

003 Symptoms and Field Observations

GENERAL	003-1	4 BODY	003-17
0 GENERAL DATA AND MAINTENANCE	003-2	5 BODY EQUIPMENT	003-18
1 ENGINE	003-5	6 ELECTRICAL SYSTEM	003-19
2 TRANSMISSION	003-12	7 EQUIPMENT AND ACCESSORIES	003-24
3 SUSPENSION, STEERING AND BRAKES ..	003-14		

GENERAL

This repair group includes a list of symptoms, field observations, and suggested fixes for common problems and issues found on BMW 5 Series (E60, E61) vehicles.

The information is organized by sections that correspond to the layout of the repair manual. Additional information (when available) can be found in the repair group associated with the specific issue:

- 0 General Data and Maintenance
- 1 Engine
- 2 Transmission
- 3 Suspension, Steering and Brakes
- 4 Body
- 5 Body Equipment
- 6 Electrical System
- 7 Equipment and Accessories

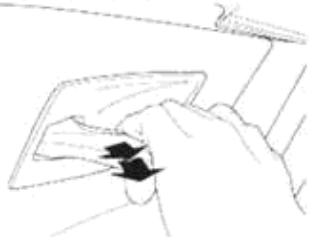
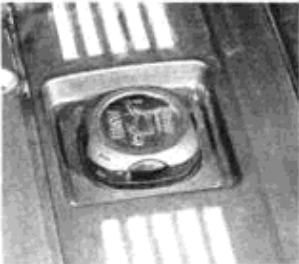
This information was developed from varied sources, ranging from professional BMW technician feedback to manufacturer-issued technical service bulletins (TSBs). The content is intended to complement the repair information found in this repair manual.

CAUTION—

- The information contained in this section is inherently dated material. It was applicable and relevant at the time this manual went to press. Always check BMW factory repair information at www.bmwtechinfo.com or the publisher's website at www.██████████.com for information that may supersede any information included in this section.

003-2 Symptoms and Field Observations

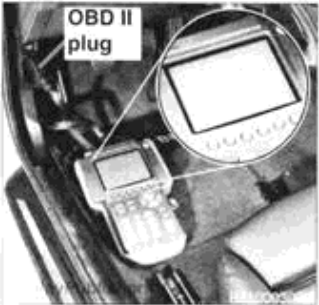
0 GENERAL DATA AND MAINTENANCE

Topic	Notes	Additional information (when available)
Exiting a vehicle that is double-locked from the outside 	Never lock a vehicle from outside the car with an someone inside the car! In the unlikely that someone gets double-locked inside the car, the person inside the car can exit the vehicle using the following 2-step procedure: • Press the central unlock button to disable "double-lock". • Pull the door handle twice to open door. NOTE— • For vehicles with the factory alarm, opening the door will activate the alarm.	
Engine oil, topping up 	Oil residue may collect on the cylinder head cover near the oil filler cap a few days after topping up or refilling the engine oil. When oil is added, the filler cap is laid partially upside down. In this position, engine oil seeps into the area of the oil cap that is not sealed by the gasket. When the cap is reinstalled, the oil leaks from the unsealed area onto the cylinder head cover surface. If investigating an oil leak in this area, confirm that it is not oil from the cap.	020
Replacing spark plugs, service tip 	When servicing spark plugs, a standard socket may fit too tightly into the spark plug bore in the cylinder head. If this is the case, remove the heat shield inside plug hole (arrow) before servicing spark plugs.	020
Special tool for spark plug removal) 	The N54 engine uses a new design spark plug from Bosch that consists of a 12mm thread (compared to the 14mm design on the N52) and a 12-point hex. The plug requires a special tool (BMW special tool part no. 83 30 0 495 560). The special socket is a thin-wall design to facilitate access in the confined area of the N54 cylinder head.	020

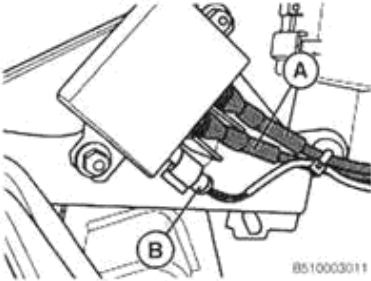
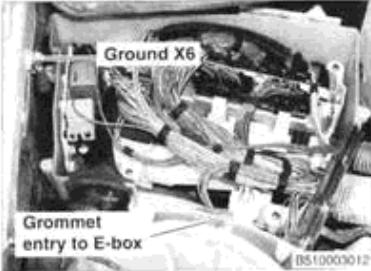
0 GENERAL DATA AND MAINTENANCE (CONTINUED)

Topic	Notes	Additional information (when available)
Models from 2006 Engine oil level, checking after oil change - dynamic check (engine running)	Always perform the dynamic oil level measurement (approx. 5 minutes driving time) after an oil change. The oil level could be misinterpreted as the oil level last stored is initially displayed after an oil change. NOTE — - There is no oil level initially stored after replacing or reprogramming the engine control unit ("Oil level below min" is displayed). The correct oil level is indicated after running the engine for approx. 5 minutes. - Start engine. - Select on-board computer function - OIL using rocker switch. Press BC switch in once. Oil level check begins. A clock symbol (arrow) may appear while the level measurement is running. NOTE — - The clock symbol appears for up to 50 seconds after starting the engine when there is no measured value or the last stored value is not within the tolerance range of the currently measured oil level.	020
V8 engine V8 engine A/C belt removing and installing. A/C belt installation tool B510003002	On the V8 engines, there is no tensioner on the A/C belt. To install a new belt, a special tool (BMW part # 90 88 6 641 040) is required to guide the belt onto the pulley.	020
Battery, replacing B510003024	When installing a new battery, it must be "registered" to the vehicle to notify the vehicle power management software (engine electronics and intelligent battery sensor) that a new battery was fitted. This operation requires a BMW scan tool. Without new battery registration, various electrical problems as well odd electrical system behavior can occur.	121

