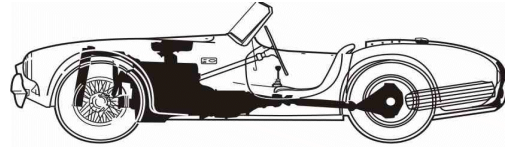


Servicing a Hawk 289 Le Mans



Introduction

- The car for which this servicing checklist was developed is a Hawk 289 Le Mans with a Rover 3.9 litre engine and gearbox and MGB running gear.
- For simplicity, it is assumed that the car is serviced and MOT tested annually, and does a mileage not exceeding 3000 miles per annum.
- If your mileage is very different you will have to review which items to do and when to do them, based on the relevant Haynes Workshop manuals.
- Remember this is 60 year old technology. Check regularly all fluid levels, check for leaks under the car and bonnet, and investigate unusual noises.
- The routine servicing jobs are important, but the key point of servicing is to identify and fix the problems which could cause a roadside breakdown.
- Consumables like oil filters, brake pads & shoes, water hoses and tyres can often only be sourced from specialist internet suppliers, so plan ahead.
- The sequence of completion of the checklist is not generally important, but the items are grouped for convenience so you can work more efficiently.
- The source material:
 - Haynes Workshop Manuals for Rover 3500 and MGB
 - Mallory website
 - Edelbrock website
 - MOT test checklist
 - Experience of servicing my car

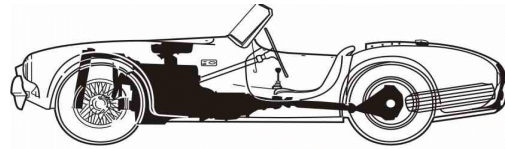
3000 mile service consumables

- 3 litres blue ethanol antifreeze (for older vehicles)
- 5 litres 10W/40 Or 15W/40 semi synthetic oil
- 1 litre SAE 90W EP for back axle and steering rack
- 1.5 litres Type 'G' ATF for gearbox, or AQM
- Multipurpose Grease
- Oil filter for Rover 3500 4" long; alternatives:
 - MG Rover LRF000320EVA,
 - FRAM PH5443
- Golden Hermetite or other petrol proof non silicone jointing compound
- Copaslip
- Automec silicone brake/clutch fluid
- Windscreen washer fluid

3000 mile service - optional consumables

- Tyres: 205 x 70 x 15, 95V. Inner tubes not required as spoke heads are sealed.
- 8 x NGK BP6ES sparking plugs
- "Low Rider" 14"x2" Air filter
- Filter King fuel filter element

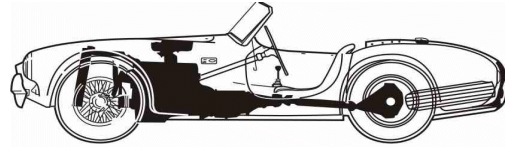
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3000 mile or annual service – checklist

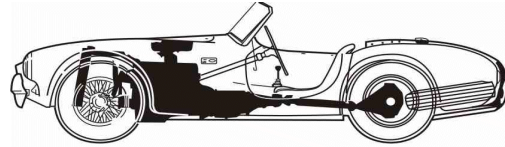
- **Under the car**
 - Slacken all wheel hubs before raising car, then remove wheels for ease of access.
 - Check tread for excess wear and side walls for damage. Min depth 4mm.
 - **Support car on 4 axle stands, under front chassis cross member and rear axle. Do not use a trolley or bottle jack when working under car.**
 - Change coolant (11 litres 25% strength blue anti freeze for older vehicles).
 - Drain radiator by disconnecting bottom hose.
 - Drain n/s cylinder bank, drain tap access from under engine.
 - Drain o/s cylinder bank, drain tap access from above manifold.
 - Change oil filter and engine oil (**do these tasks in this sequence**)
 - Remove old filter, fill new filter with new oil before replacing.
 - Drain old oil, then refill with 5 litres of 15W/40 semi synthetic oil
 - Top up back axle (plug is on rear of differential; Hypoid SAE 90W EP).
 - Top up gearbox (plug is under panel in n/s tunnel, 25mm; type 'G' ATF).
 - Grease 8 nipples:
 - 2 on each kingpin,
 - 1 on propeller shaft and 1 on each U/J,
 - 1 on handbrake cable.
 - Adjust rear brakes (square adjuster, top of backplate).
 - If rear brakes bind, remove drums and investigate reason.
 - Check front disk condition and thickness of front brake pads at least 0.12".
 - Check handbrake cable, lubricate cable linkages and adjust if necessary.
 - Check steering rack gaiters and replace if split, refill with SAE 90W EP.
 - Check for any oil leaks and rectify, wipe underside & chassis with oily rag.
 - Check for brake or clutch fluid leaks, condition of all flexible hoses.
 - Check entire fuel line:
 - check for leaks, particularly around fuel pump taper joints.
 - tighten hose jubilee clips at fuel pump.
 - check condition of flexible hose.
 - check glass fuel filter under tank, if dirty clean out filter element:
 - remove lower hose chassis clip, disconnect fuel hose at fuel pump, drain fuel tank, discard fuel.
 - unscrew filter body with 2 13mm spanners, allowing the free hose end to rotate (don't disturb crimped hose connections).
 - check filter element and rubber seals in end caps
 - take care when tightening end caps on reassembly
 - Check exhaust system for any visual signs of blows and remedy.
 - Check shock absorbers for leaks.
 - Check for nut/bolt tightness:
 - 4 on steering rack mountings, 1/2"
 - 2 steering arm ball joints 5/8", plus 2 tie rod lock nuts, 7/8"
 - 4 on rear spring shackles on each side, 9/16"

