

Mercedes 300SL Service Journal

Starting Procedure

- Pull on electric fuel pump on right side of steering wheel, red light goes on
- Pull out choke and hold out until engine runs, then release

Oil Pressure

- Bob West says oil pressure at idle 7-15lbs

Electric Fuel Pump

The electric fuel pump also acts as an emergency reserve gas. If you run out of gas you can turn on the switch with the red button (electric fuel pump on) and it will give you a couple extra gallons of gas (need to verify in the owners manual how much gas). The switch can also be used to cure vapor lock which is common in these cars.

Fuel Injection Oil Level

To check fuel pump oil level. There's a small slotted head screw in the top of the pump (which is on the left side of the lower part of engine, and has a dip stick on the end of it). Look up tech tip to see how often to check. Bob said some people check every 300-300 miles.

Brakes

The inherent in the brakes is an unusual adjuster on the wheel cylinders that has a sliding block that allows them to take up slack as the brake shoes get worn out, therefore, when you do a couple rapid presses on the peddle the brakes will feel like they are pumping when they're actually not.

The odd way the brakes feel when you press them initially. you hear a hissing noise and they start to drag, and then suddenly hit a hard spot and the car stops (it's inherent in the bendix type booster).

Hood

To close hood hold up about 8" and drop.

10/20/04 423 Km

1. Why does thermostat have threaded rod coming out at top? Brian doesn't know, thinks it is a generic replacement.
2. Adjust clutch. Done
3. Drain engine oil and replace with Kendall 20/50. Done
4. Change oil filter. Done
5. Drain cooling system. Done
6. Flush brakes - make sure brake fluid is not silicon. It is not silicon. Was replaced with Motul RBF 600.
7. Lubricated chassis. Included fuel injection. Done
8. Change transmission and differential oil. Put in Redline 75/90 NS, will change to Kendall 80/90 in transmission, need to check to see if he also changed the differential.

9. Check all hoses (brake, water, heater, etc.) All hoses and fuel lines look great except for the cracked fuel filler hose. Been ordered.
10. Check fuel lines. Same as above
11. Clunking noise under middle to front of car when backing out of Brian's driveway. Idler arm was loose, could have been this and the chassis needing lubrication.
12. Clunk in rear end. Brian thinks it is the hub splines, but I think it is the brakes.
13. Fuel injection-any adjustment necessary? Checked, ok.
14. Clunk when turning engine off. This is normal. It is an anti dieseling solenoid located at the throttle.
15. The auxiliary fuel pump electric solenoid is not working. Leave for now.
16. Fuel smell: After putting 10 gallons in the tank (tank was reading ¼ tank prior) began getting slight fuel smell. Please check for fuel smell in trunk. Probably the cracked fuel filler hose.
17. Brakes dragging-matched drums so they worked better. Shoes, drums etc. good. The hydraulic system maintains a small amount of pressure to the rear brakes after stopping. This subsides quickly. Brian thinks this is caused by a valve starting to stick in the brake booster. The booster is of the "Hydrovac" type and as such has hydraulic as well as vacuum boost functions. With the brake flush completed as well as with regular use, it may correct itself.
18. Alignment-very lengthy process, Brian thinks it's good.

1/4/05 807 Km

1. Grommet where steering column goes through dashboard is coming loose. Is actually not a grommet, but a rubber strap for holding the wire on the steering column.
2. Check all hoses (brake, water, heater, etc.) All hoses and fuel lines look great except for the cracked fuel filler hose. Fuel filler hose was replaced.
3. Air filter-replace? Replaced with foam from Lyco. Now uses K&N filter.
4. The rubber shifter boot is falling apart-needs to be replaced. Replaced
5. New rubber for the wiper blades? done
6. Screws behind seat should be cad (not black). Replaced with cad.
7. ID tag on firewall loose. done
8. Relay bracket on passenger side near firewall: Detailer said loose or broken, haven't checked. Cracked bracket was repaired and repainted.
9. Left sun visor (passenger side) is loose and will not stay up. Done
10. Check doors for adjustment. Drivers door was brought in slightly.
11. Belly Pans-missing only the ones that cover the underside of car, have the other one. Lynn Yakel @ Lyco Engineering said that after I check to see what belly pans I'm missing, he can order them for me.

12. The auxiliary fuel pump electric solenoid is not working. It is overridden by the switch on the dash. Leave for now.
13. Heater valves controls on dash don't seem to be working. Took both apart, replaced o rings, body is brass, was some corrosion, cleaned off corrosion and lubricated. Replaced control cable on passenger side. Drivers side still doesn't work.