0 GENERAL DATA AND MAINTENANCE (CONTINUED)

Topic	Notes	Additional information (when available)
No communication with BMW scan tool on DCAN. 	When performing diagnosis on a vehicle with the BMW scan tool, the message "Connect diagnostic connector and switch ON ignition (Terminal 15)!" is displayed. • D-CAN failure in vehicle. Before diagnosing D-CAN in the vehicle, try communicating with another vehicle. If communication cannot be established on other vehicle, try a different scan tool. If communication resumes on the other vehicle, use the following steps to diagnose DCAN. — Disconnect vehicle power supply / charger (if connected). — Disconnect battery. — Check resistance of D-CAN circuit across OBD socket Pin 6 (D_CAN_H) and Pin 14 (D_CAN_L). A good D-CAN measures 60 ohms. The D-CAN circuit is fitted with two 120 ohm terminal resistors. One is fitted in wiring near OBD socket. The second is fitted in gateway module of vehicle (KGM or SGM). — If resistance reading is 0 ohms, the D-CAN wires are shorted together. Check circuit for shorts as per wiring diagram. — If resistance reading is Mega ohms, the D-CAN wiring has an open circuit. Check circuit for opens as per wiring diagram. — If resistance reading is 120 ohms, one of terminal resistors is faulty. Check resistance of both resistors for an open circuit and replace as necessary.	020, 600
Intelligent battery sensor (IBS), service precautions 	The Intelligent Battery Sensor (IBS) is an electronic device connected directly to the negative battery terminal. The IBS is very sensitive to mechanical stress and strain. Particular attention should be paid to the following points: • Do not make any additional connections at the negative terminal of the battery. • Do not modify the battery ground cable. • Do not make any connections between the IBS and the sensor screw. • Do not use force when disconnecting the ground terminal from the battery. • Never pull on the ground cable. • Do not use the IBS as a pivot point to lever off the ground terminal. • Do not use the connections of the IBS as a lever. • Use only a torque wrench as described in the repair manual during installation. • Do not release or tighten the sensor screw. NOTE— • A replacement IBS includes the ground cable. The ground cable also serves as a heat dissipater for the IBS.	121

1 ENGINE

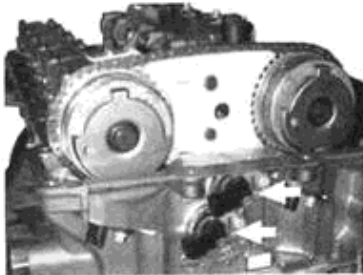
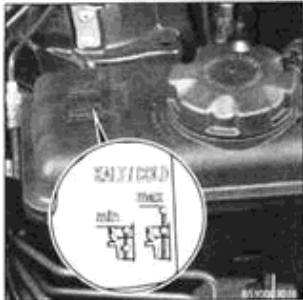
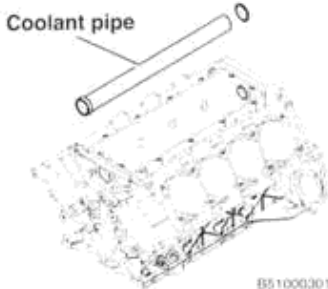
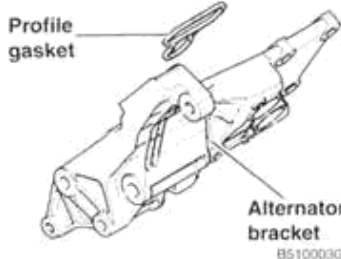
Topic	Notes	Additional information (when available)
Engine knock fault codes 	Engine knock fault codes indicate that the engine is knocking. Detonation or knock is an erratic form of combustion that can cause head gasket failure as well as other engine damage. Prolonged or heavy detonation can be very damaging. The hammer-like shock waves created by detonation subject the head gasket, piston, rings, spark plug and rod bearings to severe overloading. As a first remedy, try higher octane high detergent fuel or switch brands. If the faults codes continue to return, contact your authorized BMW dealer.	120
Diagnosing electric cooling fan 	From 03 / 2007 production vehicles: A revised power supply relay for the electric coolant fan power supply was used on these vehicles Coolant fan power supply relay K9137 is located in the back of the rear fuse box. Connector (B) provides control signals for relay activation (KL30g from the rear fuse box/power distribution box and local ground KL31). On cars with inoperative electric coolant (with symptoms of A/C malfunction, engine overheating, or fault code 2EFE "Cooling fan activation" stored in the DME), check the power supply relay operation: Check that both B+ connections (A) are threaded on tight and free of corrosion. Check KL30g (B+) and KL31 (ground) signals (B) for correct operation.	170, ELE
E-box water ingress 	Water leaks into the E-box may cause various drivability complaints, loss of power or the "Service Engine Soon" lamp to illuminate while driving. Water can enter through the grommet for the ground connection X6 on the front of the E-box. If water is present, check that all drains and water channels are clear.	
No crank, no start 	Engine does not crank. Only the SRS (Supplemental Restraint System) and red brake lights show in the instrument cluster with ignition on. FC A111 (ELV voltage supply fault) is stored in CAS (Car Access System). NOTE — As a result of a change in government requirements, the ELV was deleted on most 2007 and later models. Anti-theft protection continues to be provided by drive-away protection in EWS. Disconnect the IBS connector (3-pin connector with 2 wires) at the negative battery terminal. Follow the white/blue and gray wires from the IBS to locate the connector. Now try starting the vehicle. If the vehicle starts, replace faulty IBS.	121

003-6 Symptoms and Field Observations

1 ENGINE (CONTINUED)

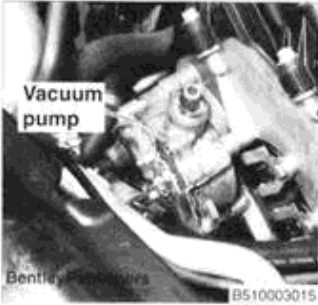
Topic	Notes	Additional information (when available)
Ignition coil fuel/ oil contamination 	When working on the fuel system, it is important to ensure that the ignition coils are not fouled by fuel or oil (especially critical for N54 engines). The resistance of the silicone material is significantly reduced by fuel contact. This can cause spark over at the spark plug and misfires. Before servicing the fuel system, remove the ignition coils and cover the spark plug hole with a cloth. Ignition coils heavily fouled by fuel must be replaced.	120
Valvetrain service note 	When diagnosing engine noise, do not rule out worn timing chain components. This is especially applicable to high mileage engines and engines with extended oil change intervals.	117
Valve cover gasket leaks 	When replacing valve cover gasket, take extra caution when tightening fasteners and sealing at metal joining points. For example front timing cover to cylinder head. There is a small area where silicone should be applied to seal where the gasket may not. Applies to all engines.	113
VANOS and silicone sealant 	When working around VANOS units keep area clean and free of silicone sealant. Even a small amount of silicone introduced into VANOS actuator or solenoid can cause a fault.	117