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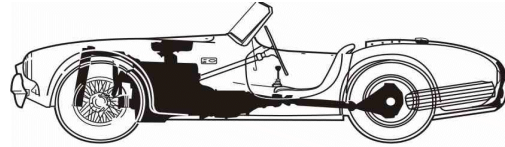
- 2 on Panhard rod ends, $\frac{3}{4}$ ”; 1 locknut 15/16”
- 4 on Panhard rod o/s clamp to rear axle, 13mm
- 6 on exhaust pipe U bolt clamps on each side, 13mm
- 4 on exhaust system rubber suspension on each side, 13mm
- 3 seat mounting bolts on each side, 13mm
- 2 starter motor mounting bolts, 14mm
- 2 starter motor electrical connections, 13mm
- 2 clutch slave cylinder mounting bolts, 13mm
- 16 sump bolts, 13mm, need box spanner for 2 at rear
- Replace wheels and lower car
 - Clean and polish wire wheels while off car.
 - Check that spokes are not broken or loose.
 - Replace all wheels and tighten hub spinners.
 - Check all 4 wheel bearings and steering track ends for play.
 - Lower car by removing rear axle stands first, apply handbrake.
 - Remove front axle stands last
- With wheels down, check front wheels toe-in (MGB: 1/16” – 3/32”).
- Check 4 hub spinners with copper mallet and hex spanner for tightness.
- **Under the bonnet**
 - Lubricate and adjust if necessary the throttle and choke linkage.
 - Remove battery to check electrolyte level; apply Copaslip to terminals.
 - Remove air filter check condition and replace if dirty.
 - Check engine breather pipes are unblocked and still connected to air filter.
 - Inspect and if needed clean brake servo filter element underneath servo.
 - Remove Filter King bowl, clean out, and check condition of filter element.
 - Remove and clean spark plugs (0.032” gap) (firing order 1 8 4 3 6 5 7 2).
 - Oil pad within cam for centrifugal advance.
 - Check cam advances smoothly and springs back on release.
 - Check points base plate rotates anticlockwise smoothly and springs back.
 - Check vacuum advance by disconnecting pipe at carb end, and sucking.
 - Check distributor cap for cracks and spring loading of carbon brush.
 - If points are fitted, check condition and static ignition timing (see below)
 - Check tightness of all HT & LT connections to coil, distributor and plugs.
 - Check alternator drive belt and adjust if necessary (1/3” play at midpoint).
 - Check condition of all coolant and brake servo hoses, and tighten clips.
 - Check fuel line unions at carburettor & Filter King regulator for leaks:
 - If bleed screw disturbed, remake with Golden Hermetite or similar.
 - Flexible hose connections require 3/8” Whit & 17mm spanners.
 - Check for nut/bolt tightness:
 - 4 pinch bolts on steering column U/Js, $\frac{1}{2}$ ”
 - 12 rocker box cover hex bolts.
 - 16 exhaust manifold nuts, 9/16”
 - Check oil filler cap seal condition, check radiator cap seal condition.

