



Tech Basics: Fuelling Around

Checking out the health of your EFI system

By Godfrey Towns

With EFI cars having been in common circulation for more than 15 years, the chance that a 'budget buy' will have electronic injection is now high. And ten years of wear and tear is likely to have resulted in a system way below new performance! So before you start to perform mods aimed at getting more power, it's a good idea to check out the mechanical health of the EFI system. Note that getting a new chip or changing the filter won't do a thing if the system is working below par: you simply have to get the basics working perfectly first.

Fuel Pumps and Filters



Most EFI cars have two electric fuel pumps - a lift pump in the tank and a high pressure external pump. The low pressure lift pump gets the fuel out of the tank to the high pressure pump, which then shoots it forward to the underbonnet fuel rail.

Checking the health of these pumps can be done in a couple of ways. First up, switch on the ignition (but don't start the engine) and listen to the noise that the pumps make. They'll sound for about ten seconds and then switch themselves off, but you can restart them by turning the ignition off and then on again.

The pumps should have a low whine or buzz - not a high pitched scream or a noise that goes high then low, high then low in pitch.

The second check that can be made is of flow. The best way to do this is to find the return line from the fuel pressure regulator to the tank. Pull this line off (under the bonnet is simplest) and feed it into a measuring container like a soft drink bottle. On a turbo engine you should also pressurise the vacuum line of the fuel pressure regulator - using a small syringe is the easiest way to do this. Run the pumps for 30 seconds and see how much fuel has come out of the return line. But how do you do that when the pumps switch themselves off after 10 secs? Find the fuel pump relay and bridge the two heavy-gauge wires that goes to it. The fuel pump should then run for as long as you have the wire link in place.

The majority of EFI fuel systems will supply between 1-2 litres a minute, so after 30 seconds there should be half to one litre in your container. If there is less than this amount, check the workshop manual to see the correct spec. If there's less fuel being supplied than there should be, the next step is to check the filters. There can be as many as three filters in the system. There's probably a gauze one at the tank pick-up, another fine mesh cone-shaped filter inside the high pressure pump's inlet, and a metal-encased filter either after the high pressure pump under the car or inside the engine bay.

Change the high pressure filter first. The cheapest way to do this is to buy a general purpose replacement EFI filter and fit that. Large aftermarket replacement filters are cheap because of the numbers they're made in and will flow heaps. Just check that your hose diameter will fit the non-standard filter. For some cars, this way the price of the replacement filter can drop from A\$70-80 to less than A\$20.

If the flow hasn't improved, clamp closed the fuel line leading to the high pressure pump and then pull the hose off this pump's inlet. Pry out the cone-shaped gauze filter that's usually inside it - not all pumps have one, but most do. Any black build-up on this filter will then be easy to see. Wash the filter out by flushing it backwards with petrol in a dish, and blow it clean with compressed air or by blowing at it through a small hose.

If there's still no improvement in flow, access the low pressure pump inside the tank. This can be done by removing the tank fitting that holds the tank level sender in place, with the pump usually mounted on the same bracket. Look at the mesh 'sock' over the inlet to this pump, making sure that it is clean and can't close right up. Inserting a small spiral spring into the sock is a certain way of making sure that it always stays open.

Injectors



The little squirters located on the inlet manifold can also cause problems. Each of these has a tiny inlet filter that can become clogged, while the nozzle itself can become blocked (or partially blocked) leading to a poor spray pattern.

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The first step is to grab a length of spare fuel hose and use it as a stethoscope. Put one end of the hose up to your ear and rest the other end against each of the injectors in turn. With the engine running there should be a distinct 'click' sound heard from each injector as it operates. All of the injectors should have the same sound, and if a dull 'thud' rather than the 'click' can be heard then that injector has problems.

While it's possible to remove and clean the injectors yourself, often this is a real pain, with access to the squirters difficult and effective cleaning not always possible at home. Before getting a professional injector cleaning workshop to perform the deed, use a few bottles of an injector cleaning additive over a couple of tankfuls of petrol. We've found that the stuff produced by the major petrol manufacturers works well and is often cheaper than other brands. Using an in-tank additive will not always be as successful as manually cleaning the injectors, but it's a cheap and easy first step to take if your car has the stutters, especially at idle and light loads.

Other Problems

Other parts of the fuel system that can cause problems include the fuel pressure regulator (doesn't regulate properly), hoses and clamps (leaks), and under-car fuel lines (dented or leaking). However note that often problems with the airflow system are also incorrectly blamed on the fuel system. An air leak into the intake system after the airflow meter can cause poor running, for example. Always check that all underbonnet ducts and hoses are in good condition.

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