Link Anti-Lag

(Not Gp N)

1. This anti-lag system is primarily intended to reduce the spool time of a typical turbocharger thus improving throttle response. This is achieved by ensuring that the throttle is never fully closed and employing ignition retard to control engine output during low power operation. Group N regulations prevent the addition of separate devices to hold throttle open, so the factory throttle-stop screw must be used. This, however, prevents the throttle from being closed for normal driving and thus requires a special "cruise" mode in the software which offers reasonable low speed driving despite the amount of open throttle. The system defaults to the "cruise" mode if the engine RPM has been BELOW 4000 RPM for at least 10 SECONDS, otherwise the normal anti-lag mode remains operative. The system may be forced into anti-lag mode by momentarily blipping the throttle over 4000 RPM for start-line arming.
   Note that the turbo and associated exhaust manifolding will get very hot using anti-lag. Ensure adequate clearance to heat sensitive devices around turbo and associated hardware.

2. The anti-lag system may be switched on/off by selecting ANTI-LAG on the remote and pressing ADJ UP or ADJ DOWN as required. The display will show ON or OFF accordingly. (Any changes are automatically stored). The anti-lag is automatically armed if the throttle (TPS) is open in excess of "22" when the ignition key is first switched on. This will be the case when some sort of throttle opening device is being used. The driver must be informed of this as some people have a tendency to rest their foot on the accelerator while turning on the key.

3. Select TPS SPAN on the remote and set the span "10" (throttle fully closed) and 100 (full throttle) settings. STORE any changes made. (Refer to instruction manual for details on TPS SPAN function)
   NOTE: The TPS sensor is used for anti-lag and boost control only and has no effect on the ZONING system.

4. With key on and engine stationary, open throttle with stop-screw until TPS SPAN = 28. This is about the correct amount of throttle opening required for anti-lag, and some sort of lock nut or similar should be used to ensure the setting remains stable.
   Reset TPS SPAN until display = 30 ("closed" throttle)

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!!!!!!!! IMPORTANT !!!!!!!

IF EVER THE STOP-SCREW IS ADJUSTED (IN OR OUT) THE "TPS SPAN" MUST BE RESET TO "30" EACH TIME AN ADJUSTMENT IS MADE. THE SOFTWARE USES THIS "30" FIGURE TO CROSS OVER FROM ANTI-LAG TO NORMAL MODES WHILE DRIVING. THE FULL THROTTLE VALUE SHOULD ALSO BE SET TO "100" BUT THIS IS NOT AS CRITICAL AS THE "CLOSED" VALUE.

(TPS SPAN SHOULD BE RESET TO 10/100 IF THE ANTI-LAG SYSTEM IS REMOVED.)

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5. Turn ignition switch OFF then ON again. (This will "arm" the system since TPS will be over 22 at this time) Assuming engine is at normal operating temperature, start the engine. The engine RPM will initially rise quickly then stabilise at about 2000 RPM and running slighly irregular due to the cyclic fuel limiting used to control the "idle" RPM. If the throttle is opened slightly, the engine RPM will rise very quickly as fuel is restored. Note that in this "cruise" mode the car may be driven normally without any fear of exhaust temperature over- eat since RPM limiting is done by fuel cut rather than ignition retard. Blip the throttle to briefly raise the RPM above 4000. This will cause the system to go into the true anti-lag mode. The engine RPM should be steady but sounding a little flat with periodic back-firing noises.

6. In the anti-lag mode at idle, the boost gauge should show about "0" I.E. no vacuum, no boost. If the gauge reads high eg 5 PSI, then too much throttle opening is being used so back off stop-screw until "0" on the gauge. Likewise, if too low (showing vacuum) wind the stop- crew in to raise the pressure. (Remeber to reset TPS SPAN to 30 each time) The RETARD = function sets the amount of retard in the lag mode and shouldn't need to be adjusted. If lag mode idle RPM is too high (to achieve the "0" PSI on gauge) then the retard figure may be increased to lower the RPM. Ideally, a value of about 1900 to 2200 RPM @ 0 PSI is the target and by fiddling with the stop-screw and RETARD =, this should be achievable.

7. Take care during testing with the turbo and exhaust manifold temper- ature. Things get pretty hot under the bonnet so keep an eye on anything close to the turbo/manifold for signs of overheating. Also be aware that on vehicles with vacuum assisted brakes that the lack of vacuum will make the brakes very "heavy". Most rally cars use a pedal box rather than vacuum assist so this may not be of any concern.

8. A final note: Do not expect a sensational improvement in low power operation. Most anti- ag systems are grossly over-rated in this respect. Remember the object of the exercise is to REDUCE turbo spool time, not to make the engine feel like some sort of big-block monster!

   Footnote: A cyclic ignition misfire will occur in anti-lag mode when the throttle position is less than "32". This is purely for sound effects and flames (crowd pleaser) and has no effect on the normal operation of the system.