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BUDGET VR6 TUNING

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Project BJB (Black Jelly Bean) - Budget VR6 Tuning.



The VR6 is among the easiest normally aspirated engines (non-turbo, non-supercharged) to get some free horsepower out of. Ok, you have to pay for some of it - but you'll be amazed with what you can do for less than the average set of wheels on your neighborhood poser car. (bling!)

Project Black Jelly Bean is a 1996 Volkswagen GTI VR6 GLX - Our focus will be on budget tuning. Seeing how much performance gain we can achieve for less than \$500.

1- De-Coned Airbox - (Free) This is a completely free mod, which is rumored to produce 5+ extra horsepower. Three great things come from de-coning the airbox. More power, smoother running at high RPMs, excellent aggressive sound, without being annoying.

2- K&N Panel air filter - (\$40) We will try the K&N vs. Factory filter, with de-coned airbox, and with stock airbox. If I feel brave enough, I will compare them to a run or two with no filter whatsoever. Maybe. The Mass Air Flow Sensor is VERY fragile, and a rock would demolish it and I don't want to cough up the \$300+ to replace it.

3- Removed Suitcase Resonator - (Mid-muffler) (\$40) VW exhaust has a lot of components to keep the engines quiet - for good reason - they are LOUD! But, you can get an excellent sound, and a fair performance boost by removing the "suitcase". Here is the VR6 exhaust system...Catalytic Converter, "Pringle can" (small resonator), "Suitcase" Resonator, Muffler, Tailpipe. 4 things, 3 of which cause restriction. The pringle can doesn't really cause any. Now here is where knowledge of how engines work comes in. Backpressure is a good thing, but too much is bad - a little back pressure gives us torque. When people run their cars "open" with straight pipes, they are often losing power!!! Loud noise does not mean horsepower! Now, if you have a 1200 Horsepower engine, then you may want to run straight pipes, but, traditional motors, even tweaked ones, need some backpressure to help torque. TORQUE is one of the best things about the VR6 - why destroy it? SO, back to the mod... We can legally remove the suitcase, let our engine breathe, and give your car an aggressive sound - NOT the sound of a bumble bee/weed-eater. One forewarning: You will hear some resonance in between 2500 and 3000 rpm with the removal of the suitcase. But with most aftermarket cat-back systems, you will also experience this resonance.

4- ECU Chip Replacement - (\$85-130 for VR6) This will probably be GIAC from awetuning.com, or the Neuspeed P-chip. You want to be very careful on selecting an ECU chip for your car. Sure, some of them claim extreme HP gains - sure, you can do that, but you have to put octane booster in every tank of gas, or you'll "ping" your engine to pieces! There are a ton of excellent chips out there, EIP Tuning, GIAC and Neuspeed are at the top of my current list. What the computer does is monitor and control air/fuel mixture, timing, rpm rev limiting, proper combustion of air/fuel mixture, speed governor, and a list of other things that we will not go into. By getting a chip upgrade, we are changing the software that controls all of these things, or some of them. We are at least changing the settings of the software in the car. This is an extremely cost-effective mod. Just be sure you get the right chip, for your level of tweaking - stock, intake/exhaust, turbo, etc. Also, you want to be sure you can pass emissions tests - but I know from personal experience that the Neuspeed chip INCREASED my freeway gas mileage by up to 3 mpg.

5- Spark Plugs -(\$5-\$25ea.) Likely Bosch Platinum +4's. If your stock plugs are good, leave them in - they are excellent Bosch plugs and you will not likely see a performance boost if you replace them.

6- Spark Plug Wires -(\$50-400) Among the candidates are: Neuspeed, Blue Ignitors, Beru, Eurosport, others. No, we will not be shelling out \$380 for a set of Nology wires - sorry. Also, only replace these if necessary. There are many other places you could put your money.

7- Mobile1 Full Synthetic Oil - (\$6 per quart vs. about \$2 for regular oil) Yes, this is a performance mod. Yes, it is expensive oil. Plan on paying up to \$60 for an oil change. (less if you do it yourself) In addition to buying your own filter from the dealer (which you have to do anyway, with a VR6) But there is an upside to cost as well, you don't have to

change your oil as often. Most people running full synthetic change their oil every 4-6k miles - depending on how they drive and how old the motor is. CAUTION: If your vehicle has very high miles or oil leaks, DO NOT switch to full synthetic. It will break down your engine seals and you will have oil leaks start that won't stop even if you switch back to regular oil. If you have high miles, I would run a synthetic blend. There is the obvious reason for running synthetic, which is its amazing ability to stand up to high temperatures and hard driving - it doesn't break down the way regular oil does. Also, it eliminates much of the friction in your engine, which robs you of horsepower before it even gets to your crank. The best gains would be in engines with more moving parts, thus more friction. A W12 would benefit more from full synthetic than a VR6, 2.0 or 1.8T 4cyl - but that doesn't mean you won't have performance gains. Also, your engine will last longer, and we all want that. Why Mobile 1? Because of their reputation and supposed lab studies that prove they are the best, or equal to the best oil in the world. Amsoil is excellent as well, maybe even better, but it's tough to find. There are now many people offering synthetic oil.

Estimates of "paper horsepower" of the mods above:

De-coned Airbox 5
K&N Panel Air Filter 3
Removed "Suitcase" 5
GIAC or Neuspeed Chip 10
Spark Plugs 2.5
Spark Plug Wires 2.5
Synthetic Oil 5

Total: 33 Added Horsepower + Stock VR6 Horsepower of 174 = 207 Paper Horses

In reality, my stock VR6 at my elevation is probably somewhere around 150 - at the wheels.

Subtract 3% for every 1000 ft elevation above sea level. Me being at 4500 ft. elevation... 1.74hp would be 1% of 174. $3 \times 1.74 = 5.22$. take away 5.22 horsepower from 174, for every 1,000 ft. above sea level. $4.5 \times 5.22 = 23.49$. $174 - 23.49 = 150.51$ Horsepower. Though this does not account for up to 12.5% power loss through the drivetrain.



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