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- Remove grille, check radiator matrix is not leaking nor blocked by flies.
- Check that all radiator fan mountings are tight
- **Inside the cockpit**
 - Check correct operation of windscreen wipers,
 - Check wiper blade condition and replace if split.
 - Check position and fixings of all three rear view mirrors.
 - Check condition and operation of seat belts for both driver and passenger.
 - Check driver seat slides.
 - Check steering wheel for play in top column bush, and play in rotation.
 - Check all electrical functions from dashboard switches:
 - Side lights, head lights, main beam and dip, rear fog lights
 - Brake lights
 - Indicator lights left and right, horn and hazard warning lights
 - Windscreen washer and wiper (position 1 fast, position 2 slow)
 - Demister fan (under dash)
 - Radiator fan (position 1 on, position 2 warning light test only)
 - Door courtesy lights
 - Check operation of alternator, oil pressure, and hand brake warning lights.
 - Oil door, bonnet and boot hinges and locks.
 - Check door lock and striker plate mountings are tight.
 - Check door hinges not loose (14mm).
 - Check boot and bonnet hinge mountings are tight.
 - Check that foot brake Tilton bar end locknuts are secure (11/16”).
 - Check condition of fire extinguisher.
 - Check fuel filler pipe (below hard top) jubilee clips are tight.
 - Clean out interior and treat leather seats with “clean and shine”.
- **Inside the boot**
 - Remove hardtop for ease of access.
 - Clean out boot.
 - Check wiring undamaged.
 - Check fuel line union is tight.
 - Check fuel filler pipe jubilee clips are tight.
 - Replace hardtop and check both hardtop fixing bolts are finger tight.
- **On the road final checks**
 - Wash exterior of car.
 - Check tyre pressures are 26 psi, including spare.
 - Check spread of main and dipped beams.
 - To adjust remove the headlamp rim to obtain access to adjusters.
 - Check correct operation of tachometer and speedometer.
 - Road test car on an extended run, if needed tune the carburettor and check the ignition timing (see below).

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Additional Service Tasks (which may be needed more often than every 3000 miles)

- **Edelbrock or Weber carburettor tuning**

To adjust the idle mixture and tickover speed, using forward facing left and right idle mixture screws (IMS), and idle air flow screw (throttle stop)

- Fully warm engine and ensure choke is fully open.
- Remove air cleaner (note: does not normally disturb tickover).
- Set desired tickover speed with idle air flow screw.
- Adjust IMS on both sides to maximize RPM (clockwise leans).
- Reset tickover to 500 RPM, if IMS change increased tickover.
- Trim IMS again on both sides to maximize idle RPM.
- Lean IMS just enough to get slight drop in idle speed.
- Replace air cleaner (if tickover changes, re-adjust),
- Road test. If engine pops on overrun, idle mixture is too lean.

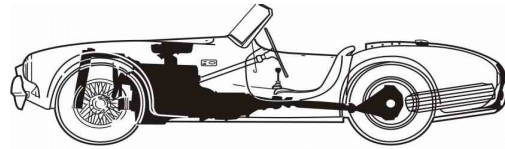
- **Mallory Static Ignition timing (either points or electronic ignition)**

- If doing this for the first time, check whether the crankshaft pulley TDC mark is accurate; use a dial gauge inserted in No 1 sparking plug hole
- If points are fitted, check distributor dual points gap is set to 0.022"
- Standard static ignition timing for Rover 3500 is 6° BTDC, you can increase to 10° BTDC with the Mallory advance fitted (24° at 3000 rpm)
- A good initial setting is 8° BTDC.
- Remove No 1 sparking plug and distributor cap, engage neutral.
- Use starter to rotate engine so that that rotor arm is pointing to No 1 lead (ahead) (different from Rover distributors described in Haynes manual)
- Engage top gear, and push car to turn engine to 8° BTDC on the crankshaft pulley
- Wire test meter across coil low tension terminals
- Loosen bolt so distributor housing can be rotated, anticlockwise advances (14mm)
- Switch on ignition, advance distributor housing until voltage drops to zero
- Tighten distributor bolt, retest ignition timing, switch off ignition.
- Remove test meter, replace distributor cap and all sparking plugs.

And finally ... let me know if you want the source Word document to develop your own checklist, or if I have missed something important!

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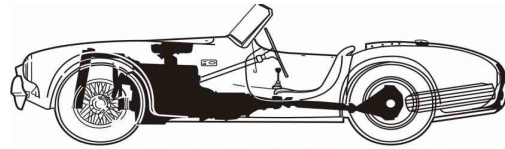
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Other maintenance tasks, not part of the normal service:

