



NAME:
DATE:

YEAR/MODEL:
MILEAGE:
DOM:

INSPECTION II - MAJOR SERVICE MAINTENANCE CHECK LIST *

E31; E32 & E34 w/M50, M60, or M70 motor; E36/Z3; E38; E39; E46; E52; E53

Service Description

- [] Road test car for initial driving impressions. Check for proper engine performance, handling characteristics and transmission engagement. Test brake system for proper ABS engagement and absence of pulling or shimmy. Check for road noises, suspension vibration, squeaks and rattles. Check basic operation of cruise control.
- [] Perform complete electronic diagnostic systems test. Interrogate and read out any existing faults in DME (*digital motor electronics*), EGS (*electronic transmission control*), EWS (*electronic drive-away protection*), ABS/ASC/DSC (*Anti-lock braking system/all season traction/dynamic stability control*), ZKE (*central body electronics*), IKE/KOM (*instrument cluster*), IHKA (*automatic heating and air conditioning*) and SRS/MRS (*airbag/multiple restraint system*).
- [] Perform body and rust perforation inspection (required every two years).
- [] Retorque engine bolts on timing covers, oil pan, and valve covers. Inspect engine seals and gaskets for oil seepage, clean and determine source of leaks as needed.
- [] Pressure wash engine and compartment (after inspection for oil leaks). Includes remove, dry out and protect specific engine electrical connections.
- [] Change oil and filter at operating temperature; check level and condition of existing oil.
Note: Specific oil required.
 Option: Specific oil requested by customer: _____.
- [] Inspect transmission seals and gaskets for seepage (automatic and manual); clean and determine source of leaks as needed.
- [] Change oil in manual transmission while at operating temperature and clean magnetic drain plug.
Note: Specific oil required.
 Option: Specific oil requested by customer: _____.
- [] Inspect rear driveshaft u-joints/c.v. joints for wear.
- [] Inspect condition of rear driveshaft center bearing for sagging and correct preload.
- [] Change oil in rear axle while at operating temperature and replace seal rings.
Note: Specific oil required.
 Option: Specific oil requested by customer: _____.
- [] Examine condition of rear axle mount including retorque mounting bolts.
Note: Z3, M Coupe - inspect for signs of cracking in differential mounting at body cross frame support.
- [] Examine rear axle shaft seals for gear oil seepage.
- [] Examine rear stub axle seals for grease seepage.
- [] Inspect condition of inner and outer c.v. joints and boots on rear half shafts. Report signs of cracking or seepage (grease).
- [] Retorque rear crossmember bolts and inspect condition of rear crossmember mounts for sagging or splitting.
- [] Test upper and lower rear control arm joints and bushings for wear.

- [] Test trailing arm pivot joints for wear. (E32, E34 only)
- [] Test condition of rear shocks for proper compression and rebound. Inspect for external leaks or internal leak down. Check condition of shock tower mounts.
Note: E36, Z3, MCOupe, E46 - Inspect body tower area for split rubber, cracking or metal fatigue.
- [] Test rear suspension link arms for play which may effect alignment settings.
- [] Examine front suspension for split seals, worn bushings and bent or damaged components which may effect handling and/or alignment.
- [] Check condition of front suspension/steering ball joints including sway bar linkage joints, thrust arms, control arms, tie rods and center link.
- [] Retorque steering shaft u-joint connection clamping bolts and steering gear mounting. Check for play in u-joints and condition of hardy disc.
- [] Measure front wheel bearings for play. If evident, check bearings for signs of water contamination and replace sealing cap if needed.
- [] Measure lateral and radial runout in each wheel.
Note: Advise if rotation and balance is needed (invoiced separately). Retorque lug bolts (82 ft lbs).
- [] Test operation of RDW system (*low tire pressure warning*) (if equipped).
- [] Set all tire pressures, including spare tire (except E46 M3, MCOupe, E39 M5, Z8). Check condition of tires and tread for uneven wear or punctures.
Note: Advise if alignment is needed (invoiced separately).

LF _____ RF _____ LR _____ RR _____ S _____
- [] Test operation of M-Mobility unit (E46 M3, MCOupe, E39 M5, Z8).
- [] Check for proper installation of jack/lug wrench and account for proper tools and supplies in tool kit (if equipped).
- [] Test condition of front shocks for proper compression and rebound. Inspect for external leaks or internal leak down. Check condition of shock tower mounts for split/collapsed rubber or worn/binding pivot bearing.
- [] Test springs for fatigue. Includes measure ride height.