1 ENGINE (CONTINUED)

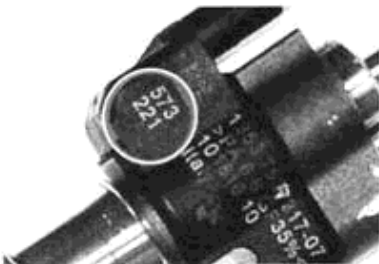
Topic	Notes	Additional information (when available)
Sticky VANOS solenoid sets cam position (CMP) sensor codes 	A sticky / jammed VANOS solenoid can set a camshaft position (CMP) sensor fault (tooth error). Models with N52, N52KP, N54 and V8 engines may be difficult to start, run rough and have the Service Engine Soon lamp illuminated with one or more of the following stored faults: • Cam sensor, inlet signal - signal invalid for synchronization • Crankshaft-inlet camshaft, correlation • VANOS intake - stiff, jammed mechanically • Cam sensor, exhaust signal - signal invalid for synchronization • Crankshaft - exhaust camshaft, correlation • VANOS exhaust - stiff, jammed mechanically Remove VANOS solenoid, intake or exhaust, depending on fault codes stored and, using shop air, gently blow out any visible particles and reinstall. If fault returns, try swapping solenoids between banks to see if fault follows solenoid. Replace solenoid if fault cannot be corrected.	117
Do not overfill cooling system 	Be careful not to overfill cooling system during service or when topping up. V8 engine coolant caps have a tendency to not release when pressure exceeds maximum. An overfilled cooling system can amplify this problem.	170
Coolant pipe leak  BS10003013	The coolant pipe located in valley of V8 engine can develop leaks at the end O-ring seals. To replace the pipe with the OEM pipe, the front of the engine must be fully disassembled, requiring engine removal under most circumstances. Aftermarket options are available (threaded expanding pipe, is one example) that significantly reduce the time and cost required to do the job.	
Oil leak - alternator bracket profile gasket  BS10003014	An oil leak from the alternator area is usually be caused by a faulty alternator bracket profile gasket. To replace the gasket, remove alternator and bracket.	121

003-8 Symptoms and Field Observations

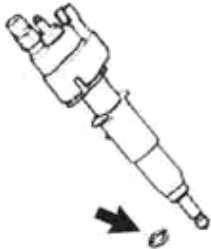
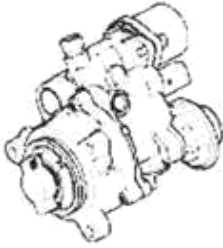
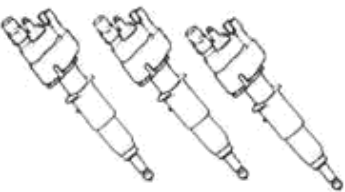
1 ENGINE (CONTINUED)

	Topic	Notes	Additional information (when available)
V8 engine	Vacuum pump diaphragm fails causing oil leak and brake booster failure 	A ruptured vacuum pump diaphragm results in oil being sucked into the brake booster. Remove brake booster vacuum hose to inspect. If oil is present in hose, replace vacuum pump. If large amounts of oil are found inspect brake booster, replacement may be needed.	133
V8 engine	Throttle housing (EDK) fault codes 	Fault codes: • 2CF8 – Throttle valve potentiometer, signal • 2CF9 – Throttle valve potentiometer 1, signal • 2CFA – Throttle valve potentiometer 2, signal In most cases, DSC fault 5F77 (DME invalid data) will also be stored. These faults are sporadic and usually not reproducible. The cause is an intermittent interruption of the EDK signal to the DME due to a resistance fluctuation in the EDK harness connector. Replace EDK harness with updated part #12 51 7 602 973.	133
N52 engine	Intermittent lifter noise 	An occasional ticking or rattling noise from hydraulic valve adjusters (HVA) elements may occur during cold engine starts or frequent short-distance driving. This condition will not cause any damage to the engine, and usually remedies itself with a longer driving distance or operating times at full operating temperature. In this situation, the lifters can bleed down or have trapped air causing ticking/rattling noise and may require bleeding, as described below. The bleed time may take anywhere from two minutes to a maximum of 30 minutes. Procedure preconditions: • Engine running at operating temperature • Vehicle stationary on a level surface in a properly ventilated area • Engine oil level correct – not underfilled or overfilled 1. Bring engine up to an operating speed (no load) of 2000-3000 rpm and maintain this speed for three minutes. 2. Let engine idle for 15-30 seconds. Listen for whether the noise is still present: - If engine is quiet, procedure is finished. - If engine noise still present, repeat procedure; perform steps 1 and 2 up to a maximum of 5 times. If the noise remains after performing the bleeding procedure 5 times: proceed by performing the procedure for a final time, also at an engine operating speed of 2000-3000 rpm, but for a total time duration of 15 minutes. If noise returns after multiple bleedings, the cylinder head may be faulty and require replacement.	113

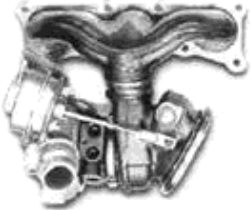
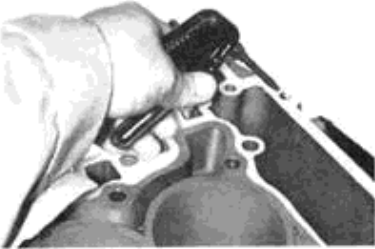
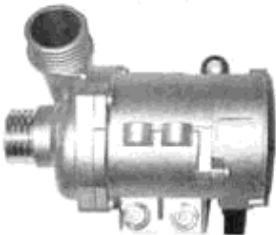
1 ENGINE (CONTINUED)

