### RADIATOR REPLACEMENT ON A BKDB 2.0 TDi VW TOURAN 2008.

Simular cars that may fit this description, could be Golf/ Jetta 5 & 6, Audi A3, as Touran is not for sale in USA/Canada. Correct me if I'm wrong.

### Vehicle Background.

Vehicle was purchased new in April 2008 from Lindsay Saker Airport Branch, Johannesburg. Had all its services at VW Dealers. Mostly at VW Barons in Woodmead. Current milage = 117,5k km. Next service is the big one @ 120k. It has the following extras/features. VW Tow hitch, 7 seater option, smash & Grab window tint, Climatronic & PDC. An aftermarket 2 din DVD/GPS with iGo8 mapping was added, as well as two DVD headrest players for the kids.

## THE PROBLEM:

On 8<sup>th</sup> Nov 2011, whist driving on the Highway, the "STOP, Coolant level LOW" alarm came up. Temp gauge read normal, so proceeded home slowly, and checked that coolant level was depleted. Gone, Vanished. As I didn't have G12 handy, but had ½ bottle (500 ml) of distilled water, which I emptied. Thought this is the last of it, as I must admit, I'm not a "check fluids weekly" kind of guy. I paid for "Vorsprung durch Technik" from VAG, that what all the electronic gismo's are there for, isn't it?.

Next day, after doing approx. 70 km, (my daily commute to work and school etc), same thing happened. Alarms Bells, Reservoir empty again. Scheisse. OK, now I started realising something bigger is wrong. Did visual inspection of underside of car. Looked and felt dry, so I was getting more worried that it may be a head gasket problem, something I was not looking forward to. As I did not have a flashlight handy, I missed the streaks of fluid that has dried on the belly cover. The next day I got beneath the car with the camera, see picture No 1.



Picture 1

**REMOVAL PROCESS:** 

I removed the belly protection and noticed a few drops of fluid (circled in red) at the bottom of the radiator. But where is the leak?...difficult to see, as everything is still covered up, except the bottom of the radiator. Decided to wait till Friday evening to pull the fans etc.



Friday came and started stripping the fan tray. The removal procedure is in a Howto else were on this forum. It has 4 x T30 screws, but you need two tools to do this. One, a T30 screwdriver, and a ¼ inch small ratchet & T30 bit, as in most cases, space is limited. Both tools are pictured below.



Picture 3

The separation of the Electrical connection of the fan tray is tricky. After moving the red clip, you still need to insert a small flat screwdriver into it to separate.



Picture 5

I suggest you remove the following: All references are relative to you standing in front of the vehicle.

(Sorry, no pictures of steps 1 to 4)

- 1) Air Intake Top Box.
- 2) U shaped intake pipe.
- 3) Top Air Cleaner Cover.
- 4) Bottom Air Cleaner Box. Remove Bolt securing the bottom air cleaner box and pull upward to remove. Secure the bottom piece on top of the battery box, to keep is out of the way.
- 5) Bottom Intercooler connection pipe (Driver Side) See pictures 9 13 below)
- 6) Bottom Intercooler connection pipe (Passenger Side)
- 7) Remove the Aircon Electrical connector, indicated below.



- 8) Remove the 2 right hand side radiator pipes and clamps. 1, 2 below Inset picture here
- 9) Then remove this plastic connector part (between the radiator pipe and the radiator itself). You need to insert a medium flat screwdriver underneath it (the clip), and then push down. This clip does not separate from the fitting, as it has a notch preventing it from going "pinggone"!! The second pic below I've turned it upside down.
- 10)



Picture 7

- 11) Open the reservoir cap and be ready to catch most of the fluid. No need to catch it all, as I suggest you refresh the G12 in any case. Just wanted to keep the floor underneath the car free from fluids, are you are going to spend quite some time underneath it. May as well do it in relative comfort!
- 12) Remove all the turbo intercooler piping at the bottom of the engine bay. Here are the 4 clips below. Picture No 4 shows the clip in the "out" position, ready for pipe removal. Once you have removed them, you'll have a lot more space getting to other items.



Picture 10



Picture 11



Picture 13

13) To remove the 3rd pipe (the one near the aircon pipes), you will need a bit of patience as well, as space is limited. So much for German Engineering! You will need a strong long nose pliers (or vice grip) with a wide opening jaw. Remove the clamp by gripping the two upturned ends of the clip (it is quite strong) and pulling the pipe when the clamp is loose. It took me several attempts before the pipe completely separated. Once Again, don't force.



Picture 14



Pipe removed and moved to left. Note Cir-clip has also been moved, but this proved to be a fruitless exercise in try to remove the plastic coupling from the radiator while it is still in positioned in the car.

14) Remove the 4 x T40 screws that hold the radiator to the Intercooler. Use the ratchet tool, as the mounting points for the radiator to the intercooler are well inside the place where the fans bolt onto the radiator.



