Flexible Service System (FSS)

System Description

The Flexible Service System (FSS) analyzes the "need for service" of the engine oil. FSS monitors the engine oil level and the conductivity of the engine oil to determine when the oil "needs" to be changed.

Two thousand miles or 30 days before service is due, the Flexible Service System indicator in the total mileage speedometer illuminates for 10 seconds when the door is opened or when the ignition is in position 2.

Maintenance depends on the driving conditions throughout the year. The next maintenance due is displayed in miles (or km) or as the days remaining.

If the suggested due-date for maintenance elapses, the display blinks when the door is opened or the ignition is turned to position 2 and is preceded by a minus sign.

The display goes off after 10 seconds.
To manually display the remaining mileage/time, turn the ignition key to position 2 and press button number 1 twice within one second.
If the engine is low on oil or overfilled, the FSS indicator will display the amount by a value preceded by a + or -.

Component Location

Oil Quality Sensor (B40)
A digital oil quality sensor is installed on the bottom of the engine crankcase just above the oil pan.

Component Description
Oil Quality

Sensor See illustration at right.

Service Tip

Resetting the FSS

To reset the FSS:

Turn on the ignition

Depress button 1 twice within one second for the mileage/time display to be indicated

Turn key off

Depress and hold button number 1

Turn ignition key to position 2

Continue holding button until buzzer sounds

B40 Oil sensor (oil level/ temperature/quality)
Connector
Pin 1: output signal
Pin 2: GND
Pin 3: voltage supply
a Capacitive measuring range at sensor
1 Electronics with 3-pin connector

System Operation

System Description

The M-Class introduction initiates "Need Related Maintenance" intervals for Mercedes-Benz cars. The principle feature of this innovation is a calculation function by the Flexible Service System (FSS) which determines the remaining time and mileage before the next oil change is due. This information is displayed in the instrument cluster.

The M112 engine is fitted with an oil level sensor in place of the previous oil level switch which offers several advantages:

- Any oil added between oil changes lengthens the oil change interval
- The oil level may be shown in a display in the instrument cluster
• The driver is given an acoustic and visual warning on the instrument cluster if the oil level is too high or low or if the oil is in danger of overheating.

FSS monitors oil change requirements based on actual needs. FSS calculates the current remaining mileage and remaining operating time up to the next oil change based on values measured for the mileage and operating time.

The maintenance interval is increased or shortened depending on the operating conditions (cold starts, engine speed, etc.) or when oil has been added.

The following information is used to calculate the remaining mileage and remaining operating time:
• Time information (from the vehicle clock in the instrument cluster)
• Speed information (from the ABS/4-ETS (A/N) control system module via the CAN data bus)
• Coolant temperature
• Load signal
• Engine rpm (from engine control module via the CAN data bus)
• Engine oil temperature
• Engine oil correction factor
• Engine oil level (from analog oil level sensor via the engine control module and CAN data bus)

The remaining mileage display or remaining time before service is required is displayed as soon as a warning threshold is exceeded. This occurs when opening the door or when turning the ignition to position 2. If the oil is low, the quantity of engine oil to add is displayed. If the oil is overfilled, the amount of overfill is indicated.

A1 Instrument cluster
N3/10 ME-SFI control module
B40 Oil sensor (oil level/temperature/quality)
CAN Data bus (Controller Area Network)