Topic	Notes	Additional information (when available)
N52 engine	Faulty valvetronic motor linked to DME failure 	130
N54 engine	Cylinder-assigned high pressure injectors  On N54 engines, mark the cylinder locations on the fuel injectors when removing them. As part of injector manufacturing, tolerance ranges for injection quantity are determined and specified in a six-digit number combination. These values are used by the DME to compensate for variations in the individual injectors. NOTE — When replacing an injector, it is essential to carry out an injector adjustment using the BMW scan tool.	130
N54 engine	Servicing high pressure fuel injection system - safety precaution  Working on the HPI system must only be carried out after the engine has cooled down. Do not attempt to open any fuel lines or connections on the HPI injection system until the coolant temperature is below 40° C (approx. 104°F) If the engine is not cool, there is danger of residual fuel pressure spray in the high-pressure system. When working on the high-pressure fuel system, take particular care to ensure conditions of absolute cleanliness and follow the work sequences described in the repair instructions. Even the smallest contaminants and/or damage to the threads on the high-pressure lines can cause leaks.	130
N54 engine	High pressure fuel system faults  Service Engine Soon light illuminated, engine enters fail-safe mode with reduced power. Scan tool data shows fault codes 10737 (P3283, P3284), and/or 10738 (P3003, P3090) – “High fuel pressure system, plausibility” stored in MSD80 (DME) control module. These fault codes all relate to the high pressure fuel system. The possible causes are: incorrect adaptation values of the high pressure pump control valve or failure of the high-pressure fuel pump. Begin by resetting adaptations for engine management. If fault codes return immediately after adaptation, the fuel pump may be faulty.	160

1 ENGINE (CONTINUED)

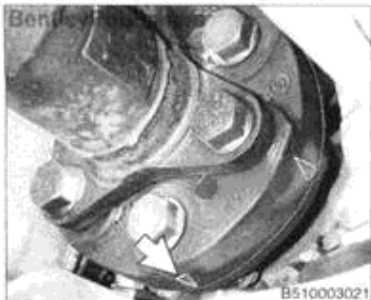
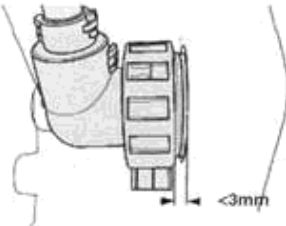
Topic	Notes	Additional information (when available)
N54 engine High pressure fuel injector, replacing replace teflon seal 	Always replace the teflon O-ring (arrow) when fitting and removing the fuel injector. This also applies to an injector that has just been fitted and has to be removed again after an engine start. A new injector with a new teflon O-ring should be fitted as quickly as possible as the Teflon sealing ring could swell up. Also, be sure that the injector is correctly seated when installing. The injector hold-down must rest on both injector tabs, otherwise the necessary force is not applied. Do not clean the nozzle-needle tip of the piezo-injector.	130
N54 engine High pressure fuel pump extended warranty coverage 	On 2007 - 2009 models with N54 engines, BMW emissions warranty of the high pressure fuel pump (HDP) has been extended from 4 years or 50,000 miles to 10 years or 120,000 miles, whichever comes first. Vehicles with a faulty fuel pump may have the Service Engine Soon lamp illuminated with various low fuel pressure-related faults stored in the engine control module (DME). Affected vehicles may experience long cranking times or reduced engine performance (engine in failsafe mode) when the HDP malfunctions. If the high pressure fuel pump of a MY 2007- 2009 exhibits the symptoms listed above, it should be replaced with the improved part.	160
N54 engine Fuel injector faults 	On cars with faulty fuel injectors, various fault codes related to fuel injectors may be stored in the DME control module (Service Engine Soon light is illuminated). The engine may lack power, idle erratically, or have poor throttle response. Faults codes such as injector, cylinder 1-6, short circuit or line break, DME internal fault; Injector driver circuit failure bank 1-3; bank 4-6 or Misfiring, several cylinders may indicate a bank of 3 faulty injectors. Consult your authorized dealer regarding injector replacement as it applies to BMW Service Bulletin SIB 12 02 08 (dated October 2008).	130
N54 engine EML light illuminated, limp home mode, no boost pressure control	In the event of a failure, malfunction or an implausible signal from any of the sensors listed below, activation of the wastegate valves is shut down and the valve flaps are fully opened. Turbocharging ceases at this point. • High-pressure fuel system • Inlet or exhaust VANOS • Crankshaft position sensor • Camshaft position sensor • Boost-pressure sensor • Knock sensors • Intake-air temperature sensor If the ELML light is illuminated, interrogate fault memory and correct any problems found.	

1 ENGINE (CONTINUED)

	Topic	Notes	Additional information (when available)
N54 engine	Rattle noise from turbocharger area 	A metallic noise from the exhaust system near the engine or turbocharger area can occur during deceleration from approx. 3,500 RPM or during a high engine speed without a drive gear being engaged. In this situation, the wastegate valve does not completely close due to mechanical tolerances of the wastegate actuator and results in the wastegate valve rattling against its seating surface. Do not replace the turbocharger or adjust the existing wastegate actuator control rod. Instead reprogram the DME. If after programming, the noise is no longer present, take no further action. If the noise is still present, replace both of the turbocharger wastegate actuators.	180
N52, N54 engines	Coolant contact with magnesium components 	During service procedures which involve coolant, such as cylinder head replacement, the bolt holes must be blown dry immediately. To prevent corrosion, do not allow any traces of coolant to remain in holes.	113
N52, N54 engines	Damaged connector at throttle module	When connecting throttle module connector, it is possible to twist the connector before plugging it in, causing damage to the harness and the connector. Be sure to install connector carefully to avoid damage.	
N52, N54 engines	Electric coolant pump precautions 	Particular care must be taken to ensure that the coolant pump does not run dry. When the pump is removed, it should be stored filled with coolant. The pump bearings could seize if the pump is not filled with coolant. A inoperative coolant pump could cause serious engine damage. If the pump should ever run dry, the pump impeller should be turned by hand to ensure the pump is not seized before connecting the coolant hoses. The system should then be immediately filled with coolant.	170