8/11/05 1,229 Km

1. Seat belts-webbing fraying. Replaced. Need to come up with better way to mount, currently mounted to body with cross piece acting as washer and support. Need to mount to frame.
2. Brakes dragging-after drive through Santa Cruz mountains, left rear and right front wheels were very hot. Rebuilt wheel cylinders, master cylinder and booster. Replaced all brake hoses, flushed system and filled with Castrol Dot 4.
3. R&R'd transmission, resealed, replaced clutch with rebuilt original one from Paul Russell, replaced TO bearing, trans seal, pilot bearing, pinion seal, gasgets etc. Filled with Kendall 80/90 without syncro additive.
4. Re-bushed shifter.
5. R&R'd radiator and oil cooler assembly to have oil cooler leakage fixed-rebuilt. Had new oil cooler hose fabricated and replaced engine oil with Kendall 20/50.
6. Repaired leaks in differential.
7. Repaired leak at injection pump drive gear cover.
8. Checked brake lights, tail lights, aim of headlights. OK
9. Installed remote battery cut off switch on battery. Replaced cover screws with Ferrari style plastic knurled screws.
10. Repaired loose left fender vent strake.
11. Repaired with heli coils, loose rear bumper bumperettes.
12. Spare holding air? Filled 2/26/05 to 35psi.
13. Repaired spare tire hold down.

12/15/05 2,065 Km

1. Seat belts-Need to come up with better way to mount, currently mounted to body with cross piece acting as washer and support. Need to mount to frame. Need correct seat belt anchors. Lynn Yakel suggested running a chain or cable under frame and attach

- to the eye bolts connected to the seat belts. Bob fabricated steel anchors that wrap around the frame tube and bolt through the floor to the belts. Looks good.
2. Brakes, if rapidly press brake pedal, don't have boost pressure. Have to wait until hear clunk noise in booster. Noise might be check valve. Bob thinks the brakes are fine. I will monitor
 3. Drivers side heat doesn't work. Valve works but appears to be a plug in the line. Valves needed to be switched from one side of the car to the other. Now work fine.
 4. Detail underside of car-Done
 5. Clean up louvered belly panels at sills-have debris in them and mounted crooked.- Done
 6. Clean up attachment points of under panels beneath doors-Done
 7. Fuel injection pump oil level. Bob checked, level was ok.
 8. Watch for leaky water pump. Evidence of prior cooling leak from the water pump seal. Bob said this is common when the cars sit, often will go away after use.

2/19/06 2,120 Km

1. Clunking sound when getting on and off the gas. Drive shaft was balanced and u joints were replaced
2. Trailing arm bushings: Cracking, need to be replaced. Passenger side had been replaced. Replaced drivers side.
3. General tightening-Done
4. Paint rear brake drums-Done
5. Brake peddle is sticking at the very top of its travel as you first press it (this didn't do this before). Lubricated now doesn't stick
6. Windshield wipers stopped (need to check fuse). Also check to see if the speeds are working. Adjusted linkage. Wiper gear boxes are stiff. A major job to remove and rebuild the wiper gear boxes which are rare and problematic. Don't even want to remove the wiper arms, there is a complicated adjustment necessary to make them fit. Problem may be that the pressure of the wipers is too hard against the windshield but too difficult to adjust.
7. Adjust length of seat belts straps shorter-Can't be done, they are fixed at the anchor point.
8. Rebuild brake booster-Power Break Supply reported a bad poppet valve in booster. No one had taken the booster apart in years. They rebuilt it and bench tested it. Operation ok. Bob checked the vacuum and it showed a steady 12 inches at hot idle out the back of the intake manifold. This is good for a well running roadster engine.
9. Brake fluid-filled with Castrol LMA dot 4 brake fluid
10. Rattle noise under car or in engine compartment? Bob adjusted the last tailpipe hanger to keep from rubbing.
11. Keys: procured two extra sets of keys.

4/14/06 2,842 Km

-Windshield wipers-replaced with inserts from Lynn Yankel, look same as original

6/15/06 3,030 Km

-Water Pump: Replaced water pump with new one from Star Classics. Have original one. Also, replaced surrounding hoses and refilled with anti freeze.

8/10/06 3,047 Km

-Inner Tubes: Had a flat in right rear tire and replaced both tubes on right side with Michelin tubes. Inspected one of the tubes pulled out and it looked like a good quality tube. I have three more tubes but did not replace left side tubes.