Picture 18



- 15) Now comes the tricky part in the removal itself, as the left hand side of the radiator intake has an extra angled plastic piece that gets tangled in the Aircon Alu piping, which does not give way a lot. Don't remove the Aircon piping, as that would mean a trip to the shop for a re-gas.
  - a. Move as much wiring on the right hand side towards the driver side, so that you can move the radiator as far right as possible. At the same time start moving the radiator upwards on the right hand side.
  - b. Squeeze the left hand side elbow past the Aircon piping, at the same time moving the radiator to the right and upwards. Be patient here, to ensure you inflict as little as possible damage. (to the radiator and Intercooler) The Intercooler seems to be much stronger than the radiator, so focus on the radiator.
  - c. You will notice that to the right hand side of the radiator is a bunch of wiring loom that is in the way. I did remove the connectors (no need to separate) and wiring away from the radiator, so one can gain about 5 cm more space to move the radiator into(the right)
  - d. I had to "help" the black plastic elbow past the Alu Aircon pipes. Also, the left top will get stuck at this plastic part, which looks like the same as the intake part on the right hand side. See photo X below. Maybe a 3<sup>rd</sup> hand would make this part of the removal easier, but I was alone!



Picture 22

Costs:

I did not bother requesting a quote from the dealer to do the whole job, as that would probably break the bank...so I only got the following Prices in local currency (with US \$ in brackets @ R8=\$ on 14/11/2011)

Dealer Radiator replacement Part	R3200 VAT incl.(\$400).
Replacement part form Goldwagen.com	R2050 VAT Incl.(\$256).
Replacement part form Silverton Radiators	R1000 VAT Incl.(\$125)

I would estimate approx. 3 hours for stripping, and 2 hours for assembly for a first timer. Can be reduced by half? by experienced mechanic.

I also had the leaking radiator repaired by Silverton Radiators Midrand Branch for R450 VAT Incl (\$56). They supplied the New Radiator and repaired the old one on the same day. Good Service received from Caroline.

(VAT in South Africa is 14%)

Picture of the four damaged areas, with leak indicated in red.



Picture 23

The repaired readiator below. Key FOB as reference.



Picture 24

Here is the new radiator I bought.



I saved the box to store the repaired radiator. The Red circles indicate the mounting for the fan tray. The yellow ones are the radiator's mounting hole to the chassis (in front of the Intercooler)

### ASSEMBLY PROCESS:

In general, it is pretty much the reversal of the removal process.

Strip the black plastic cover on top of the old radiator and fix to new one.



Afix the left hand side plastic elbow pipe adaptor to the radiator with clip. I would have liked to insert the radiator without it, as it would mean the rad would then fit easily past the aircon piping, but then to get the elbow on, required a fair amount of pressure to seat it would be required. Simularly, I was unable to separate this elbow from the rad in the removal process. The top (rhs) one is easy to remove and insert, as one has plenty of space that side, so can be done after rad is in place.

Now insert the radiator into the engine bay.



To get the left hand side elbow into place past the "always in the way" aircon piping is tricky, but doable. Just be patient.

Loosely hand fit the four holding screws, and once all four in place, start tightening with Torx tool.

Next refit the rubber pipe from the bottom onto the elbow. Pull the clip as far back, so that the pipe can fit properly, and then attempt to move the clip upward onto the elbow with the long nose pliers.

While you are down there, keep the turbo intercooler pipes and clips handy, so you can refit at the same time. VW fundies will have noticed by now, that the fuse box is exactly the same as the ones used on Golf/Jetta V & VI.

Re-filling with 50/50 G12 as per howto's on TDiWorld.net forums.

LASTLY....

I had very little time to do this, so I did not always take specific pictures. Apologies, and I hope your fitments are relative pain free, should you every fall prey to such a problem.

# SERVICE FOLLOWUP:

It's 19/12/2011, and no (radiator) issues to report. The time came for the 120k service. Took it to a reputable VW/Audi mech. AFAIK, this is the service that they have to replace all fluids, the water pump, cam belt and the rollers & tensioners. Plus the normal lube & filter stuff. The Mech reported that the pollen filter cover was missing. So next time you get your car back from service (at a dealer), check to see that the cover is replaced. Needless to say, now that I have found a reliable mech in my area, no need to go to the dealer anymore <sup>(C)</sup>. Also reported that the front and rear brakes need to be replaced within 3k km. Not bad for such a big car. My wife's Jetta V 1.9 TDi only managed 90k on the fronts. I'll do that myself, but have been warned that the rears are a bit of a bastard, due to the self tensioning mechanism of the handbrake that needs to be reset. Will have to do some more reading to look for a how to. Mech also reported that Wife's Jetta's (129k km) DMF is on it's last legs. It will have to stand over to early Jan.

Just refilled the radiator reservoir with about ¼ of bottle (300ml) of G12 that was left from my read replacement, due to the waterpump replacement, as alerted to me via the Mech.