

Rover SD1 V8 Electronic Ignition Routine Maintenance & Preserving Component Lifetime

Grouped as follows, a raft of maintenance and component protection jobs should be routinely observed for the various parts comprising the Rover SD1 V8 Electronic Ignition controlling up to 24,000 twenty kilovolt discharges per minute in the hostile under-bonnet environment of heat, damp, oil, grease, fuel and human interference found on our cars. Even in ideal conditions the scope for problems is decidedly magnified when basic needs are neglected.

Moisture, Dirt and Cleaning

- Grime and moisture are the main problems, even condensing inside the distributor cap.
- Spray monthly externally with WD40 but less often inside the distributor cap.
- Carefully wipe off excess fluid from all component surfaces using a clean rag.
- HT components are freed from the risk of high voltage tracking, lifetime is extended.
- Plug leads particularly last much longer without damp/grime contaminated surfaces.
- Routinely clean the rotor arm and the inside of the distributor cap.
- Neglect causes early component failure, more so due to recent inferior materials trend.

Component Lifetime

- Increase ignition switch lifetime with a single injection of Vaseline or silicon grease.
- Routinely inspect all primary side (LT) connections to ensure they are clean and secure.
- Amplifier module lifetime will be compromised if re-fitted without thermal paste.
- Coil longevity is improved by cleanliness and corrosion free terminals.
- Random costly coil replacement begs for simple testing before unnecessary purchase.

Inspection

- Lightly oil distributor spindle, bearing surfaces, springs and weights to avoid corrosion.
- Routinely monitor vacuum advance action by 'mouth sucking' the vacuum pipe.
- Likewise gently rotate rotor arm against mechanical advance springs to check action.
- Distributor strip-down for repair access requires a clean bench, care and good tools.
- Newly heard RF interference is a good clue to replace low cost suppression condenser.

Spark Plugs

- Clean and adjust spark plug gaps every 5-6000 miles.
- Wire brush can leave metal deposits on insulator tip so try plug sand blast kit instead.
- Renew spark plugs every 10-12000 miles, or more often for older cars & mixture issues.
- If plug gaps too small, spark is weak, cold with inefficient burn. Plug life is increased.
- If plug gaps too large, spark is strong, hot with more efficient burn. Plug life is reduced.
- Worse, with large gaps, extra voltage build-up can cause collateral damage elsewhere.
- Uneven plug gaps will cause unbalanced cylinder performance and rough running.

HT Leads

- Keep HT leads neatly in their separators and avoid contact with hot exhaust manifolds.
- Good HT lead lifetime presumes no abuse, only gripping rubber boots to disconnect.
- HT leads often wrongly blamed for engine problems elsewhere leading to:-
- Unjustified high cost snake oil replacements too thick to snug into existing separators.
- Best to retain or replace (if damaged) with lower cost, original specification HT leads.
- Measure HT lead resistance with an ohmmeter to detect damage or broken conductors.
- Inspect for loose connections inside rubber boots and physical insulation damage.

Ignition Timing

- Ignition timing is not a normal maintenance issue because it does not randomly vary.
- Distributor wear, uninformed fiddling, fuel grade make noticeable efficiency differences.
- Stay with the same fuel vendor and octane rating if possible.
- Permanent change of octane rating calls for a timing change to optimise burn efficiency.
- Check timing marks on a clean front pulley/damper are legible. Fill with white wax.
- Original V8 spec called for non vacuum ignition advance at idle of 6-8 deg BTDC.
- With cost issues and no access to high octane leaded fuel, some choose a lower grade.
- If so retard ignition timing by 4-6 deg for best burn efficiency to typically 2-4 deg BTDC.
- Timing methods vary with equipment used. Basic stroboscopic timing lamp is fine.
- Setting is made below normal idle speed (say 600 rpm) with vacuum advance disabled.
- Loosen the clamping bolt just enough to allow the distributor to rotate.
- Follow lamp vendor instructions and set timing to recommended (or recalculated) figure.
- Reconnect vacuum advance, reset idle speed and secure distributor clamping bolt.
- Empirical timing is an easy enhanced dynamic process when driving under heavy load.
- Loosen distributor clamp bolt just enough so the unit can be rotated without undue force.
- Drive the car on a safe preselected route including uphill and lay-bys.
- Subject engine to heavy uphill acceleration at low engine speed in a higher gear.
- Listen for pinking, the high-pitched knocking noise, caused by premature detonation.
- If present, stop the car and rotate the distributor very slightly to retard the ignition.
- Test again under identical conditions, use small adjustments until pinking is eliminated.
- Conversely, pinking may not be observed at the start.
- Under the same conditions make small advances until pinking is heard.
- Back off until it just disappears, tighten the distributor clamp bolt.
- To finalize, back in the garage re-measure timing, note actual setting for future reference.
- Scratch a location mark on distributor body to aid re-assembly after any future removal.
- As mentioned, decide best fuel grade, vendor and cost to suit car/wallet and stick to it.

Cross Firing

- Cross firing may occur when plug leads No. 5 and 7 are adjacent in their separators.
- As piston No 5 nears TDC, No 7 lags by 90 degrees part way through compression stroke
- The high voltage in lead No 5 induces a discharge in No 7 by electromagnetic inductance.
- The resultant spark prematurely fires the mixture in cylinder No 7 causing a partial burn.
- To foil inefficiency, overheating and collateral harm those two leads must not be adjacent

Options

- Do nothing, fix occurring issues often in ignorance by random costly replacement of parts
- Choose minimal key issues and only address them as determined by cash in hand.
- Do it all over a reasonable time period for the cost of a can of WD40, thin oil and rags.
- Sit back smugly knowing (in all probability) the electronic ignition will rarely if ever fail.

More Stuff

- http://www.vintagemodelairplane.com/pages/Downloads/Rover_Tasters/Ignition01.html
- http://www.vintagemodelairplane.com/pages/Downloads/Rover_Tasters/Ignition02.html

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