Repair List-2/13/08 Bob West notes

-Change certain fluids: *This service: Engine Delo 400. Add EOS Done.* Transmission Kendall EP 80/90. Differential Kendall EP 80/90. *This service: Flush brakes Done and eluteh Castrol Dot 4.* Flush radiator 50/50 mix. Do transmission and differential at major service only, do radiator flush next time June 2009. Flush radiator every 3 years.

-Corrosion Inhibitor: Always use? Brand and quantity? Needed or is it already in the Anti Freeze? Bob doesn't add anything besides the anti-freeze.

-Clunking sound: when getting on and off the gas. Replaced the u joints but still getting some clunking noise. Brake shoes? Half shafts? Gear lash I did not hear much if anything. There is some gear lash in the differential, but nothing requiring attention now

-Windshield rubber seal: replace or caulk Best done with a windshield replacement, the German rubbers weren't good in the 80's

-Coolant Tank: Bob noticed one external mounting clip and internal level indicator (both soldered joints) have come loose from the coolant tank. No immediate concern, but need to repair sometime.

-Radiator Overflow Tank – Fluid measuring tab on the inside of the tank has come off. It may still be in the tank. Check the clips for holding the tank. They need to be repaired.

-Vibration/rubbing – Car has a funny feeling. 1997 (or 1987) hard old V rated Michelins Check the wheel bearings and anything else that could cause this. Bearings all seem good Might have been fixed at last service.

-Rear Bumper – There is a rattle on the left side. I can't tell where it is hitting. Might have been fixed at last service. Every time the exhaust tip gets scraped the last exhaust hanger will bend and hit the bumper bracket. I bent it back.

-Mud Flap – Driver side front mud flap is coming off. Repaired both sides

-Floor mats – Rubber floor mats are loose. The holding screws do not seem to firmly hold them in place. Normal? Yes

-Hard top seal – Dry, replace?

-Antenna: How controlled? Usually automatic when the radio is turned on, but I did not troubleshoot

-Noise: There's a clicking noise coming from left rear quarter panel. Could it be a gas tank float hitting the side of the gas tank? I did not hear this

-Throw out bearing: check for free play per spec Adjusted per manual

-Oil Cooler: Make removable aluminum cover per tech tips. Done Would like to get engine hot enough so that heater puts out hot air.

-Oil Pressure: Ok? List pressures cold and warm. Warm at idle was 2bar which is very good. Bob said 1/2bar (7psi) at idle is the lower wear limit good. If the gauge is reading, probably ok.

-Seat Belts: how strong are the cut carabineers that Bob put on. Way to calculate or ask the company. Steel Hooks and preexisting flatbars are much stronger than any fabric belt

-Valve Adjustment: Necessary? Valve clearances checked OK

-Brake Drum Lock Tabs: Are these ok? Yes

-Alignment: Check alignment, car wanders Alignment laser-checked and found to be in spec. Old Michelins are the likely culprit, but those are cool tires.

-Brakes: Check for pulling I did not experience any pulling....be kind to the brakes, Rudge Drums are a few grand \$\$ each

-Fuel Injection: Check for gas in oil issue Changed the FI Pump oil - -smelled a little normal "fuelish", but the quantity of oil was good - -which is a good sign

-Tech Tips: Any other items need to be addressed? If you don't already have it - -I would suggest getting the history of the car from Paul Russell. They were proud enough to rivet their ID number on the firewall in 1982, they should have some records. I noticed that the head had a casting date of 1968. All in all - ---a great driving, solid roadster. PS - why is the fuel pump wire disconnected from the oil pressure switch? I left it, but the starter will crank longer without the supplemental fuel pump going. If hooked up, it will override the manual lighted switch on dash. Not sure why disconnected. Did not test, may have been disconnected for a reason.

11/10/08 Full detail by Cullen

11/30/09 Installed oil cooler cover

7/21/09 6,153 km Replaid Battery 72 month 27F60

11/30/10 - Changed oil, drained and added 12 quarts of
6,395 km Brod Penn 20/50. New Wix oil filter #51045

- Fuel injection pump. Not sure if ^(hex) plug at back bottom of pump is drain plug. When removed vent near filler dip stick a lot of gas contaminated oil came out. When I first removed hex plug, thin gas contaminated oil came out. With plug out, I filled pump with 20/50 and nothing came out. Ended up over filling pump with vent off until oil ran out clean.