003-12 Symptoms and Field Observations

2 TRANSMISSION

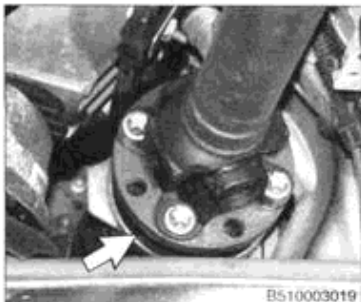
Topic	Notes	Additional information (when available)
SMG Transmission requires specific socket to remove output flange. 41 mm deep socket  B510003001	An extra deep socket is used to remove the 41mm nut on the SMG output flange. BMW part number 83 30 0 493 421.	
ATF service recommendation  B510003021	The automatic transmission fluid in the both the ZF and GM units should be changed at service intervals no greater than 100,000 miles. 60 to 80k miles should be considered a more acceptable maximum interval. When checking the fluid level, it is critical that the temperature of the fluid be maintained at approximately 30°C (86°F). (The factory specification is 30 - 50°C.) Checking the temperature can be done using an infrared temp gun or a more correctly, with a BMW scan tool.	240
Vibration or noise in drive train  B510003021	One or more of the following may be heard while driving slowly, coming to a stop or at highway speeds: • A clunk can be heard while rolling slowly and downshifting from 2nd to 1st gear coming to a stop. • Load reversal causes a slight clunk noise. • A clunk noise can be heard while shifting into forward or reverse gear from park or neutral. Check for a deterioration or separation of the rubber in the universal joint located between the transmission and drive shaft assembly. To check if the noise is caused by a defective universal joint the driveshaft must first be removed. Once removed, check if any of the metal collars are loose and/or rubber cracking is found. Replace the universal joint if any fault are found.	240
Mechatronic sealing sleeve leaking  <3mm	Transmission fluid can be seen leaking from transmission oil pan, or more specifically from the Mechatronic sealing sleeve. This repair requires replacing the sealing sleeve and the transmission oil pan gasket. Refer to BMW Service Bulletin SIB 24 08 06 (dated February 2009) for parts and repair information, including proper sleeve installation instructions. NOTE — • After installation of the new sleeve, the correct distance between the transmission harness connector and the housing surface should not exceed 3 mm.	240

2 TRANSMISSION (CONTINUED)

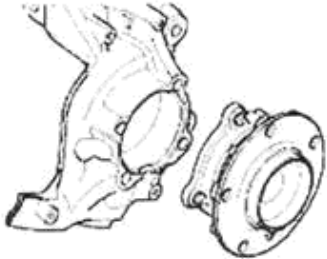
Topic	Notes	Additional information (when available)
Transmission/transmission control complaints 	Various complaints associated with inoperative transmission controls. At times the vehicle will not start, gear indicator display not present, transmission failsafe light is on, or there is a transmission failsafe message in the check control. During diagnosis with scan tool, EGS cannot be identified. The transmission harness connector may have a loose or pushed back pin(s). This condition can cause various complaints and many different faults to be stored. Disconnect the battery and check the transmission connector X8500 for loose or pushed back pins. It may be possible when the connector is removed for the pin to move forward, so check that all the pins are tight and locked in place by using a blunt tool like a pick. Look carefully - a pushed in pin may appear as an open slot. NOTE — • It may be necessary to remove the exhaust and lower the back of the transmission to properly inspect plug. If this step is necessary be careful to not bend shifter cable bracket otherwise shifter cable operation will be compromised.	240
Transmission in failsafe mode with stored fault (CF33) (from 02/2006 to 08/2007 production with 6HP19TU auto. trans.)*	This is caused by highly-sensitive EGS software. The fault normally sets during a 5-4 downshift in vehicles with a replacement transmission, or after a reset of the adaptation values. Do not replace any parts. Using the factory scan tool (version 49.0 and higher) to run a short test and perform the following test module: Reset learning functions - available using the following diagnostic path: Service Functions / Transmission Control / Calibrations / Reset learning functions Afterwards, turn ignition off / lock vehicle / let vehicle enter sleep mode. It should then be possible to clear the fault. <i>*This problem is planned to be corrected with August 2007 and later production vehicles equipped with these ZF transmissions.</i>	240

003-14 Symptoms and Field Observations

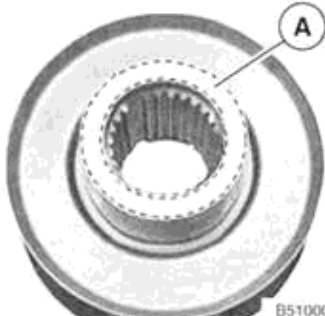
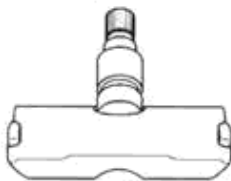
3 SUSPENSION, STEERING AND BRAKES

Topic	Notes	Additional information (when available)
Rear coil spring repair procedures 	For repair procedures that require removal of the rear coil springs, the spring seats must be properly cleaned prior to reinstalling the springs. Dirt, pebbles, and debris left on the spring pads can become trapped between the spring pads and the lower coil of the springs. This can damage the protective coating of the springs and rust may form on the spring. Over time, rust formation on the spring combined with vehicle operating conditions may cause the spring to break.	330
xDrive front pinion seal leak 	Front pinion seal leaks (arrow) should be addressed promptly. The front differential has a low fluid capacity and any size leak can pose an immediate problem.	311
Brake pad wear sensor, use care when installing / removing 	The brake pad wear sensor is easily damaged during installation owing to the 90° design. Be careful not to break the sensor when during installation and removal.	340
Brake squeal from pad wear sensor	Under light / moderate brake applications, brake squeal can be caused by contact between the brake pad wear sensor and the brake rotor (front or rear brakes). The geometry of the pad wear sensor, combined with individual driving habits, can result in a wear pattern that causes a squeaking and/or squealing noise when the brakes are applied with light to moderate force. If the noise is coming from the brake system, inspect the brake pad wear sensor of the affected axle. If the sensor is in contact with the rotor/disc, remove the sensor and drive the vehicle. If the noise is eliminated, replace the brake pads and wear sensor of the affected axle. If the noise is not eliminated, further diagnosis is required to determine the cause of the noise.	

