

High Power Ignition Mis-fire

Problem

Engine misfire at high RPM or high load conditions. (Engine runs OK at low / medium power ranges). This is most common on high cylinder count engines (8 / 10 / 12 etc.) running SINGLE COIL, distributor ignition systems. This problem is less common on lower cylinder engines, but the same rules apply.

Cause

Ignition energy declines rapidly as DWELL time falls below the optimum level. (There is inadequate time between sparks to fully recharge the coil).

Solutions (in order of simplicity)

Absolutely confirm that the ignition system is the problem. Select "TEST RPM" on the remote (or PC screen) and check that the RPM reading is stable with the engine running in the misfire region. Large variations in the reading indicate an interference problem which will require a different diagnostic procedure. Contact your Link agent for further information.

Also check that the fuel system is delivering adequate flow at these power levels. This includes checking the "%FF" (per-cent Fuel Flow) on the remote as well as checking injector and fuel pump flows at **Full System Pressure**.

- .. 1. Reduce spark plug gaps down to about 0.5 mm (.020") if necessary. Also ensure that spark plugs are reasonably "fresh" with sharp edged electrodes and proper heat range. Do not use unnecessarily cold plugs.
IMPORTANT: Systems using dual ended coils (wasted spark) **MUST** have **RESISTOR** spark plugs.
HT leads **MUST** be suppressed type. Plain wire HT leads **WILL** create large amounts of interference and will not improve system performance.
- .. 2. Try different coil types. Some coils require relatively short dwell times to fully charge up, especially coil-per-cylinder types. Take care with coil temperature though as small bodied coils can run very hot at high power. Move coil to cooler location if necessary.
3. Substitute igniter for CDI type ignition. CDI's have very good high RPM performance but they do have some other compromises;
 - Ensure the correct trigger "edge" is used. Most Link ECU's have normal and reverse polarity igniter drive options. "Normal" means the spark is meant to occur on the falling (negative) edge, while "reverse" will occur on the rising (positive) edge.
 - CDI sparks are very intense but usually relatively short in duration. This may cause problems with engines running lean burn (for emissions) at low/medium power levels. Misfiring and surging problems are not uncommon.
 - CDI's have a tendency to cross fire when HT leads are bundled together for any significant length. Ensure leads are well separated and in perfect order.
 - CDI's can generate very high levels of interference. Keep all wiring to igniter and coils as direct as possible, and observe that some units require extraordinarily large diameter wiring. Ensure that igniter and coil are kept **WELL AWAY** from any sensitive equipment especially engine control ECU's. Full suppression of power supplies and HT leads is essential.