11/24/12 New tires - Michelin X P205/75R15 from Costco recommended by Bob West. Car drives much better. ~~Thoroughly~~ Thoroughly cleaned wheel wells. Had to remove valve stem brace & put in cabinet drawer in shop. Durometer 65

2/2/13 8,240 km

- Drained engine oil + fuel pump oil + changed filter WIX 51045
- Replaced fuel pump bottom cover with one from GWG that has a drain plug, drilled drain plug so could safely wire it. Initially cover leaked - removed and compared to original cover. Cover was very similar but rubber O ring on original cover was thinner than one on new cover. Used original cover O ring + stopped leaking
- Grease nipple on right ball joint was stripped and wouldn't pump oil and grease into ball joint. Tapped slightly and put in new nipple, slightly larger threaded stem
- Greased all ~~nipples~~ grease nipples on under side of car
- Brake fluid - tested for moisture - LED was green - under 1.5% water - didn't bleed - level ok
- Checked coolant with PH strip was 9+ PH Range is 8.5 - 10 Added 8^{oz} of RMI-25
- Filled with 14 quarts of Brad Penn 20/50

2/2/13 Continued

- Cleaned & oiled K+N air filter
- Adjusted trunk lid
- Tilt down, drove. no leaks - Oil Pressure 2 bar

9/14/13 - G6

- During night driving, found headlamp high beams on constantly when headlamps first on. Checked high beam switch against wiring diagram & found it incorrectly wired. High beam wire (yellow) was connected to voltage supply wire (white/black T30), and low beam wire in position of high beam location on switch. Corrected wiring according to Factory diagram for W.S. 300SL roadster. Verified low beams operate correctly & independently.
- Lubricated hood release cable & latch with D. Pont teflon spray.

11/3/13 - G6 9,160 km

- Adjusted RH headlight to even with LH.
- RH reverse light not operating. Removed lens assembly, checked bulb, found it o.k. checked voltage & ground to bulb socket. Found 11.5V supplied, open circuit on ground as measured from socket to ground wire. cleaned socket & voltage supply wire. ~~Re-~~ re-assembled, verified reverse lights operating as designed.
- Trunk difficult to open. Found RH hinge binding. Lubricated using T-9 spray, no improvement occurred. Recommend ~~consult~~ consult a 300SL specialist, and/or remove hinge & clearance as needed to allow free movement.

12/2/14 - G6

- Lubricated both exterior door handles using Tri-Flow teflon lubricant. Neither handle "sticks" open further. Both operate as designed.

12/30/14 - DOT #s B9CCT/AX4312

1/15/15 - Gh - 10471 km

- Cleaned throttle body & plate, lubricated shaft per tech tip in following Group book.
- Engine oil leaks reported. Inspected vehicle, found valve cover gasket leaking at LH rear corner, oil cooler leaking, ~~at~~ the latter resulted in engine oil blown under vehicle coating underside. Removed engine oil cooler, sent to Contra Costa Radiator. They stated there were several leaks, all were repaired and tested. Upon return, cooler was poorly painted. Stripped all paint from top of unit, primed & painted entire cooler with semi-gloss black to match radiator as best as possible. Also, rattle present in bottom of tank for cooler. Returned to C.C. Radiator to correct issue. Inspected oil cooler after returned 2nd time. Re-installed oil cooler, topped off oil (2 qts Brad Pen 20/50). Started engine, checked for leaks. Found steady leak from fuel injection pump overflow tube. Approx. 2" puddle appeared in 4-5 min engine run time. Oil on ground smelled of fuel. Removed injection pump dipstick with catch pan underneath. Oil flowed out of dipstick hole when removed. Approx 3oz. came out. Inspected oil & found it to smell strong of fuel, also found metal particles in oil. Operated engine with pump oil level correct, no further ~~a~~ leak from pump. Excessive amount of fuel has entered injection pump oil sump, damage has most likely occurred. Consulted Bob West, he advised to send injection pump out ~~to~~ for inspection/repair.

• Removed fuel injection pump. Engine at $\approx 17^{\circ}\text{DC}$. Sent to Farchild Industries (Fuel Injection Center). Found diaphragm cracked and fuel pump for supply leaking into injection pump. New mechanical supply pump which has been machined to accept orings installed. Re-installed fuel injection pump to vehicle, timed 60°ATDC cyl #1. Bled fuel system. Fuel leaking from steel braided supply hose to injection pump. ~~Sent~~ Removed all 4 braided fuel hoses, sent to Ant's Star Classics. Re-installed fuel hoses, bled fuel system. Engine starts very easily, yet has poor acceleration and produces black smoke. Adjusted injection pump timing and re-checked. Engine now starts in similar fashion to prior use (crank, wait, then start), and ~~accelerates~~ accelerates ok. Road tested vehicle short distance, all appears ok. Vehicle sat approx 48 hours, rechecked again. Cold start, hot re-start, acceleration, deceleration, light throttle at cruise speed all ok. No further leaks from fuel system or engine oil present. Fuel economy should be monitored to ensure optimum balance between performance & economy.

