

MB 50

Tech. Notes

Updated: 18.09.2022

Disclaimer: Much information herein is specific to my car (Middlebridge No 50) and not necessarily correct for other Middlebridge cars. No information in this document is in any way claimed nor guaranteed to be correct. Anyone may use but do so **entirely at their own risk!**

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Appendix 1

Hub greasing (Timken)

Appendix 2

Lockheed Servos

1. Service Items

(Lubricants, Fluids, Filters & Service parts.)

Item	Details
Engine oil (4.5L)	Orig. Spec'n. 15W-40 Mineral. Better is 10W 40 Semi Syn: Comma Eurolite
Oil Filter	Ford EFL90 (MB50 has K&P Stainless (Petrol wash))
G'box – Man'l (1.9L)	Comma SX75W-90 Semi Syn GL-4 (Not GL5)
G'box (Auto)	ATF (Ford Spec') TQ Dexron II
Power Steer'g (0.8L)	ATF mineral oil Comma 'AQF' or similar
Brakes (1.7L)	DOT 3, DOT 4 or DOT 5.1 definitely not Dot 5.0 (silicone)
Grease, Wheel Bearings	See Annex 1 for latest spec'n and hub greasing procedure
Grease, F. Susp'n	Comma rec. CV Lith-Moly Grease (less viscous than LM grease)
Grease, generally	Lithium EP
Plugs (NGK 'R') **	MB50: BCPR6EIX (gasket seat)
Coolant *** (5.0L)	Ford SSM-97B-9313-A Ethylene glycol + de-ionised water
Thermostat *	Ford Pt No: 6588962 (88C)
Rear axle (2.0L)	EP90
Air filter	Granada not Scorpio: MAN CA4237, WIX: WA6208
Fan Belts	Water pump & power steering: Gates 13 x 1000 Water pump & alternator: Gates 13 x 1225
W'Wipers	Arms: Morris Marina, 1/2" spindle, 7.2mm blade (push fit) Blades: 16"

* Haynes says 82C for v6 but many others say 88C (TVR boys, Burtons, etc). MB50 has 88C.

** MB50 came with NGK 'R' BPR6EF, taper seat plugs. Nice grey colour but wrong type, ought be gasket seat.

For Granada 2.9efi engine **NGK Tech. Dept.** recommend iridium plugs:-

- (1) **BCPR6EIX** (gasket type). Supplied out the box with 0.8mm gap "which is fine."
- (2) **BPR6EFIX-10** (taper seat type). Supplied out the box with 0.9mm gap "which is fine".

*** Comma & Granville technical both advise:-

Most modern anti-freeze packages not suitable for older vehicles. Keep to basic stuff (Comma "Super Coldmaster", Granville "Sub Zero Universal RTU"). But, additive package of silicate type is acceptable (Comma "Xtream G48", Granville Zerocol 48).

Thus, if **additive** is contained it must be non other than **silicate** based.

Use only de-ionised water.

Note that water alone is a more effective coolant than water antifreeze mix. However, anti-corrosion and lubrication properties of antifreeze are vital. If overheating is a problem try just 30% antifreeze solution in summer.

2. ENGINE, 2.9EFI (Ford Granada MK 3/ Scorpio)

Mechanical tappets (MB50):-

Inlet valves - 0.014" Exhaust valves -
0.016"

No 1 cyl. is front offside, 2 cyl. is middle offside, 3 cyl. is rear offside.
No 4 cyl. is front nearside, 5 cyl. is middle nearside, 6 cyl. is rear nearside.

Setting Procedure:-

	Valves rocking (overlapping)	
	Ajust valves.	
No 5 cylinder -----	No 1 cyl (in & ex)	
No 3 cylinder -----	No 4 cyl (in & ex)	
No 6 cylinder -----	No 2 cyl (in & ex)	
No 1 cylinder -----	No 5 cyl (in & ex)	
No 4 cylinder -----	No 3 cyl (in & ex)	
No 2 cylinder -----	No 6 cyl (in & ex)	

When rockers on cyl. 5 are both rocking (overlap) adjust both inlet and exhaust tappets on cyl. 1

1. Always turn engine in direction of normal rotation.
2. Align engine pulley marks at zero(ish). If valves at cyl.1 are rocking turn engine 360deg. So that cyl. 5 is rocking.
3. Turn eng. 1/3 turn and rockers at cyl. 3 should be rocking and those at cyl. 4 can be adjusted.
4. Continue procedure.

Hydraulic Tappets?

(1) If you can slide feeler gauge under the [rocker arm](#) tips when valves closed then it's mechanical. If rockers all have small amount of pre-load (tightish to valve tip) it's probably hydraulic.

(2) Push down on the push-rod end end of the rocker Arm. Hydraulic lifters give a little, solid don't!

Setting clearances is different procedure for mechanical and hydraulic types.

Torque Settings

Cylinder head - Hexagon bolts

Stage one	40-45Nm	30-33lb ft
Stage two	55-70	41-52
Stage three (after 10-20 mins)	95-115	70-85
Stage four (after warm up)	95-115	70-85

Cylinder head - Torx bolts

Stage one	35-40	26-30
Stage two	70-75	52-55

Stage three (after 5 mins)

Tighten a further 90 degrees

Ignition Timing

Basic timing for RON 97 fuel:-

12 degrees @ 850 rpm, engine code BRC.

15 degrees @ 900rpm, BRV (catalyst equipped engines).

For lower grade fuels an Octane socket is provided whereby connecting blue lead to earth retards ignition by 2/4(?) degrees, connecting red wire to earth retards by 4/6(?) degrees and connecting both retards 6/10(?) degrees. The yellow wire if connected to earth simply increases tick-over by say 70 rpm.

