

improved Perfection

RACE CAR OR ROAD CAR? IT'S THE ETERNAL QUESTION, BUT WE THINK ASHLY BARNETT HAS BLURRED THE FINE LINE OF DIFFERENCE RATHER NICELY WITH HIS IPRA-SPEC S14A

Story: Rick McDowell Photos: Rick McDowell



Spot the 36mm restrictor just on the turbo inlet



Motorsport really has come a long way since the days when how you tuned a brace of three Weber carburettors meant the difference between winning and losing. Turbochargers, EFI and computerised engine management are both the present and the future, along with a huge growth in tarmac rally type events.

Later model road cars are lending themselves perfectly to this overall direction and the Improved Production Racing Association class is becoming one of the key beneficiaries of the whole late model phenomenon.

This is Especially so in Western Australia, where Ashly Barnett's S14a proved its worth with an overall Top 5 placing in its debut meeting at last year's Barbagallo Raceway GT Tander Trophy race meeting. >>

BUILDING RELATIONSHIPS

When it's time to go racing, you really need the expertise of people like Steve Thomas, who right from the start nipped out with Ashly what would be the best SR20DET engine package to build. Steve's been around the WA scene for more years than he'd care to remember, building Nissans, tuning and these days hanging around Garage 101.

Ashly's build began with a freshly checked S14 spec' block, an equally prepared SR20 crank, Eagle rods and Wiseco pistons. The block runs stepped diesel liners and although a stock oil pump has gone in, there's a G'Reddy winged sump, HKS remote oil filter kit and oil cooler in the system.

Up top, where the stock head was de-dagged and re-conditioned, before being squeezed down, perhaps surprisingly, onto a stock Nissan head gasket with equally stock head bolts. The key factor with the top end however, is the IPRA rule that turbo cars must run with a 36mm restrictor on the inlet side of the turbo. Canny tuners work around this and main man Thomas has developed camshafts specifically for Ashly's motor, which when combined with turbo choice, produce gobs of low down torque without sacrificing too much top end. Around Barbagallo Raceway, it's the mid and low range that is important anyway.

There are no prizes for guessing that the camshaft specs are not being revealed and while the valve gear is stock, HKS adjustable cam gears are hidden under the rocker cover. The turbo meanwhile, is a Garrett hybrid based upon a GT 35/40, again, developed locally for this particular engine set up. Sitting on a 6 Boost manifold and supported by a 50mm APEXi wastegate, the compressor breathes through a typical K&N pod filter, before sending up to 21PSI of compressed air molecules forwards to a PWR 76mm thick front mount intercooler.

Jeff Thomas, who just happens to be Steve Thomas' son, took care of the plumbing and connected the intercooler to turbo and stock throttle body with tig welded light alloy piping. The throttle body sits in front of an equally stock intake plenum, but the fuel system is well specified and starts with a Tomei pre pump that feeds a 2.5 ltr alloy surge tank mounted under the boot.

A Bosch 910 pump then sends the E85 120 octane racing fuel via a single stainless line to a stock fuel rail fitted with 720cc Nismo injectors. A standard fuel pressure regulator keeps it all in check.

Over on the waste side meanwhile, Jeff fabricated a straight dump to atmosphere from the wastegate and then set about building a complete 3in straight through mild steel exhaust system for the car.

The whole deal is managed by a Wolf 3D Version 4 ECU, with standard Nissan coil packs and Autolite Iridium spark plugs. Dyno tuning has seen just over 300 rear-wheel HP produced, but as indicated above, it's the production of low down torque that has been the focus.

This in turn has necessitated the building of a tough drive train, starting with an OS Giken twin plate clutch and chrome-moly flywheel assembly, which feeds the tractive effort into a beefy RB25DET gearbox.

So far the box has survived and so too the R33 GT-R 4.1:1 ratio diff and axles from the same source.

Nonetheless, Ashly is hoping to get a straight cut dog box in the future, which will allow future engine and suspension development to be exploited with peace of mind.



It might 'only' have 17s, but this S14 has a gorgeous stance, perfect ride height and more

Arnold at Damage Control Panel & Paint helped to fit the C West front bumper, side and rear skirts before sorting out a paintwork freshen up of the car's genuine Nissan white hue.

The serious mechanical work got under way with sorting out the suspension and brakes. On both fronts, IPRA rules are quite clear and although seemingly restrictive, there's a heck of a lot can still be done.

Custom coilovers on all four corners were made up using Wilkinson Suspension sourced multi adjustable custom front and rear coilover struts, which are now home to King springs and independently bump and rebound adjustable Koni Race shock absorbers.

Malaga Springs and Suspension then came up with Super Pro eccentric bushes, pressed into the front radius rods plus multilink suspension and GT-R uprights out back. These mods help to improve the Nissan's front castor, as well as toe and camber at the rear. There's also a 30mm front swaybar in the mix, but no bar out back to help the car turn in.

The brakes meanwhile are all Wilwood at both ends, with massive 330mm rotors and 6-piston Billet Callipers up front, the callipers clearly mounted on custom dog bones to those Wilkinson struts. At the rear, 309mm callipers and 4-piston billet callipers are no less impressive.

Braided lines, a Wilwood brake bias adjuster and Ferodo DS3000 pads are all a part of the equation too, while the factory brake booster has been removed for enhanced brake feel in the heat of battle.