Left front: _____ Right front: _____
Left rear: _____ Right rear: _____
- [] Top up power steering fluid reservoir level and check fluid for burnt or poor condition.
Flush is advised every 30,000 miles.
Note: Advise if flush is needed (invoiced separately).
- [] Retighten power steering system hose clamps and fittings. Inspect for any leaking seal rings, hoses, pump, and steering gear.
- [] Retorque engine mounts and check condition of rubber for cracking or sagging.
- [] Resecure exhaust system bolts and sealing flanges, check condition, position and mounting of exhaust system; check rubber hangers for cracking or sagging.
- [] Visually inspect clutch master cylinder, slave cylinder, hoses and lines for leaks (manual).
- [] Check operation of shifting, inspect for wear in cables (automatic) or linkage (manual).
- [] Measure estimated remaining clutch life and advise if over 50% worn (manual or SMG).
- [] Top up level of brake and clutch fluid in reservoir. Flush is required to remove moisture build-up in the brake/hydraulic system and is advised every year in Houston due to the high humidity levels.
Note: Advise if flush is needed (invoiced separately).

- Examine brake lines/hoses and connections for seepage, damage, or distortion.
- Check parking brake for proper engagement and adjust if needed.
- Visually inspect brake calipers for worn slider pins and/or split piston seals. Retorque brake caliper mounting bolts.
- Measure thickness of brake pads remaining:
Front: ____ mm (____% worn) Rear: ____ mm (____% worn)
- Measure thickness of brake rotors (if pads are worn more than 80%)
Front: ____ (____ Minimum spec) Rear: ____ (____) Minimum spec)
- Examine engine belts for cracking. Inspect tensioning adjustment pulleys for wear and tensioner pistons for correct preload on belts.
- Visually inspect fuel tank, lines, and connections for seepage or under-carriage damage. Report hoses older than 7 years or visually cracking.
- Tighten fuel line connections at fuel pump and pick up units. Includes removal and installation of back seat and/or fuel pump access hatch. Report seepage around pick up unit/gasket.
- Retighten fuel line clamps under car and connections in engine compartment.
- Visually inspect injection rail, injectors and fuel pressure regulator for seepage.
- Replace fuel filter(s). Includes drain in a reverse direction through a 4 micron strainer to check for signs of contaminants.
- Inspect condition of vacuum hose to remote fuel pressure regulator.
- Inspect engine cooling system aluminum flanges under hose connections for signs of corrosion or hose damage.
Note: Advise if removal and repair of hoses is required (invoiced separately).
- Check all engine cooling system plastic hose connections and flanges for signs of seepage due to embrittlement. Advise of age and condition of parts for future attention as needed.
- Pressure test engine cooling system and all connections, tighten clamps, and check all hoses for seepage. Top up coolant level and test for correct concentration.
- Test efficiency of engine cooling system including test radiator heat dissipation, thermostat operation and proper flow through system. Flush is required every three years to prevent corrosion damage.
Note: Advise if flush if required (invoiced separately).
- Test engine fan clutch for proper operating engagement (at approximately 90 °C.) to provide adequate air flow through radiator. Test for disengagement at higher RPM to prevent excessive drag on engine.
- Test auxiliary fan with engine at operating temperature at idle for proper operation of normal and high speeds. Includes bypass temperature switch to simulate overheat situation and engage air conditioning system to test auxiliary fan response based on system pressures.
- Remove and clean battery terminals and battery posts. Inspect for acid seepage around posts. Treat connections with terminal protector.
- Clean ground cable connection at chassis from battery and engine ground at frame rail.
- Visually inspect battery condition and fitment. Verify vent tube function.
Note: For non-sealed batteries, add distilled water as required.
- Inspect and test all fuses. Includes replace weak or high-use fuses.

