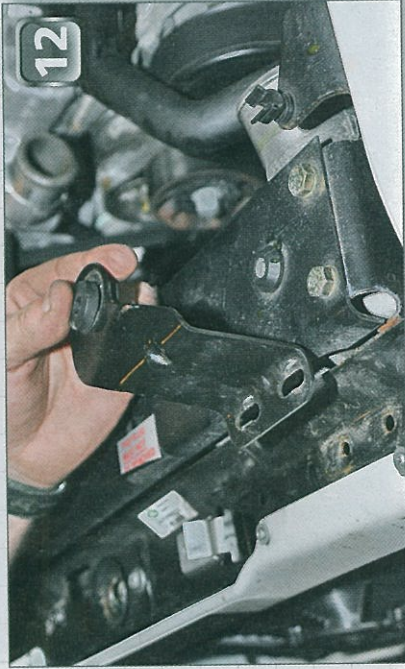


INTERCOOLER INTRICACIES

- Like almost everything else, when air heats up it expands and when it cools it contracts.
- Cooling air, because it's 'concentrated', contains more oxygen (by volume) than hot air.
- A turbo diesel engine has the unfortunate side-effect of heating intake air as it goes through the turbo. However, the cooler the air when it enters the turbo, the cooler it will be when engine will be.
- An intercooler is a radiator that has the injection system's intake air passing through it. The intake air is cooled in the same way as the coolant radiator – by air from outside the vehicle passing through it.
- The better the intercooler, the cooler the intake air and the more efficient your turbo diesel engine will be.



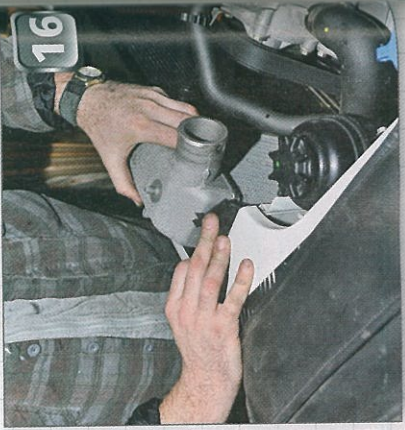
PICTURE 11 The top radiator mounting plates have to be removed. You take out the two screws holding each one in place...

PICTURE 12 ...then just lift them away.

PICTURE 13 Two more machine screws at each end of the radiator top plate are removed...

PICTURE 14 ...and then the top plate itself is simply lifted off.

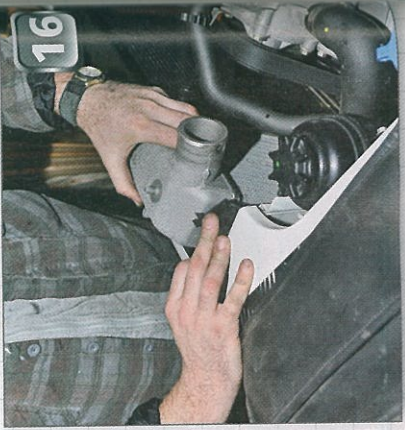
PICTURE 15 This is the bottom air intake hose from the intercooler itself which Dave has detached and removed.



of rubber strip, foam, washers and gaskets in connection with another project and eventually came across R.H Nuttall Limited of Birmingham. Their self-adhesive foam strip was ideal for making the seal between intercooler and radiator that had been found on the original.

PICTURE 20 Dave lowered the Allisport intercooler into place, making sure that the papers were located correctly at the bottom. This is where having the radiator grille removed can really help.

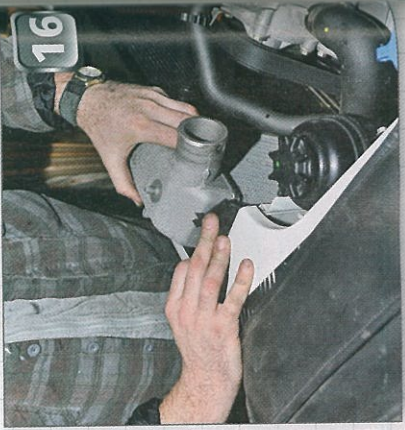
PICTURE 21 He then refitted the bottom intercooler hose only this time...



PICTURE 22 ...he fitted the centre mounting bolt to the inner wing. We discovered it had been left off previously. As you can see, you need to access both sides of the wing at once to hold the bolt while turning the nut.

PICTURE 23 This is the Pela Oil Extractor that Dave had used to withdraw a suitable quantity of coolant before removing hoses. A plastic tube was fitted to the hole in the top of the extractor (now being used as the pourer) and when the handle was pumped, coolant was sucked up and out, like a garden sprayer in reverse.

PICTURE 24 Because of the air conditioning condenser



fitted. Then, as the engine warmed up and the speed increased a little, the extra 'oomph' became impressive. There's certainly a few more revs at the top-end – more difficult to tell with an auto. Though I did hold it in a lower gear to try it out – but the most noticeable improvement comes through mid-range torque, where you need it most. The Defender feels so much more lively and pleasant to drive than it was before and so, my recommendations are: ■ If you want the simplest and most unobtrusive way of improving your turbo diesel Land Rover's performance, this is it.

conclusion

The results are far better than I dared hope. As I drove slowly off down our narrow lane, with the engine cold and little air passing through the radiator aperture, I noticed that performance seemed just a bit more lively than before and about what it had been before the auto box had been

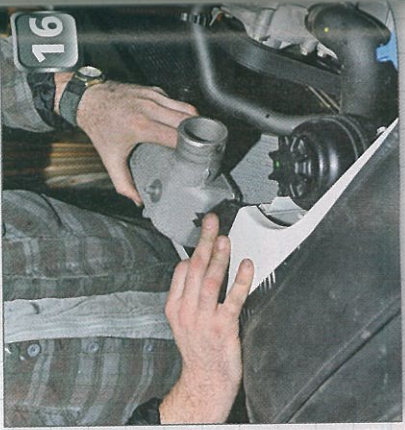
will be like. I'll keep you posted!

footnote

I always suspected that my injection pump was over-fuelling slightly, from the small amount of smoke it created.

If your pump is set correctly or on the lean side, performance will benefit from 'tweaking' it so that extra fuel is available to make best use of all that extra oxygen. Also, I just met a man who had 'chipped' his Puma-engined Defender but complained about the amount of smoke it produced. I suggested he tried an Allisport intercooler so that, again, the fuel-air ratio could be more in balance.

LRM



CONTACT

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