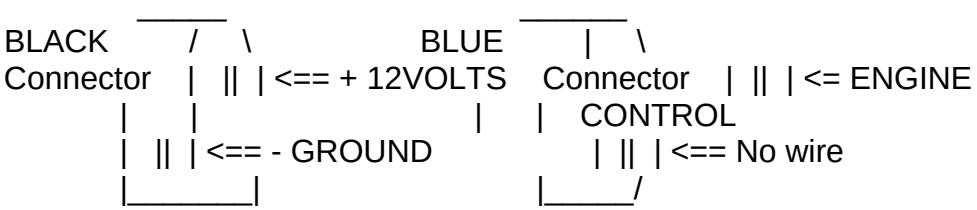
The end-of-fault display is signaled by a 2.5 second ON light then 2.5 seconds OFF. This is known as
code 0000 and will continue until the ignition is turned off.

1989-March 1990 / 5 cylinder / 49 state and California models - These models have the two (2) test
connectors in the drivers side footwell or in the engine compartment near the fuel pump relay. One
connector is dark colored and one is light.



March 1990 to 1993 / 4,5,6 and 8 cylinder - These models have the three (3) test connectors under the

shift column boot or above the pedals on the drivers side footwell. One connector is black, one is brown
and one is blue. The BLACK connector is power, the TAN or WHITE connector is for the factory fault
code reader #1551, 1552 or other data stream diagnostic scanners and the BLUE connector is for blink
code output.



Connect the test light (if no CHECK ENGINE LIGHT is present) between the +12VOLTS and the
ENGINE CONTROL.

Using the jumper wire connect the - ground to the ENGINE CONTROL for at least 4 seconds then
disconnect.

The beginning of the fault code sequence is a single flash of the CHECK ENGINE LIGHT or test light
followed by a 2.5 second pause. The next flash series is the first fault code.

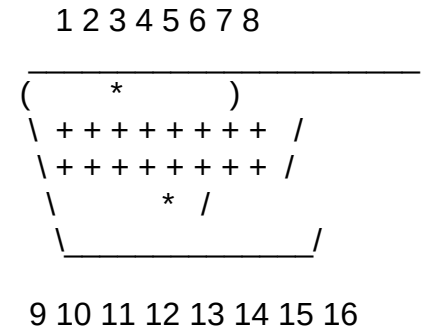
Fault codes consist of 4 digits
-1st digit evenly spaced flashes, 2.5sec OFF
-2nd digit evenly spaced flashes, 2.5sec OFF
-3rd digit evenly spaced flashes, 2.5sec OFF
-4th digit evenly spaced flashes, 2.5sec OFF

Each 4 digit code will keep repeating until the jumper is inserted again. When you remove the jumper
the second time the next fault code will flash, this will continue until you insert the jumper again.

The end-of-fault display is signaled by a 2.5 second ON light then 2.5 seconds OFF. This is known as
code 0000 and will continue until the ignition is turned off.

1994-1995 / All makes and models - All vehicles are now equipped with the OBD-II connector found in
the center console, in the transmission shift housing or near the steering column. It can be recognized by

the symbol OBD or the picture of an engine with a lightning bolt through it. Blink codes are no longer
used after model year 1995. Use the factory diagnostic tool VAG1551, 1552 or VDS-PRO



Using the jumper wire connect the - ground to the ENGINE CONTROL or jumper the OBD-II connector
between pin 4 (ground) and pin 15 (L-line) for at least 4 seconds then disconnect.

Read the code as a series of blinks of the CHECK ENGINE light. The beginning of the fault code
sequence is a single flash followed by a 2.5 second pause. The next flash series is the first fault code.

Fault codes consist of 4 digits
- -1st digit evenly spaced flashes, 2.5sec OFF
- -2nd digit evenly spaced flashes, 2.5sec OFF
- -3rd digit evenly spaced flashes, 2.5sec OFF
- -4th digit evenly spaced flashes, 2.5sec OFF

Each 4 digit code will keep repeating until the jumper is inserted again. When you remove the jumper
the second time the next fault code will flash, this will continue until you insert the jumper again.

The end-of-fault display is signaled by a 2.5 second ON light then 2.5 seconds OFF. This is known as
code 0000 and will continue until the ignition is turned off.

CODE FAULT
0000 End of fault sequence
1111 Bad ground to Electronic Control Unit (ECU) or ECU failure-check grounds or replace ECU
1119 Transmission Range - Defective wiring. Check for break or short.

