

**SUBJECT****Instrument Cluster Outside Temperature Display Implausible****MODEL**

F22 (2 Series Coupe)

F23 (2 Series Convertible)

F30 (3 Series Sedan)

F31 (3 Series Wagon)

F34 (3 Series GT)

F80 (M3 Sedan)

F32 (4 Series Coupe)

F33 (4 Series Convertible)

F36 (4 Series GT)

F82 (M4 Coupe)

F83 (M4 Convertible)

F07 (5 Series GT)

F10 (5 Series Sedan)

F06 (6 Series Gran Coupe)

F12 (6 Series Convertible)

F13 (6 Series Coupe)

F01 (7 Series Sedan)

F02 (7 Series LWB Sedan)

F04 (7 Series Hybrid Sedan)

F25 (X3)

F26 (X4)

F15 (X5)

F85 (X5 M)

F16 (X6)

F86 (X6 M)

SITUATION

In the Instrument Cluster (Kombi) display you may observe an implausible outside temperature reading.

The display can show:

1. An outside temperature that is too high or too low while the vehicle is stationary
2. Temperature reading of -40° F
3. Temperature reading of +122° F
4. A constantly too low temperature reading under all operating conditions
5. A constantly too high temperature reading under all operating conditions
6. The kombi may set fault code 931B

CAUSE

There are multiple possible causes for these readings:

1. The temperature reading is not live, it has a built in time delay
2. The harness between the outside temperature sensor and the kombi is open or the connector is unplugged at the outside temperature sensor
3. The harness between the outside temperature sensor and the Kombi is shorted to ground.
4. Excessive resistance in the harness between the outside temperature sensor and the kombi
5. Outside temperature sensor is faulty
6. Fault code 931B can set for an open circuit, or a short circuit between the outside temperature sensor and the Kombi. If the harness shorts to battery voltage this can permanently damage the kombi.

DIAGNOSTIC HINTS

For each of the listed situations & causes:

1. The Kombi has a built in time delay for this temperature sensor circuit. The temperature display will gradually change over time to reflect the current sensor reading. When a vehicle is stationary the temperature sensor is primarily reading the ground temperature and may not accurately reflect the outside temperature. The temperature sensor is most accurate while

traveling at road speeds of 50 MPH or higher. If you want an immediate reading of the temperature sensor perform a Software reset in the Kombi test function.

2. Check that the temperature sensor is properly installed, that the harness is firmly seated into the temperature sensor, and that the harness is not damaged under the vehicle. First perform a resistance check at the kombi of the entire circuit. Make sure the resistance is plausible for the outside temperature, see chart below. Do a resistance check of each of the sensor wires between the outside temperature sensor and the Kombi with the circuit unplugged at either end. Repair any harness damage that is found.
3. Perform a resistance check at the kombi of the entire circuit. Make sure the resistance is plausible for the outside temperature, see chart below. Do a resistance check of each of the sensor wires between the outside temperature sensor and the Kombi with the circuit unplugged at either end. Locate the area of the harness short and repair any damage that is found.
4. Check the temperature sensor electrical connector for corrosion, road salt contamination or damaged pins. Clean electrical contacts. Exchange the temperature sensor from a known working vehicle for testing. If that is effective then replace the sensor or electrical connector as needed.
5. Exchange the temperature sensor from a known working vehicle for testing.
6. When fault code 931B is set:
 - o Work through the test plan
 - o Do not install another kombi for testing. If the harness was shorted to battery voltage it will damage the new kombi immediately.
 - o Disconnect the harness at the temperature sensor and at the kombi. Measure resistance of each line. Check for shorts to ground, battery voltage or a short between the two wires in the harness.

Here is a general range of temperature vs resistance readings

Outside temperature in Degrees Fahrenheit	Resistance value of the temperature sensor
32° F	16,116 - 16,530 ohms
50° F	9,853 – 10,045 ohms
68° F	6,166 – 6,322 ohms
77° F	4,930 – 5,067 ohms
86° F	3,969 – 4,087 ohms
104° F	2,618 – 2,708 ohms

WARRANTY INFORMATION

This service information bulletin provides technical, diagnostic and/or repair-related information.

Eligible and Covered Work/Repairs

To submit a claim for the repair of a verified defect in materials or workmanship, please following the established and applicable warranty policy and procedures together with the using corresponding defect code and labor operations provided in the KSD2.

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