3 SUSPENSION, STEERING AND BRAKES (CONTINUED)

Topic	Notes	Additional information (when available)
Wheel alignment (track), resetting (cars with active steering) 	On cars with the optional active steering (option SA 214), the front track has to be reset after work on the steering. The procedure for adjusting track on a vehicle with active front steering (total steering angle sensor) is not the same as that for a vehicle with a conventional power-assisted steering system.	320
ELV (Electric Steering Lock) warning shown in the Instrument Cluster 	ELV light on with intermittent no-crank, no-start situation or ELV solenoid in locked position. This fault is usually caused by low voltage during vehicle cranking / starting. Troubleshooting should be carried out using BMW scan tool. NOTE — • If terminal KL15 is not switched on, scan tool communication will be inhibited. In this case, start diagnostics by selecting the vehicle manually. Then follow the diagnostics path: Drive / Engine start / Comfort start / button to get into the scan tool test plan.	320
Front wheel bearing wear 	Worn wheel bearings can often produce a knocking sound while driving. Note that special press tools are needed to replace the bearings. • Check the front wheel bearings for wear with the vehicle raised. The bearing will feel tight when spinning the wheel. • Put the vehicle on the ground, pull and push on top of wheel / tire to check for looseness in wheel bearing. Initially it may feel tight. Rock steering wheel back and forth to situate the bearing. Bearing will then feel loose when pushing / pulling on top of tire.	310
Active steering, reinitializing after battery disconnect	Active steering must be reinitialized after the battery has been disconnected. Reinitialize as follows: • Start engine (the "Active Steering Inactive" Check-Control message appears) • Turn steering wheel as far as it will go counter clockwise and then as far as it will go clockwise.	

3 SUSPENSION, STEERING AND BRAKES (CONTINUED)

Topic	Notes	Additional information (when available)
Clicking or cracking noise from rear differential  BS10003010	The differential input flange mating surface with the input drive pinion is insufficiently greased. This is not a failure of the differential assembly. Do not replace the complete differential. Remove the differential drive flange. Apply lubricant P/N 83 23 0 443 864 on the input flange mating surface (A), as described in the illustration. Before complete reassembly, replace the input flange seal and collar nut retaining plate	
Tire pressure monitor, damaged wheel electronics (2007-2010 vehicles) 	The tire pressure monitor (TPM) system used on 2007 and later cars measures the tire pressures at each of the four wheels. The system utilizes a warning lamp, mounted in the instrument cluster to alert the driver of a low tire pressure condition. The TPM system uses separate wheel electronics mounted at the base of each tire valve inside the wheel. Extra care must be taken when changing tires to avoid damaging the wheel electronics. A damaged wheel electronic can cause the tire warning indicator to illuminate. When diagnosing an illuminated TPM warning lamp, the tires and wheels should be inspected for damage and/or prior replacement. NOTE— The last four digits of the tire's DOT number indicate the calendar week, followed by the year in which the tire was produced. This information can be used to determine if one or more tires have been recently replaced.	
Flat tire monitoring / tire pressure monitoring, illuminated warning lamp 	The warning lamp is illuminated when the tire pressure decreases by approximately 25%. Temperature fluctuations can cause changes in tire pressure. For every 10° F change in ambient temperature, the tire pressure can change by 1 psi. Therefore, the tire warning indicator may be illuminated by a large change in temperature combined with a low pressure condition. Inspect tires regularly for physical damage and check tire pressures when the tire warning is illuminated. BMW recommends checking tire inflation pressures every two weeks and before long trips. CAUTION— - Driving on a significantly under-inflated tire causes the tire to overheat and can lead to tire failure. - Under-inflation reduces fuel efficiency and tire tread life, and may affect the vehicle's handling and stopping ability.	020

4 BODY

Topic	Notes	Additional information (when available)
Multiple electrical faults caused by water leak into trunk 	Electrical components mounted in spare tire well may become damaged by water leaking into trunk. Inspect trunk rubber seal and in particular, the large rubber washers at the bumper fasteners (as viewed from inside trunk).	
Noisy wiper blades, blades chatter	Wiper blades in good condition may make noise during operation, or may not clean the windshield properly. This may be caused by contaminants on the glass or blades, or by the blades or arms being out of adjustment. The first step is to make sure the glass and the blades are clean and free of contaminants. Common contaminants that are not removed by conventional glass cleaners can be removed with BON AMI®, a household cleanser. The cleanser should be applied on a wet cloth or sponge and the windshield must be thoroughly and evenly scrubbed. Wipe off the residue with a clean, dry cloth before the cleanser dries on the glass. If there is evidence of heavy overspray of waxes or silicones on the glass, a wax and silicone remover can be used to remove them. Clean the wiper blades with a clean cloth soaked in rubbing alcohol. Once the blades and glass have been cleaned, check the adjustment of the wiper arms. NOTE— ▪ To properly adjust the wiper arms, special BMW adjustment gauges and tools are required. See 611 Wipers and Washers.	611

003-18 Symptoms and Field Observations

5 BODY EQUIPMENT

Topic	Notes	Additional information (when available)
Squeaking noise from B-pillar 	A squeaking or grating noise may be heard from the top of the B-pillar when driving over rough roads at very cold ambient temperatures. This noise typically occurs only below approximately 20°F. (For noises from this area at high temperatures, refer to BMW Service Bulletin SI B51 02 05). This is caused by a bad bond between the B-pillar trim and the rear door seal. Replace the door seal with an updated part, which uses a softer rubber compound.	
Sunroof moves in small steps or interior lights not working	Slide/tilt sunroof requires initialization. The motor of the slide/tilt sunroof uses 2 Hall sensors. They are located on the motor shaft and offset by 90 degrees with respect to each other. When the motor is running, this results in two offset Hall signals that are used to register the direction of rotation and for the anti-trapping protection function. NOTE — • The control button must remain pressed during the entire initialization procedure. The initialization procedure must be repeated if the button is released. • If the power supply is interrupted during initialization the procedure must be repeated. Press and hold sunroof button in the sunroof tilt direction. After approx. 15 seconds, the initialization begins by storing the tilt-position end stop, then the full open end stop position, etc. Initialization takes about 120 seconds. Initialization is erased under the following conditions: • Removal of the voltage supply to sunroof control module • Hall sensor fault detected • Sunroof position implausible • Modified/changed vehicle coding or coding data faulty	
Tailgate opens slow at low ambient temperatures (Sports Wagon)	Tailgate opens slowly or does not fully open under its own power. In low ambient temperatures, the gas pressure in the tailgate struts is reduced. The result is a less powerful strut. Conversely, at very high ambient temperatures, the gas pressure is higher, thus allowing the tailgate to open quicker. This is a normal condition and the struts are not faulty. However, to ensure that excessive friction is not present in the hinges due to lack of lubrication, be sure to lubricate tailgate and gas strut hinges with grease.	

