

# 4.5l EFI Motor Flat Spot

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This is an explanation of a problem experienced by a number of 80 Series owners: please note that what follows is the opinion of the author of this note, which was paraphrased from lengthy discussions with various motor mechanics about the subject.

## **Vehicles/Engines affected:**

All 4500 Petrol (gasoline) engined TLC 80 Series.

## **Symptom:**

At about 85,000kms a small loss of power occurs when slowly accelerating at about 2,300 RPM, followed by a catch-up surge. It is a hiccup in the smooth acceleration of the 4500 Twin-Cam Toyota engine.

A few kms later (around 90K)the problem gets worse and it begins to miss at 2300, 2500 and 2800RPM. Some of the misses are so strong the car gives a jump" as it looses then catches.

This is not evident with hard acceleration of the vehicle.

## **Attempted fixes:**

Some members have had the following done:

- clean injectors
- replace injectors
- replace throttle position sensor
- replace oxygen sensor
- replace air flow sensor ('93 model)
- replace engine management computer
- dismantle and clean entire inlet tract
- replace fuel filter
- replace fuel pump

And it still has not gone away...

## **Possible explanation:**

This is actually an effect of two processes; the first is the fact that the fuel injection mechanism is designed to minimise fuel wastage (to reduce fuel consumption) by switching off the fuel temporarily to the injectors when not accelerating. If you are just gently accelerating and back-

off very slightly this can be felt as a slight hesitation. In fact you can induce it by slightly depressing the accelerator and then backing-off very slightly. The effect is a small hesitation followed by a pick-up of power and then a small hesitation followed by a pick-up of power etc...

The second effect is in the inlet manifold itself...

The injectors fire twice; once when the valves are closed and then again as they open. It is suggested that a carbon matrix builds up in the inlet manifold and around the injectors as a result of the evaporation and slow burning of the fuel residues on the inlet manifold and around the injectors, after the first firing of the injector. As this builds up as a porous carbon matrix, it acts a bit like a sponge and absorbs the fuel/air vapour mix of the first inject - thus giving a deficit fuel delivery to the combustion chamber = roughness, missing etc...

This matrix is very hard to remove, but it can be reduced by a complete hot-flush injector service. It does seem to come back again although not as strongly and less as a permanent fault.

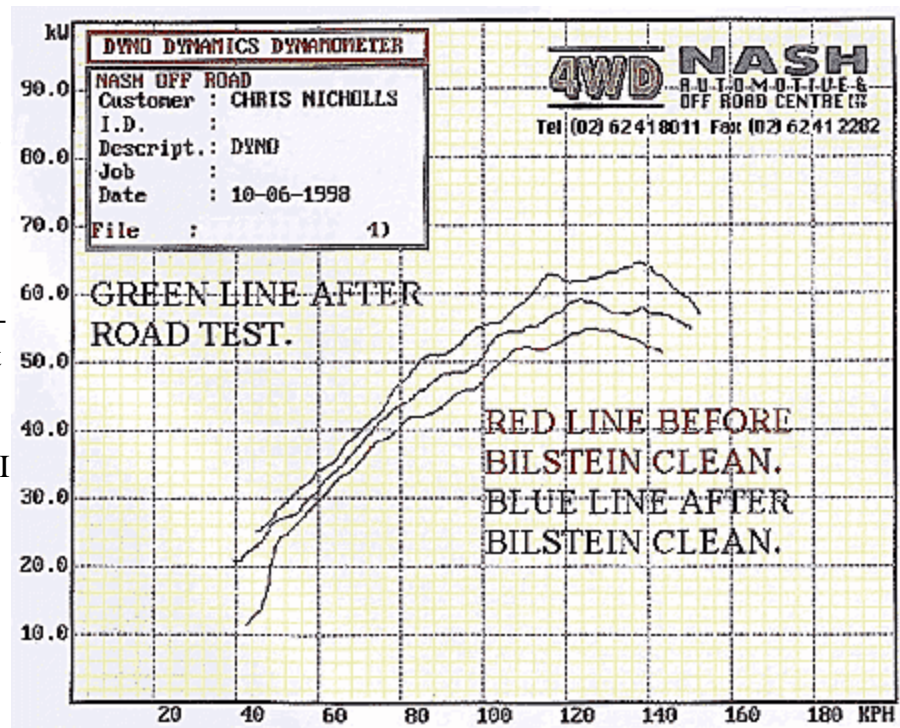
This entire process seems to be an accentuation of the fuel economy mechanism explained above - it occurs only when under slight to moderate acceleration - never when under hard acceleration.

### Hot Flush?

What I tried was a complete flush of the inlet and injector system. The effect was dramatic - I got a 10-12kW increase in power (see dynamometer test results) after the flush and after running a road test (20kms). Also the flat-spot disappeared for about three weeks... yes it did come back, but not nearly as dramatic nor as strong. I suspect if you had a series of these flushes it may disappear entirely.

Hope this is help to those out there with the problem...

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NB: Other fix: Replace 4500 TLC 80 with TLC 80 24valve Turbo Diesel...