Distributors

MB50 has a spare engine (in garage if ever needed) but from auto car and has different distributor to that of the one originally, currently, fitted to the car:-



86TF-12100-AB

E5-RF12A297-8A

E67E-12127-AA

3B04B

FDC-4

ECU (Ford type EEC-IV)

WARNING! Be sure to use correct ECU because if manual ECU is fitted to Auto car it will not slow down when foot is lifted. The correct part numbers are:-

Auto 86GB-12A650-BD,

Manual

86GB-12A650-B2A.

ECU's can be bought from

[https://www.atpelectronics.co.uk/search ...](https://www.atpelectronics.co.uk/search...)

[mit=Search](#)

ECU & Engine management:

www.andrewc.org.uk/tvrgit/ford29diagnostics.pdf

ECU's

<https://www.atcdrivetrain.co.uk/>

Engine Cooling

Thermostat – Use Ford only.
opening temp)*

Ford Pt No: 6588962 (88C,

Thermostat Seal

Ford Pt No: 1092262

Thermostat Housing
(latest)

Ford Pt No: 86TF-8592-CB

(earlier Nos 6153502 & 6183965)

Pressure cap

14lbs psi.

* An 88C thermostat will not be fully open until 94-103C because it opens progressively after 88C to allow further opening if temperature rises further. At peak load a thermostat will be approaching fully open but even with engine at full power there should always be a reserve safe margin of cooling capacity.

Run too cold a 'stat and the EFI/CPU wont go in to closed loop:-

closed loop = choke off)

(open loop = choke on

Engine block coolant drain

Positioned offside towards bottom and rear of block.

Fuel system

Fuel hoses must nowadays be bio/ ethanol (E5, E10) resistant.

High pressure fuel hoses (fuel injection) **must be to SAE 30R9.**

Low pressure fuel hoses may be SAE 30R7, SAE 30R14T1 or especially for marine application (fire rated), SAE J1527, SAE 30R 14T1 or ISO J7840.

Fuel injectors

Orig Bosch injectors (Pt No: 0280150727) no longer available from Bosch or Ford dealers.

If can be found at all then buy for spares as engine is useless without without them.

Alternatively, search for alternative with same characteristics (within 1% or so) check size is same.

Consider this list: https://www.polog40.co.uk/article_injector_table.php

Bosch Number	cc/min @3bar	Resistance (ohm)
0280150229	143	15.6
0280150710	144	14.5
0280150727	144	14.5
0280150750	144	14.5
0280150767	144	14.5
0280150937	144	14.5
0280150938	144	14.5
0280150941	144	14.5
0280150942	144	14.5
0280155604	146	14.5
0280155707	144	14.5
0280155708	144	14.5
0280155842	154	14.5
0280155962	141	14.5
0280156027	141	14.5
0280156050	141	14.5

Bosch Fuel Injector 0280-150-727 can interchange with any of the following casting or OEM numbers below, all ohm and flow exactly the same.

'Motor Man' replaces Bosch 0280150727 with Bosch 0280150710.

Bosch

0280150229 0280150710 0280150727

Ford

E59E 9F593 A1A	E59E 9F593 A2A	E59E 9F593 A2B	E59E 9F593 A1A
E59E 9F593 A3A	E59E 9F593 AB	E5TZ-A	E67E 9F593 A1B
E67E 9F593 B1B			
E67E 9F593 B4B	E67E 9F593 BB	E6SZ 9F593 A	E7DE 9F593 B1B
E7RY 9F593 A	E7TZ 9F593 B	F47E 9F593 A2D	F47E 9F593 A2E
F47Z 9F593 A			

Motorcraft

CM-4347 CM-4492 CM-4556 CM-4626 CM-4782 CM-4849

Bosch part numbers 0280150767 & 0280150750 for 2.9 EFI are for later cars (aluminium fuel rail) and **do not fit the early 2.9 engines**. Early engines (**MB50**) have steel fuel rail manifold and steel clips to hold Bosch 0280150727, clip holder part can be seen on Bosch 0280150727.

Oil Pressure Sender

It is said:-

The original part, VDO 360 081 029 030, is now obsolete and replacement from Demon Tweeks (VDO 360-081-029-020C), 10 bar (earth return) 1/4 – 18NPTF M4 knurled nut has a parallel thread whereas MB is tapered.

2014 VDO Catalogue gives part no. 360-811, 0-100 psi, 1/8-27 NPT, 240-33 ohm and supposedly does work but difficult to source in UK.

Options:- Use parallel to taper thread adapter? Try PTFE tape?

Engine not starting

- Lack of fuel (pump continuous running?)
- Fuel pump OK? Should run for a few seconds until primed.
- If pump runs then try relays and supply to/ from them.
- Cover of one relay (not both) may be carefully removed and contacts cleaned.
- Larger of the two relays is Ford, 'B' type, not a standard 4 pin 'A' type
- If pump is running, check for spark at the plugs
- Fuel pump inertia switch (in boot, nearside rear cubby hole).



Ford E1AE-9341-A2B First Inertia Switch

- Check power to switch. If power but not working try jumper across switch terminals.
- If no power then try using alternative +ve supply
- If power and switch is working then its the wiring to the pump or the pump itself.
- Wiring to/ from ECU (MB 50 suffered broken cable at battery connection)
- Problem may be the ECU (unlikely) or more likely a wire problem!

Poor idling/ hesitation

Mechanical friction within the throttle body?

Check gasket between the two halves of the throttle body is not covering hole between the two halves.

Many thanks to the owner of Middlebridge No 50 for this very comprehensive guide.

Thank you from Mick and all the MESS.