- **Cleaning out the Edelbrock Performer 500 carburettor**
 - This is not a routine job, but may be necessary if
 - The fuel supply has been contaminated, or
 - the engine is difficult to start and/or runs roughly, or
 - the car has failed the MOT emissions test.
 - Check that ignition and timing are OK before removing and cleaning carburettor
 - Do not attempt to dismantle carburettor in situ, as screws can drop into the engine
 - Obtain new Edelbrock 500 gasket set before dismantling
 - Remove carburettor from manifold:
 - Isolate battery
 - Remove air cleaner and disconnect breather pipes
 - Disconnect fuel line banjo fitting (3/4"), catching fuel in container
 - Disconnect choke and throttle cable linkages, and distributor vacuum pipe,
 - Remove 4 bolts on carburettor flange and lift off carburettor (1/2" box)
 - Invert and drain from carburettor the old petrol, and clean the outside.
 - Dismantle and clean carburettor, using a clean container to hold all the small parts
 - Remove clips to disconnect the choke linkage and throttle pump linkage
 - Unscrew cover plates (T15), release the 2 metering rods & step-up springs
 - Remove 8 screws (T25) securing top and bottom parts of carburettor
 - Separate top air horn cover and bottom body of carburettor, turn over body
 - Remove 8 screws (T25) securing four primary and secondary metering jets
 - Remove 2 screws (T20) securing central idle metering jet
 - Clean and replace 5 metering jets in body, replacing gaskets if necessary
 - Clean out the two float chambers and other cavities in carburettor body
 - Check float level:
 - Invert the air horn cover with the gasket in place
 - For each float, check gap is 7/16" between top of float and gasket
 - If adjustment is needed, do not apply any pressure to the float valve
 - Check float drop:
 - Turn the air horn cover upright with gasket still in place
 - For each float, check gap is 1 1/4" ± 1/4" between top of float and gasket
 - Check condition of air horn / body gasket and renew if necessary
 - Reassemble carburettor air horn to body
 - Replace 8 screws securing top and bottom parts of carburettor
 - Replace 2 metering rods & step-up springs and tighten cover plates
 - Re-attach choke linkage and throttle pump linkage using correct hole
 - Check condition of flange gasket and replace if necessary
 - Replace carburettor on manifold and reconnect choke, vacuum pipe and throttle
 - Check that choke and throttle linkages work correctly and are lubricated

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- Remove Filter King bowl, clean and replace filter if necessary
- Check that the filter installed between the fuel tank and fuel pump is clean.
- Reconnect fuel line, reconnect battery, switch on ignition and check for fuel leaks
- Replace the air filter and breather pipes
- Clean and gap all sparking plugs, which can be affected by poor carburation
- If necessary, adjust engine idle speed and tick-over as described above

- **Removing the Mallory distributor (either points or electronic ignition)**
 - This is not a routine job but may be necessary if you need to replace:
 - the oil seal
 - the vacuum advance unit
 - other internal parts
 - Disconnect electrical connections and vacuum pipe and remove distributor cap
 - **Do not remove the rotor arm yet!**
 - Remove No 1 sparking plug (front of engine, left hand side facing forwards)
 - Use starter motor to position rotor arm roughly on No 1 lead (facing forwards) (this is different from some Rover 3500 distributors described in Haynes manual)
 - Rotate crankshaft exactly to TDC mark on crankshaft pulley (push car in top gear)
 - Mark the position of rotor arm on distributor
 - Mark the position of distributor on engine crankcase
 - Release distributor clamp (14mm)
 - Rotating anti-clockwise to clear top hose, withdraw distributor from crankcase.

- **Replacing the Mallory distributor (either points or electronic ignition)**
 - The distributor shaft engages with both the camshaft helical gear and the oil pump
 - Inserting the distributor makes the shaft rotate about 20° as it passes the camshaft
 - On the Mallory distributor, the oil pump drive slot is aligned with the rotor arm (this is different from some Rover 3500 distributors described in Haynes manual)
 - Ensure that the oil pump drive dog is aligned with the rotor arm at No 1 position
 - Ensure that the rotor arm is aligned with the mark on the distributor
 - Position distributor and rotor arm about 20° anticlockwise from the oil pump dog
 - Insert the distributor, allowing both rotor arm and distributor to rotate clockwise
 - Ensure that the distributor is aligned with the mark on the crankcase
 - Replace the distributor clamp and tighten bolt (14 mm)
 - Reconnect electrical connections and vacuum pipe, replace distributor cap
 - If you forget to mark the position of the rotor arm or distributor:
 - Position crankshaft on No 1 TDC as when removing the distributor
 - Remove left rocker box and ensure that both No 1 valves are closed
 - If not, rotate crankshaft 360° so that it is on the No 1 cylinder firing point
 - Align rotor arm with No 1 lead contact on distributor
 - Replace the rotor arm and distributor as described above
 - Ensures No 1 lead faces forwards approximately
 - Retime the engine statically (see above) or dynamically