- [] Perform electrical system /load tests.
Alternator: amp ___ V ___ Starter: amp ___ V ___ Battery V ___ sec. ___
- [] Inspect windshield washer reservoir, hoses and nozzles for leaks (including rear if equipped). Fill system, clean and aim nozzles.
- [] Resecure both wiper arm stalk retaining nuts to prevent spline slippage.
- [] Check wiper blades (front and rear if equipped) for proper cleaning and condition. Replace as needed.
- [] Adjust wiper blades as needed to prevent "wiper chatter".
- [] Test operation of AIC (*automatic interval control/rain sensor*) (if equipped).
- [] Test resistance of coils, inspect contact connections for arcing or oxidation.
- [] Check for signs of oil seepage into spark plug holes around valve cover gaskets.
- [] Replace spark plugs including inspect for signs of improper combustion (fouling, ash deposits, excessively worn arc gap).
- [] Check engine compression at operating temperature with wide open throttle (fuel and ignition systems disabled).
#1: ___ #2: ___ #3: ___ #4: ___ #5: ___ #6: ___
#7: ___ #8: ___ #9: ___ #10: ___ #11: ___ #12: ___
- [] Test function of vanos system (93 and newer) and assess engine timing chains for wear.
- [] Test oil filler cap for proper sealing. Replace seal or cap as needed.
- [] Clean and lubricate bearing points of throttle linkage including return springs.
- [] Electronically test synchronization of MDK unit and throttle sensor (99 and newer).
- [] Tighten hose clamps on throttle housing, intake plenum, air collector and air mass meter.
- [] Inspect intake boot, engine breather hoses and crankcase breather system for proper sealing or signs of cracking, splitting or brittle plastic components.
- [] Perform engine vacuum test:
inVc at idle: _____
- [] Replace air filter(s) including clean debris from housing(s) and check for proper fitment of inlet ducting to air box.
- [] Test function of cold start and warm-up operation.
- [] Verify proper secondary air injection system function including inspect vacuum and pressure hoses for cracking or leakage. Test operation of air limit valve for signs of sticking (due to carbon build up).
- [] Electronically test function of oxygen sensors including pre-catalytic converter and post catalytic converter sensor operation.
- [] Scope engine including read out live engine data for nominal specs and adaptive fuel trim.
- [] Test fuel evaporation control system for proper operation and saturation levels.
- [] Measure fuel injection system emission output at tail pipe(s):
Bank 1: CO% ___ HCppm ___ CO2% ___ O2 ___ NOX ___ AF Ratio ___
Bank 2: CO% ___ HCppm ___ CO2% ___ O2 ___ NOX ___ AF Ratio ___

- [] Check operation of lighting equipment including headlights, foglights, turn signals, taillights, side marker lights, and parking lights. Replace bulbs of questionable age, clean and secure suspect connections. Check for burnt or corroded sockets.
- [] Check stalk control for proper turn signal and headlight flash.
- [] Test operation of ALC (*automatic light control system* - 9/01 and newer) (if equipped).
- [] Check operation of both horns.
- [] Adjust headlight settings as needed. Check headlights for broken aiming tension rods.
- [] Check instrument cluster and dash illumination.
- [] Test operation and illumination of all standard dash warning systems and check control system.
- [] Test function of OBC (*on-board computer*) including stalk controls.
- [] Test operation of MFL (*multi-function steering wheel*) controls.
- [] Test operation of PDC system (*park distance control*) (if equipped).
- [] Perform navigation system function test.
- [] Check operation of interior dome, glove box, map, flashlight, rear reading, vanity mirrors and luggage compartment lights. Replace bulbs as needed.
- [] Adjust glove box and lubricate latch. Resecure mounting hardware as needed.
- [] Check function of cup holders (if equipped).
- [] Test operation of windshield wipers (rear if equipped), heater and air conditioner blowers and controls, and rear window defroster. Check stalk control sliders, switches and vents for proper operation.
- [] Check sunvisors and clips for proper tension.
- [] Lubricate door brakes and strikers.
- [] Inspect all weatherstripping for tears and good door/window contact.
- [] Lubricate all door opening and door weatherstripping.
- [] Check operation of sunroof including height adjustment, cable timing and one-touch feature.
- [] Lubricate sunroof tracks and check operating function.
- [] Lubricate hood and trunk hinges and latches. Advise if adjustment of hood cable release or trunk lock is needed.
- [] Lubricate fuel filler door hinge, lock pin and gas cap seal.
- [] Adjust door latch strikers for proper closing tension and check function of internal and external release mechanisms. Adjust latches as needed.
- [] Resecure door hardware on latches, locks and strikers.
- [] Operate and test function of locking system. Check function of all interlocking actuators in doors, trunk, fuel filler door and check for third position dead bolt operation.
- [] Test function of DWA (*alarm system*).
- [] Recharge or replace batteries for remote key controls as needed.
- [] Test operation of electric and manual seat adjustments including test operation of seat memory feature (if equipped). Lubricate tracks as needed. Advise if seat material repair or conditioner is needed.