- Lubricated wiper linkage & tested wipers.
- Set all T.P. 30 psi, spare tire 35
- Replaced valve cover gasket, cleaned oil engine
- Replaced coarse & fine fuel filters
- Inspected/cleaned distributor cap & rotor
- Lubricated distributor per following Group (6w6) tip
- Checked steering box oil
- Checked gearbox oil level/condition, both ok
- Changed engine oil 12 qts Brad Penn 20/50
- Checked all grease points & greased as needed

- Checked all lights
- Performed nut & bolt tightening
- Checked rear wheel bearings per GWH tip - both ok
- Checked generator per GWH tip - ok
- Checked clutch free-play per GWH tip - ok at 1"
- Lubricated clutch mechanism per GWH tip
- Lubricated accelerator linkage & pedal per GWH tips
- Lubricated door hinges per GWH tip
- After road test, noticed coolant tank seepage from seam has increased to a small leak.
- Cleaned area of leak, applied JB Weld & painted with semi-gloss black.

10/28/15 Gb - 10495km

• Engine oil leaks under vehicle. Inspected & found drain plug, oil filter housing gasket & fuel pump plug on injection pump. Removed drain plug, cleaned off & applied different type of thread sealant (Permatex JB) than used during service. Removed oil filter & Gullwing Group adapter plate. Made new gasket & re-installed with same sealant used on drain plug.

• Applied additional torque to fuel delivery pump plug (uses 24mm wrench) to further crush copper sealing washer. Oil appears to be leaking past bottom mounting stud threads. Removed nut & found stud loose. Double nutted stud & tightened fully. Applied sealant as used previously & torqued nut. Verified all other fasteners secure. ~~operated~~ Re-filled engine oil, verified injection pump oil level ok. Operated engine, re-checked & no further oil leaks present at this time.

6/6/19 14,496 km.

Vehicle reported to "vapor lock" after driving approx 35km. After exiting long freeway run, engine sputtered & stalled. Electric fuel pump must be used to operate engine. Road tested & verified concern. After driving approx 20km, sitting at stop sign, engine stalled - only started after electric pump used. Checked G.W.B. archives & service manual. Removed slide valve for fuel pump transfer. This valve is a "check valve" which closes off the port to the tank when electric pump actuated to switch fuel flow from mechanical pump. Otherwise, fuel drawn from electric pump would travel directly back to tank. Disassembled & inspected slide valve. No defects or corrosion found. Cleaned bore, lightly sanded valve shuttle, lubricated with Marvel & re-assembled. Tested on bench, all ok. Re-installed to vehicle. Road tested approx 20km, no issues at all. Need longer road test. If concern re-occurs, line from slide valve to tank must be checked for restriction or vapor lock condition.

7/8/19 14,506

Removed pickup assembly for mechanical fuel pump feed in tank. Removed pipe from pickup. Found holes in pickup screens, rust like particles in fuel tank. Sprayed plv tube with soapy water & pressurized tube. No leaks found. ~~Also~~ blew through pipe from check valve to plv fitting, all ok. Re-assembled.

7/10/19 14,506

Road tested & added 5gal fresh fuel. Found after good long run & some traffic sitting, engine stalled when put into neutral making a turn. Engine would not re-start. Only after electric pump used would engine start.

Reved engine up a few times, then let idle after switching off electric pump. Engine stalled & would not re-start until electric pump used. Continued back via electric pump. Shut off & continued driving in traffic. Engine cuts out & pops through intake below 2k RPM w/o electric pump on. When ~~used~~ electric pump used, no issues. ~~Cracked~~ Allowed engine to stall once back at shop. Cracked both fuel lines (supply & return) on top of tank. Substantial pressure & fuel present. It appears to be similar to a modern fuel injected vehicle. Opened fuel cap. Massive amount of pressure present in tank. Left fuel cap off, vehicle still would not start, or stay running at idle w/o electric pump on. Vehicle appears to be operating as designed, except for failed fuel cap venting. Vapor lock was anticipated by M-B when designed (even as stated in owners manual) due to high temperature of fuel exiting injection pump via return valve.

• Heard intermittent knocking sound in rear, seems to be LH side. Raised & inspected. No witness marks found from anything shifting. Pried on various components, unable to duplicate.

1/30/22 - 66

Inspected checked rear axle noise & found inj. pump oil.

Need to repair rear wheel bearings first, then see check injection pump oil good, smells like normal oil