

Harewood, one of the top Hilclimb courses in the country. I also realised that the club holds lots of track events, and I knew that any improvements made to the car would be put to good use. Over the next eighteen months I set out to rebuild and to get to know my Turbo 2. Since embarking on this labour of love I have gained a wealth of knowledge and respect for the car. You can see some of the results from looking inside the cover of the Xmas Redline issue, you might of also seen the car in various photos in brochures and in the newsletters. If you have been wondering whom this fellow is with the bright yellow Renault with "Lotts" written on both sides of it, now you know.

Aside from introductions, I would like to share a few technical tips and secrets that I have learned from rebuilding the car. I do not claim to be an authority on them but have had the good fortune in talking to several people who know the fuel, ignition and suspension systems that are in use. I also know that mistakes are the best teachers in some cases. They can also be the most expensive.

The weakest performance link in the cars is the fuel system. The Bosch mechanical injection unit is subject to a multitude of faults. Even when the system is performing well and as originally designed, it has no real means for performance or capacity enhancement. What makes this so interesting is that most fuel systems have had a great resurgence of new technology and development since the introduction of the Group B cars. In today's market there is finally a reasonable selection of electronically controlled engine manage-

ment systems available to the public, with most falling into the inexpensive category. This does present a dilemma of straying away from the original concept, in order to find more performance. Having said that I have recently chosen to upgrade with some of the new technology available.

Due to an unfortunate introduction of water into my fuel system, I have had a considerably high number of engine failures that can be directly related to the fuel system. The cause of the failure was not evident at first.

I will explain some of the symptoms before discussing the causes. Detonation is a catastrophic event in any engine. With the Gordini engines it tends to manifest itself in fractured cylinder liners. The first indication whilst driving is a loud "pinking" from the valve train, followed by an immediate loss of power. This will be accompanied by a rather spectacular white cloud exiting mainly from the exhaust system, followed by a strong smell of coolant. Upon inspection you will usually find that one of the cylinder liners will have a stress crack along the thinner "Siamese" section of its wall.

There is a tendency to replace the cast iron liners with the steel versions that are available. This is recommended by Renault in their 210/220 conversion kit but some schools of thought dismiss this option saying that unless you are running 25-30 lbs per square inch it is not needed. There are many people with higher-powered engines without them, perhaps built on a save money basis, but who knows which option is the right one.

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If the fuel system can deliver the correct amount of fuel for the amount of air being pushed into the engine the liners might be adequate up to this boost level. The cause of detonation on a stock turbo engine needs to be addressed, instead of the resulting cylinder failure. If the fuel system, for whatever reason cannot deliver the correct amount of fuel into a clean pattern from the injector, the mixture in that injector's cylinder will become too lean. This can result in elevated temperatures and pressures that are well above those present in a turbo charged combustion chamber. Aluminium pistons will begin to melt at about 1600 degrees Fahrenheit. Due to the thin "Siamese" sections in the walls of the cylinders, they usually fail under the pressure before the temperature reaches that point. There are many possible causes for fuel mixture imbalance.

A mechanical fuel injection system operates through fuel pressure regulation. The air flow meter varies the regulating pressure, which in turn works with the control regulator to vary the pressure at the injectors. The whole system is made of finely machined passages and diaphragms that must remain clean and free of debris. That is why cleanliness and purification are paramount in this system on the turbo engine. This brings us to the issue of the Bosch make of filter for this application that costs one tenth as much as the Renault one. People are probably not replacing them often enough, it should be replaced every 3 months or 10,000 km which ever comes first. No filter made will separate water from fuel. If water does get in the system it can spell disaster. The water attacks the internal

parts of the metering head and the resulting corrosion not only restricts the passages but it breaks free and builds up in the injectors. All this results in altered fuel mixtures and as spelt out earlier can lead to detonation. To prevent this occurring you should only use a high grade of fuel with a good brand name. It is also very important not to use additives, or fuels that use alcohol. The alcohol breaks down into water once it is in the fuel system.

Over the next few months I am going to install and develop an electronically controlled injection system and in addition I am going to install an after-market distributor less ignition system. I will follow up with additional articles to let you know what the results are and how successful this approach has been.

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