This Service Information bulletins supersedes S.I. 16 04 98 dated January 1999.

Changes to this revision are identified by a black bar.

SUBJECT — Fuel Level Sensor Gives False Resistance Readings

MODEL E31, E32, E34, E36 (including Z3), E38, E39, E46, E52, E53

SITUATION A fuel level sensor unit has open circuit, or high resistance when tested out of the vehicle.

CAUSE

1. Replacement fuel level sensors are oiled to prevent contact corrosion. If a replacement fuel level sensor is tested prior to vehicle installation, dust particles which are attracted to the oiled surface, may falsely indicate an open circuit or high resistance condition, as the float arm is moved through its operating range.
2. When a multimeter on "Auto" range is used to test a fuel level sender's resistance, the multimeter momentarily shows an "out of range" display as the fuel sender's float arm is moved through its operating range. This is caused by the meter switching between ranges, but can be misinterpreted as a momentary open circuit in the fuel level sensor.

CORRECTION

1. Clean the resistor card prior to testing a replacement fuel level sensor, using aerosol electrical contact cleaner. Allow the contact cleaner to evaporate, and then proceed with the test using a multimeter set on "Kohm" range.
2. Select a multimeter (for example Fluke 83) which can have the range manually set. Set the multimeter range to "Kohm", then slowly sweep the float arm through its full range of movement in both directions, at the same time observing the multimeter display.

GENERAL INFORMATION For information, fuel level sensor resistances are as follows:

	Left Sensor Resistance (ohms)		Right Sensor Resistance (ohms)	
Model	Full	Empty	Full	Empty
E31	245 - 255	8 - 12	245 - 255	8 - 12
E32 from 9/87	2.5 - 3.9	85 - 92	One sensor per vehicle	
E32 to 8/87	3 0 - 4.8	83 - 88	One sensor per vehicle	
E34	2.5 - 3.9	85 - 92	One sensor per vehicle	
E36 from 1/95	227 - 236	8 - 12	263 - 274	8 - 12
E36 to 12/94	245 - 255	8 - 12	245 - 255	8 - 12
E36/5 from 1/95	235 - 244	8 - 12	255 - 266	8 - 12
E36/5 to 12/94	245 - 255	8 - 12	245 - 255	8 - 12
Z3	480 - 520	16 - 24	One sensor per vehicle	
E38	480 - 494	15 - 40	470 - 484	15 - 19
E39	401 - 415	50* - 70	401 - 415	50* - 70
E46	304 - 316	68 - 72	388 - 401	67 - 73
E52	690 - 710	35-45	One sensor per vehicle	
E53	490 - 510	18 - 22	490 - 510	18 - 22

*Resistance with float resting on bottom of tank. Removed from vehicle, actual minimum resistance will be lower.

This Service Information bulletins supersedes S.I. 61 05 00 **dated May 2000**.

SUBJECT Stabilant 22A Electrical Contact Enhancer

MODEL All

GENERAL INFORMATION

Connectors carrying low current, are particularly susceptible to the formation of deposits. These deposits affect the resistance of the circuit running through the plug connector and, depending on the sensitivity of the particular circuit, can cause system malfunctions (very often intermittent in nature), and the activation of warning lamps and check control indicators. Airbag circuits and sensor circuits are typical examples of low current circuits.

In many cases, part replacement may temporarily cure the problem, not because the part was faulty, but because the wiping action of disconnecting and reconnecting the connector wipes clean the metal to metal surfaces within the connector itself.

Where the connector may be the cause of the vehicle problem:

-- Without disconnecting the connector, if possible, measure the resistance of the circuit running through the connector to confirm the connector has high resistance. A good connector will have close to zero ohms resistance.

-- Remove both male and female terminals from the connector housing and visually examine them to confirm the integrity of the wire crimps, and in the case of certain types of male terminal, the integrity of the weld of the male pin to the terminal itself. Reinstall the terminals in their housings.

-- Liberally spray both male and female connectors with a zero residue electrical contact cleaner.

-- Allow to air dry. Do not dry with shop air supply as this may recontaminate the connector.

-- Read and understand any Stabilant 22A safety precautions provided by the manufacturer.

-- Apply Stabilant 22A to both male and female connectors so the terminals are completely wet. A cotton swab may be used if required.

-- Reconnect the connectors while still wet.

Stabilant 22A evaporates and leaves a thin polymer film which is conductive between the mating surfaces, while staying non-conductive between adjacent pins. At the same time it prevents the formation of any further harmful deposits.

NOTE:
Stabilant 22A must not be used on Oxygen Sensor connectors. To function, oxygen sensors require a flow of oxygen through the terminal connector to the sensor element. Stabilant 22A will affect this flow of oxygen, and will result in irreparable damage to the sensor.

Stabilant 22A may be obtained directly from Wurth USA., Inc:

Wurth P/N - 893622

An initial supply consisting of:

(1) bottle	P/N 893622	Stabilant 22A
(1) can	P/N 89365	Wurth Zero Residue Electrical Contact Cleaner will be shipped by Wurth USA to each BMW Center under the Automatic Shipment Program

WARRANTY INFORMATION

Stabilant 22A may be claimed when used in conjunction with repairs performed under the terms of the BMW New Vehicle Limited Warranty.

The sublet allowance claimed for Stabilant 22A, should reflect the value of the product used for the repair, up to a maximum of $2.