5 BODY EQUIPMENT (CONTINUED)

Topic	Notes	Additional information (when available)
Front and rear doors do not unlock at same time	Intermittently, when the vehicle is unlocked using either the remote key or the central locking button, the rear doors do not unlock at the same time as the front doors. This situation is unaffected by whether or not selective locking is active. For the rear doors to unlock, the unlock procedure must be performed an additional time. A High Rate of Battery Discharge check control message may also be displayed. This condition occurs when an excessive closed-circuit current draw is detected. When an excessive draw is detected, the 30gf relay is switched, disconnecting the basic body module (KBM) from the power supply.	

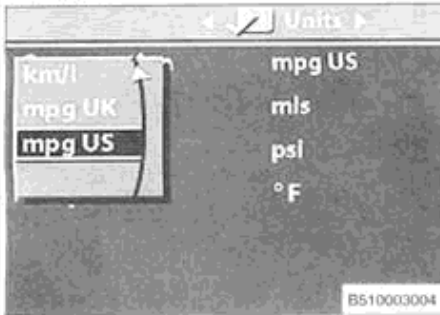
6 ELECTRICAL SYSTEM

Topic	Notes	Additional information (when available)
Changing / setting date format (mm/dd or dd/mm) in the Personal Profile settings (vehicles without Navigation)	To change Personal Profile settings: • Press rocker switch in direction indicator stalk, up or down until "Personal Profile" function (key with a check mark) appears, accompanied by the word SET in the instrument cluster. • Press Board Computer (BC) button on steering column stalk. • Press rocker switch, up or down, until "tt/mm" or "mm/tt" is shown. • Press the BC button. • Use the rocker switch to make the selection/change. • Press the BC button to confirm and accept the selection/change. NOTE— • This will also change the date format in the radio display. The following display formats and units of measure can be selected/changed in the same way. • Fuel consumption (l/100km, mpg, km/l) • Distance (km, mls) • Time format (12h/24h) • Temperature (°C, °F) • Reset of display formats / units of measure (factory/default setting)	

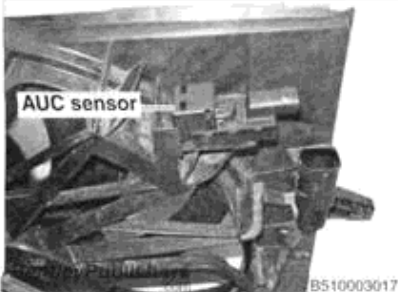
6 ELECTRICAL SYSTEM (CONTINUED)

Topic	Notes	Additional information (when available)
Closed-circuit current (parasitic draw) specification	Increased closed-circuit currents may occur permanently or intermittently and cause the battery to discharge. The increase in closed-circuit current may be caused by a faulty control unit, or by the installation of a non-approved accessory. E60, E61: 40 mA after 60-70 minutes with TCU (telematics control unit) (30 minutes without TCU) In general, closed-circuit current consistently over 50 mA must be investigated.	121
Stabilant 22A electrical contact enhancer 	Connectors carrying low current are particularly susceptible to the formation of deposits. These deposits affect the resistance of the circuit and, depending on the sensitivity of the particular circuit, can cause system malfunctions (very often intermittent), and the activation of warning lamps and check control indicators. In difficult to solve electrical resistance situations, Stabilant 22A may help to enhance electrical contact. 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 — • Read and understand any Stabilant 22A safety precautions provided by the manufacturer. • Do not use Stabilant 22A on Oxygen sensor or SRS connectors.	
Check Control message: Vehicle Battery! Increased Battery Discharge	If the off-load current exceeds 80 mA after 68 minutes of the key being off, the engine management system outputs the CC message "Vehicle Battery! Increased Battery Discharge" the next time Terminal 15 is switched on. This happens regardless of the battery state of charge. In the event of the above situation, check the vehicle for non-approved electrical equipment installations. Retrofitted after-market equipment (e.g., hands-free systems, navigation systems, GPS or entertainment systems) may have been incorrectly connected to Terminal 30, Terminal 30g-f or directly to the battery. NOTE — • The intelligent battery sensor (IBS) monitors the battery's discharge current while the vehicle is off. The measures values are transmitted to the DME through the bit-serial data (BSD) interface. Therefore, equipment or accessories must only be connected to Terminal 15 or Terminal 30g, unless otherwise specified in the installation instructions of the BMW retrofit kit.	121

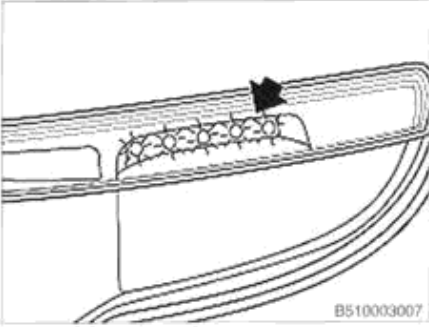
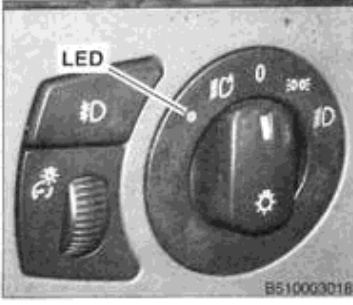
6 ELECTRICAL SYSTEM (CONTINUED)

Topic	Notes	Additional Information (when available)
Windshield washer, low or no volume 	Windshield washers spray a very low volume of fluid, or no fluid at all. The strainer (arrow) on the windshield washer fluid pump may become clogged by debris or an algae-like substance. The algae-like substance is typically caused by using non-approved washer fluid or straight water in the washer fluid reservoir. To replace the strainer: • Remove the washer fluid pump, located in lower part right front wheel well. • Drain existing washer fluid in the reservoir and properly discard. • Replace the strainer, which is installed on the end of the pump. An updated strainer has a larger mesh to avoid future occurrences. • Refill the washer fluid reservoir with BMW washer fluid at the specified concentration.	611
Gong warning without visual check control message	A gong warning sounds approximately 10-15 seconds after the engine is started. There is no check control warning in the instrument cluster and no faults are stored. This can be caused by a center door lock button (permanently closed contacts). Test the functionality of the center door lock button and replace as necessary.	515
Remote key not working	The radio remote control function is inoperative: • The vehicle cannot be unlocked or locked with the remote key. • The check control message "Replace Remote Control Battery" is displayed. • Fault Code 9308B0 – ID transmitter: Battery undervoltage is stored. Test remote key using BMW scan tool.	
Instrument cluster mileage display switches to kilometers when key is switched	The instrument cluster mileage display switches to kilometers after switching keys. This situation occurs only up to 16 minutes after the vehicle is switched off (vehicle not yet asleep). Do not replace any parts or perform any software updates to correct this situation. The problem can be corrected by letting the vehicle go to sleep (longer than 16 minutes after the key is OFF).	
Consumption is Set to mpg UK instead of mpg US 	Using iDrive menu change setting under Display Settings.	

