

POWER RECIPES

Scott Taylor Archives

NISSAN RB30 TURBO



With a twin-cam head, the RB30 takes on a modern appearance

Everyone thought Holden was crazy for using a Japanese engine in Australia's own Commodore, but look who is laughing now

Holden fans were shocked, their competitors were rubbing their hands with glee, and motoring journos all over Australia collectively said "What the...?" as Holden announced it would be using the Nissan RB30 for its new VL Commodore.

At the time, it seemed like an insane move. Not only was Holden dumping an Aussie icon, the good old Holden six that had served Australia well through a lifespan of over 20 years, but replacing it with a Japanese engine.

Most people at the time didn't care that the new motor ran smoother, used less fuel and made more power than the straight-six it was replacing. The fact that it came from Japan was enough to discourage some buyers. Word got around that this new engine wasn't so bad after all, and after a slow start, the new VL was selling like hotcakes. When the police chose the new turbo model as their highway patrol vehicle, people sat up and took notice.

Gone were the thumping great V8s of the highway patrol, and when people started to realise that these low capacity, turbocharged sixes were actually pretty quick, things really began to fall into place.

Still, turbo technology was still in its infancy, and while most people realised that more boost meant more power, they also learnt that too much boost would eventually cause the engine to fail. While the engine is pretty tough, there is only so much inlet temperature it can handle, and people found that the turbo had a hard time supplying a lot of extra boost while leading a long and happy life.

Fast forward to now and it's pretty clear that the VL Commodore is arguably the most popular Commodore out there. While a few people insist on trying their hand at V8s, most are fitted with the RB30 Turbo, and why wouldn't they be with plenty of street VLs running 10sec quarters down the strip?

In recent times, we've seen street-registered VLs running as low as 8sec over the quarter mile and pulling some pretty big numbers on the dyno – and there is no sign of the tempo slowing down. VL Turbos are as

popular as ever, so we thought it was about time to get out the magnifying glass and take a closer look at the mighty RB30ET. Just make sure you always run the best fuel you can. On the street this means premium unleaded as a minimum, but we recommend staying with the 98-octane stuff like Optimax, BP Ultimate 98, or Mobil Synergy.

LOW HEAT – 200kW

Okay, so the standard VL Turbo only makes 150kW at the flywheel, but this can be bumped up pretty quickly.

One of the first ports of call should be the exhaust system because with turbo cars, the less the restrictive the exhaust, the better. A nice free-flowing 3in system with a high-flow catalytic converter, straight-through muffler and resonator should do the trick without deafening the neighbourhood.

Then you'll want to look at running some more boost; not too much because you're not running an intercooler yet, so you'll need to set up a simple adjustable bleed in the wastegate actuator line to fool the actuator.

While the RB30ET is a pretty responsive piece with only 6psi as standard, bumping the boost up to 10psi will really open your eyes, but don't let the boost addiction get to



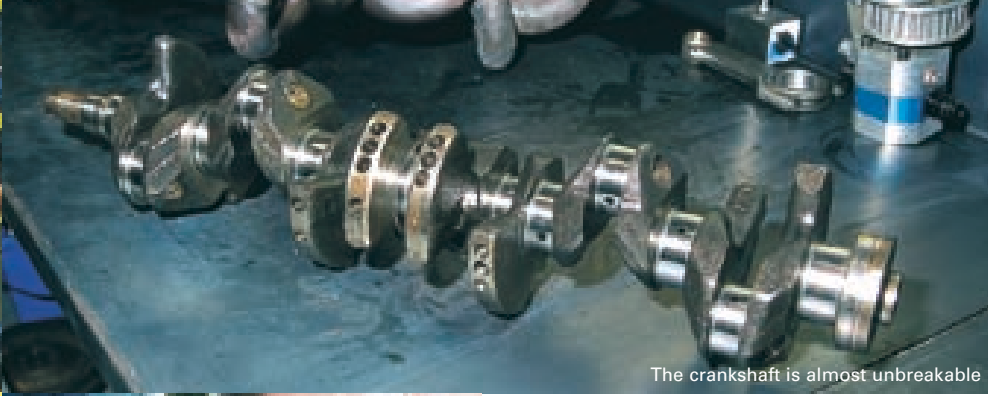
With the new cooler in place, you can then wind the boost up a little further, but the standard turbo will have trouble providing too much past 12–15psi of boost and remaining stable. What you really need to do is get the standard T03 'hi-flowed'.

Hi-flowing is a term that has popped up over time to give a definition to changing the compressor wheel size and modifying the compressor housing to suit. Some people go even further and combine a T03 exhaust housing with a T04 compressor housing, which creates a T03/T04 hybrid turbo.

Using the T03 on the exhaust side means that the turbo will still spool up reasonably quickly, while the increased efficiency of the compressor side forces more air into the engine. We're not just talking boost either, we're talking efficiency. Good, cool air will make power, and lots of it, while hot air will only endanger your engine.

COOKING WITH GAS – 400kW

Now we haven't even talked about twin-cam conversions yet, and really we don't need to because most of the super-quick VLs are still running the original SOHC head. We're not saying that there isn't an advantage to running the DOHC head because there is, but



The crankshaft is almost unbreakable

you otherwise you'll cook the engine. With just these two mods, you'll find that a relatively light VL sedan will accelerate quite nicely, especially when compared to later-model V8s that came with 200kW as standard.

HOT STUFF – 300kW

Upping the power further requires intercooling for the extra boost that is needed. While a water-to-air intercooler is alright for a stealth set-up, there is plenty of room in the VL's front for a decent-sized front-mounted air-to-air unit. You can even buy bolt-in kits that make fitting the new cooler a breeze (no pun intended).