1213 Vehicle Speed Sensor (VSS) - Check transmission speed sender wiring and the wiring of the
instrument cluster
1231 Vehicle Speed Sensor (VSS) (G54) - Check transmission speed sender wiring and the wiring of
the instrument cluster
1232 Throttle Position Actuator - Check defective actuator or wiring for break or short.
2111 Engine speed sender. (RPM)
2112 Ignition reference sender
2113 Hall sender - No speed signal from distributor; check Hall sensor and circuits or the Air-flow
sensor plate is not moving freely; adjust potentiometer or lever.
2114 Hall sender not on reference point or distributor out of position.
2121 Idle switch - check switch & circuit.
2122 Hall sender - Check wiring for break or short.
2123 Full throttle switch; check switch & circuit.
2132 Electronic Control Module (ECM) - No ignition to injection signal.
2141 Knock sensor 1 control at maximum retard - test compression, change octane, adjust timing,
check knock-sensor wires.
2142 Knock sensor 1 signal - Test sensor, check wiring for break or short.
2143 Knock sensor 2 control at maximum retard - test compression, change octane, adjust timing,
check knock-sensor wires.
2144 Knock sensor 2 signal; test sensor.
2212 Throttle Potentiometer - Value out of range.
2214 RPM Signal - Idle speed to high or engine over-revved
2221 Vacuum Control - No vacuum to control unit. Check for leaks.
2222 Manifold Vacuum - Check vacuum line and wastegate for leaks. Pressure sensor - Sensor
defective
2223 Altitude Sensor - Check sensor, check wiring for break or short.
2224 Turbo/Manifold pressure - Check turbo control wiring, check for over boost, air leak, defective
wastegate valve, vacuum leak or defective pressure sensor.
2231 Idle-speed stabilizer adjustment limits exceeded; too-fast idle. Adjust throttle for full closing,
check for vacuum leak, check ignition timing Or Air Mass Sensor - Check sensor and wiring.
2232 Air mass/flow sensor - No signal. Check wiring for break or short.
2233 Air mass/flow sensor reference voltage open or short circuit
2234 ECM Supply voltage low.
2242 CO-potentiometer voltage low
2312 Coolant temperature sensor - Check wiring, check resistance.

2314 Transmission to Engine control module circuit. - Check wires for breaks or shorts.
2322 Intake Air Temperature Sensor - Check sensor and wiring.
2323 Mass Airflow Sensor - Check sensor and wiring for breaks.
2324 Mass Airflow Sensor - Check sensor and wiring for breaks or shorts to B+ or ground or check for
air leak.
2331 Oxygen Sensor Control - Out of range. - Check ignition, air intake for leaks and injectors.
2332 Oxygen Sensor - Bank 2 - Check wiring for breaks or shorts.
2341 Oxygen sensor (O2) at control limit; check CO, lambda-sensor wire, lambda-sensor control,
start valve, evaporative system and check for vacuum leaks.
2342 Oxygen Sensor Control - no signal - Check wiring, sensor.
2343 Rich limit; the pressure regulator has exceeded +10 mA for more than 5 minutes, closed-loop;
check for vacuum leaks.
2344 Lean limit; the pressure actuator has exceeded -5mA for more than 5 minutes, closed loop;
check idle.
2411 EGR System Malfunction
2412 Intake Air Temperature Sensor - Check sensor and wiring for breaks or shorts
2413 Mixture Control - Running rich Fuel pressure too low
3424 Malfunction Indicator Lamp (MIL) failure - Check lamp and wiring.
4311 Secondary Air Injection Pump Relay - Check relay and wiring.
4312 EGR Frequency Valve
4313 Secondary Air Injection Solenoid Valve - Check valve and wiring.
4331 EVAP Carbon Canister Solenoid Purge Valve 2
4332 Ignition Circuit Final Stage - Check for break or short to ground or B+ or bad ECM.
4343 EVAP Carbon Canister Solenoid Purge Valve 1
4411 Fuel Injector Cylinder 1 or 1 & 5
4412 Fuel Injector Cylinder 2 or 2 & 7
4413 Fuel Injector Cylinder 3 or 3 & 6
4414 Fuel Injector Cylinder 4 or 4 & 8
4421 Fuel Injector Cylinder 5
4422 Fuel Injector Cylinder 6
4423 Fuel Injector Cylinder 7
4424 Fuel Injector Cylinder 8
4431 Idle Air Control Valve / Idle Stabilizer - Check valve and wiring.
4433 Fuel Pump Relay
4442 Wastegate - Defective frequency valve or wiring. Boost pressure circuit - Check for short.
4443 EVAP Canister purge valve.
4444 No fault in system.

To erase KE3-Jetronic permanent faults

1) Turn ignition OFF
2) Insert fuse/jumper
3) Turn ignition ON
4) After 4 seconds remove fuse/jumper
5) Insert, remove fuse/jumper 3 times until light flashes 4444
6) Insert fuse/jumper
7) After 4 seconds, remove fuse/jumper, end-of-fault should display
8) Insert fuse/jumper, after 10 seconds, remove fuse/jumper.

To erase KE-Motronic/Motronic permanent faults

1) Turn ignition OFF
2) Insert jumper
3) Turn ignition ON
4) After 4 seconds remove jumper, end-of-fault should display
5) Insert jumper, after 10 seconds, remove jumper.