- [] Check operation of seat heater (if equipped).
- [] Examine condition and operation of seatbelts including lubricate release mechanism with dry Teflon lube.
- [] Retorque seat mounts and panels.
- [] Check headliner and partial shelf material for sagging and for secure mountings of A,B & C pillar trim.
- [] Visually inspect SRS/MRS air bag units for worn covers or damaged trim.
- [] Check operation of electric mirrors including check motors for binding or popping. Test function of passenger side reverse drop down feature (if equipped) and mirror memory function (if equipped).
- [] Check operation of manual and electric windows and lubricate window channels. Report any window regulator abnormal function or noises.
- [] Check operation of side and rear window shades (if equipped).
- [] Replace external IHKA microfilter(s) and clean debris from cowling.
- [] Test internal IHKA microfilters for clogging (if equipped). Replacement advised every 3 years (invoiced separately).
- [] Check air conditioner charge and visually inspect all hose connections and components for signs of seepage.
- [] Inspect air conditioner hoses and compressor for proper mounting to prevent chafing or vibration.
- [] Test actual air conditioning system pressures during operating conditions.
High: _____ Low: _____ Ambient temperature: _____
- [] Test IHKA temperature output during operating conditions.
AC at idle: _____ AC at 55 mph: _____
Heat at idle: _____ Heat at 55 mph: _____
- [] Test audio function including radio, CD, cassette and speakers.
- [] Reset Service Interval System, stamp service book, calculate time and mileage for next service/oil change interval (condition based) and install reminder sticker on windshield.
Note: Service lights do not reflect realistic condition based intervals - advise following reminder sticker based on calculations of our climate and your driving habits (time and mileage).
- [] Final road test car and inspect completed work.

** Comparison of this service sheet to factory recommended service requirements will not directly coincide. Many operations have been added to this checklist insuring a more inclusive approach for immediate needs, as well as future considerations.*

Additional requirements for specific cars (to be invoiced separately):

E46 M3, MCoupe (02):

- [] Adjust valve clearances. Includes removal and installation of valve cover, oil separator and breather hoses. Examine cam lobes for wear. Test oiling system for adequate oil to cam lobes and journals. Replace valve lash shims as needed. Clean valve cover and mating surfaces and replace gaskets and grommets.

MODELS WITH SMG (sequential manual gearbox)

- [] Test SMG function and adaptation with GT1.
- [] Flush SMG hydraulic system (Pentosin).

E46 XI, E53 X5:

- [] Inspect transfer case for seal leakage.
- [] Inspect front halfshaft inner and outer c.v. joints for wear and boots for cracking or leakage.
- [] Change oil in transfer case. Note: Specific oil required.
 Option: Specific oil requested by customer: _____.
- [] Inspect condition of forward driveshaft including drive flanges and fasteners.
- [] Change gear oil in forward differential. Note: Specific fluid required.
 Option: Specific oil requested by customer: _____.

E36, E46 CONVERTIBLE :

- [] Activate roll-over device.
- [] Lubricate convertible top hinges, linkage and frame.
- [] Test convertible top operating system (electric or hydraulic) including interrogate CVM fault code system for faults stored in memory.

ALL MODELS WITH AUTOMATIC TRANSMISSION:

- [] Perform automatic transmission service. Includes replace filter, o-ring, gasket, and seal rings. Clean the oil pan and magnets. Inspect for signs of wear to fiber discs and thrust washers. Check solenoids for proper sealing and solenoid electrical connections for tightness. Refill the transmission using original equipment synthetic transmission fluid to maintain proper shifting. Fill transmission to correct level with engine running and temperature between 45 to 55 degrees Celsius. Electronically check fluid level reading (no dipstick is provided).

ALL MODELS DURING 2nd INSPECTION II AT OR ABOVE 80,000 MILES:

- [] Removal and replacement of valve cover gaskets and grommets.
- [] Examine cam and cam lobes for wear including inspect valve and timing components for adequate oiling.
- [] Examine timing chain and vanos system for wear.
- [] Check cam timing for proper setting.