6 ELECTRICAL SYSTEM (CONTINUED)

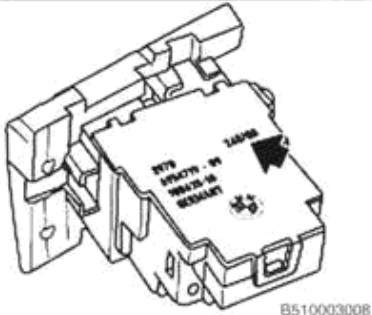
Topic	Notes	Additional information (when available)
A/C blows warm after an extended drive	The air conditioning stops cooling and starts to blow warm air. This usually happens when the weather is very humid or there is a high level of air pollution. Normal operation is restored after the system is turned off for approximately 15 minutes. The air conditioning system temperature regulation is calibrated between 33.4°F (0.8°C) and 34.5°F (1.4°C). Under certain environmental conditions, ice may form on the evaporator, causing loss of air conditioning performance. A software update is required to remedy this problem. Program using BMW scan tool.	
Blower motor stays on with key OFF.	Occasionally after a long drive, the blower motor stays on at a reduced speed from the last setting on the control panel, for up to 16 minutes after the vehicle was turned off. DME fault code 2DED Battery Power Management may also be stored. This complaint will not cause the battery to be discharged. This is caused by a blower motor LIN-Bus communication error (blower in emergency mode). A software update is required to remedy this problem. Program using BMW scan tool.	
A/C compressor does not switch ON 	IHKA (Integrated Heating and Air Conditioning) fault 9C6A – Compressor Coupling is stored. Check for a loose ground connection at compressor. If the ground connection is not loose, continue troubleshooting fault using BMW scan tool test plan	
Testing automatic recirculation (AUC) sensor. 	Use the following steps to diagnose AUC-related fault codes. — Remove AUC sensor from mounting point. Electrical connector remains connected. — Turn ignition key on, make sure IHKA system is on. — Blow into AUC sensor air intake. Fresh air flap should slam shut. — If flap does not close, check voltage supply to sensor. If voltage supply is good, replace AUC sensor.	640

6 ELECTRICAL SYSTEM (CONTINUED)

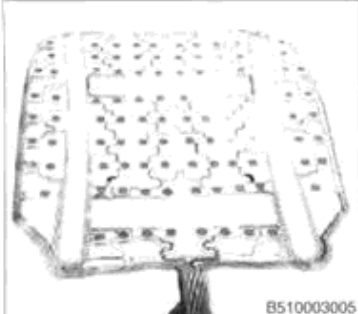
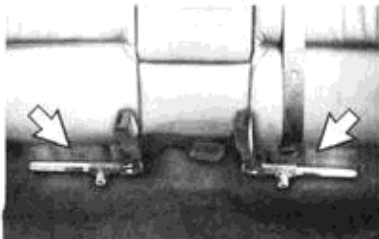
Topic	Notes	Additional information (when available)
Eyebrow lights inoperative after programming  B510003007	If eyebrow lights (arrow) fail to work after vehicle programming, reprogram complete vehicle using BMW scan tool with latest software.	
Xenon lamp bulbs differ in color after replacement	Replacement xenon bulbs have a yellow-white appearance when compared with the bluish-white of the original bulb. New Xenon bulbs require a burn-in period, which causes a gradual color change from yellow to blue. The greatest color occurs in the first 5 minutes of use, and stabilizes after approximately 100 hours of use.	
LED flashing on headlight switch, no faults stored  B510003018	With the light switch switched to the automatic position, the LED on the headlamp switch is flashing and AHL (Active Headlights) is deactivated. Using the BMW scan tool, carry out a short test to identify any faults related to AHL system. If no faults are stored and LED is still flashing, problem may be caused by stuck stepper motor in the headlamp. AHL is integrated into BUS network and relies on communication with other modules to function. Select: "Control Unit Functions/AHL/Component Activation." Activate each of the AHL functions in turn until the problem is identified and replace faulty components.	
Automatic headlights, adjusting sensitivity	Headlights switch on too early or too late, even in daylight, with headlight switch set to automatic position. The factory default for the rain/light sensor is set to "sensitive". With this setting, the rain/light sensor is set for optimum operation. There are three setting options: • Normal (reduced sensitivity) • Sensitive (factory default) • Highly sensitive (most sensitive). If the preference is to have sensor setting either more or less sensitive, the setting can be changed using BMW scan tool.	

003-24 Symptoms and Field Observations

6 ELECTRICAL SYSTEM (CONTINUED)

Topic	Notes	Additional information (when available)
Key falls out of, or gets stuck in key holder  B510003008	Remote key is not adequately retained in the key slot and sometimes falls out. There are also situations where the remote key gets stuck in the key slot and cannot easily be removed. Under these situations, the key slot should be replaced with an updated part (improved mechanism for gripping the remote key). Updated part were introduced in 9 / 2005. The date code on the part is in day/year format. Improved parts have date code 248/05 or later. Illustration shows E90 key holder, E60 is similar.	

7 EQUIPMENT AND ACCESSORIES

Topic	Notes	Additional information (when available)
OC3 (occupancy) mat installation tips.  B510003005	When a new OC3 seat mat has been installed use the following tips to avoid activation problems: • With the new seat mat installed in the vehicle, eliminate any tension in the seat mat caused by the installation process by having an adult sit in the seat. • Remove all weight from the seat. • Using BMW scan tool, enable the seat mat. NOTE — • OC3 mat warranty has been extended to 10 years / unlimited mileage on vehicles produced to 11 / 2005.	
Both rear belt tensioners deploy in accident 	In the case of an accident that would trigger the rear belt tensioners, both tensioners will deploy, regardless of whether the rear seats are occupied, or not. This is a normal condition as the rear belt buckles have no switch. WARNING — • Always replace deployed airbag components and confirm MRS operational status using BMW scan tool.	721