Even if you don't opt for an off-the-shelf kit, it's pretty easy to source a semi-custom kit using an off-the-shelf core, like the 600x300x75mm cooler from Speed Freak, and then getting an exhaust shop to plumb up the piping for you.



Hi-flowing the turbo is an easy way to make power

pretty much anything you will want power-wise, you can do with the SOHC head.

With that out of the way, the DOHC conversion is simple and the flow is that much more, we wonder why anyone would stay with the SOHC head. But they do, and it mainly has to do with cost. You see, the heads to use are the RB25DET or the RB26DETT head; stay away from the RB20DET heads because the valves are a lot smaller and the gains are not so great.

Obviously, the head is going to cost you a packet because the engines are so popular that even a dead engine can bring decent bucks, so expect to pay \$3000 or more for the right head.

Now that's a lot of moola; in fact, you can buy yourself a pretty decent turbo for that kind

of money, which is what most people do. If you want to make the most out of your engine and budget isn't a concern, then buy the DOHC head and don't look back. If budget is a concern, then buy that roller-bearing turbo you've been drooling over and go from there.

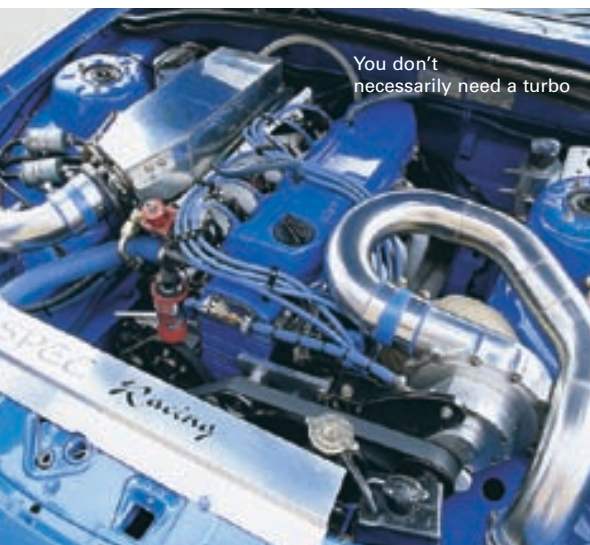
To make this kind of power, we're talking about more than just a turbo. You'll need a nice external-gate roller-bearing turbo, a 45mm or larger external wastegate, a nice set of turbo headers and a custom plenum to complete the package.

Compared to the standard-bearing turbo set-up, you will not believe the difference. Those roller bearings spool up to full boost in no time at all and a nice 550–600hp Garrett

through to the top end in retaining the head. You will also need a top-quality head gasket. We've been hearing good things about the Cometic head gaskets, but if fitted correctly, a solid copper gasket and O-ringing the block will work just as well.

Now, here comes the bad part: you'll be able to run around the streets on relatively low boost (18psi or so) on premium fuel, but for full-power runs you will need to run something with a little more zing. Just don't get caught with it because the fines are huge for running race fuels on the street.

Turbo selection is not going to be hard; take a dinner plate down to the turbo shop and find one that covers it. Okay, maybe not



You don't necessarily need a turbo



Good rods and forged pistons will bulletproof an RB30 bottom end

Forced induction has a couple of variations, but they all end up with the same thing – horsepower, and plenty of it

will do the trick nicely. In a correctly set up car, this combo will go low 11s with ease.

We can hear everyone complaining already – 11s on the standard engine? Yep, it is very possible, but don't expect the engine to live forever at this power level. There is only so much that the stock rods and pistons can handle.

MICROWAVING – 550kW

This is where we start to talk big dollars. You've already got the cooler, plenum and turbo, but what you now need is the bulletproof engine. Alright, so there isn't such a thing as a bulletproof engine, but the RB30ET is just about as close as you can get if you spend the money wisely. The standard con-rods start to get flaky when approaching the 400kW zone, so they will be well and truly dead meat up around the 550kW mark. Dump them in favour of some nice Argo or Carillo rods, but they will cost you around \$1800–\$2200 for a set depending on the brand you choose.

As for pistons, just about anyone that makes forged pistons makes a piston for the RB30, so take your pick between Venolia, Arias or SPS. ACL has just started making pistons for the RB30 too, so you may even want to look at those as a possibly cheaper alternative.

Down the bottom end, the crank is damn strong and retained by a fully integrated main cap girdle that stiffens the block and retains the crank in all conditions. You will not need to touch it other than replacing the fasteners with some premium-quality ARP items, the replacement of which should also extend

that extreme, but you will need a large turbo and this is going to cost you in more than monetary terms. Boost response will be poor because there is only so much you can do with 3L worth of exhaust gas flow. Once it comes on boost, though, hang on to your socks because that VL is going to accelerate like a missile; an unguided missile if you're not ready for it.

THERMONUCLEAR – 800kW

As this is usually the silly zone, we're talking DOHC head, dinner-plate turbo and possibly a shot of nitrous to bring the turbo up to boost.

Head gaskets are going to be listed under consumables at this power level, and you'll be a happy boy (or girl) if you can get 10 runs in a row out of the same head gasket.

Why? Boost, and lots of it. Not only will the turbo need to be a monster, but you'll also need to feed the engine copious amounts of boost coupled with the best fuel you can get to make this power.

So, is it worth it? Well, if you want to run eights down the quarter then maybe it is, but remember you're walking a path already travelled by others. So if you want to be noticed, you will have to overtake those who are already there. Not an easy task given that the guys who are at the top of the VL Turbo tree have all been doing this for quite a while. You'll be taking on the likes of JPC, Nizpro, PET, Rajabs and the Bresciani boys. Unless you're ultra-committed, quit while you're behind and go fishing instead. SC