Fitting big brakes like this invariably means calculating wheel sizes and offsets, but in this case study there was also the issue of having to choose from Yokohama's A048 tyre size range – the control tyre for IPRA.

The end result is 17x9in Enkei RPF1 rims all round, wrapped in 255/40/17 A048 rubber at both ends. Ashly says he would have liked to get 18s under the guards, but even with a bit of guard rolling it would have been just too tight. >>



Massive Wilwood anchors help to paste Ashly's eyeballs onto the inside of his helmet visor.



17" Enkei's, sticky rubber and massive brakes would be perfect for the street never mind the race track.

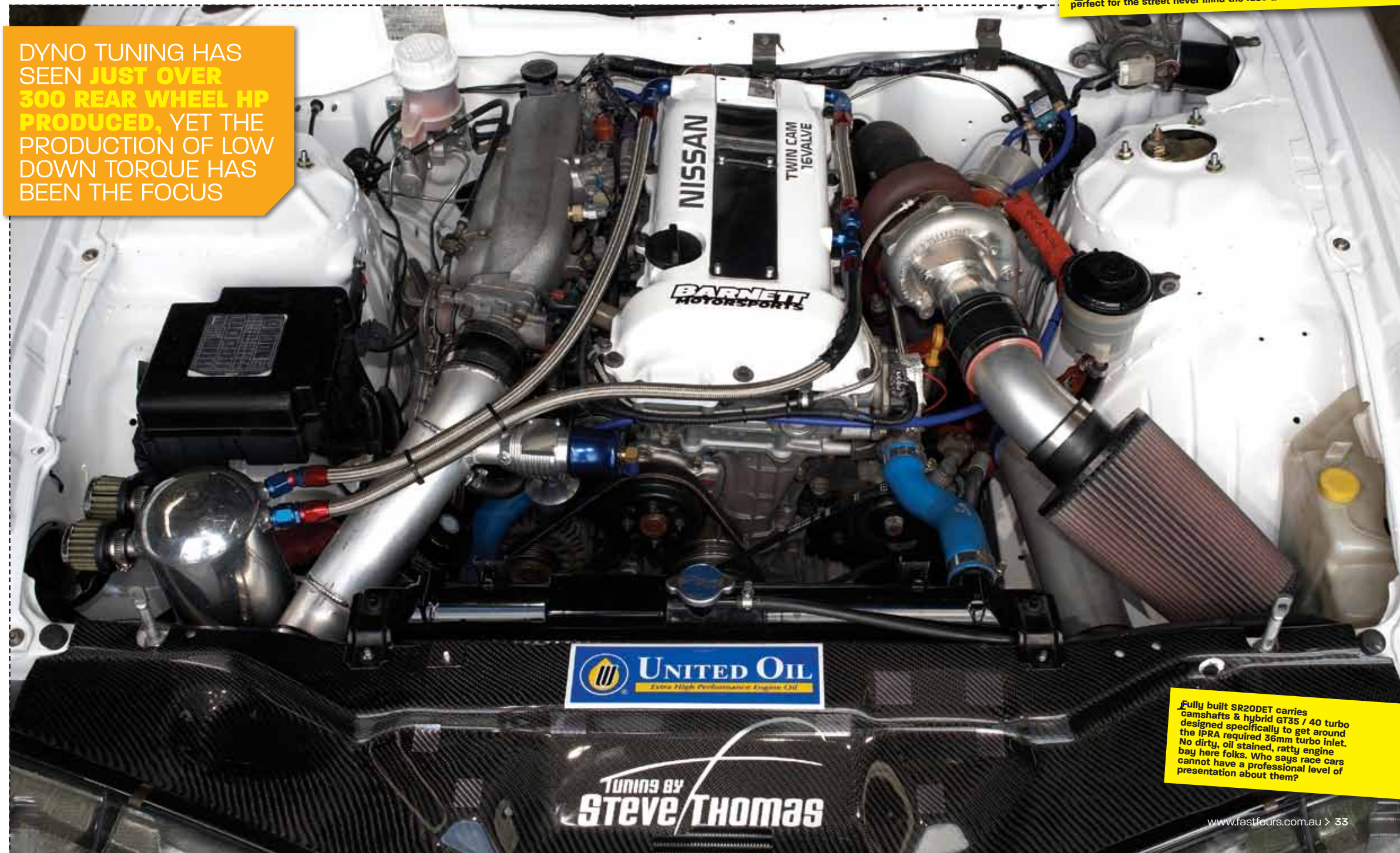
Although he won the 2008 WA Street Car Championship in a Series VI RX7, it was his exploits in '06/'07 driving a 2.3 litre 4G63-engined Mitsubishi Scorpion IPRA car that paved the way for Ashly's current S14a exploits.

Without getting overly complicated, IPRA rules dictate that a pre '86 car like the Scorpion (go on, Google it, we dare you ...) has to use smaller and thinner wheels/tyres than a post '86 car, so there is an immediate benefit in opting for a 90s model or beyond if you want to get serious with IPRA racing.

The S14a was brought in semi modified direct from Japan, but was quickly stripped upon arrival in Perth before the shell was sent to Steve Maitland Engineering for its CAMS approved roll cage. Maitland is the guru when it comes to cages in the west and for a race car there are no shortcuts taken, with bars coming through the firewall to each strut tower for total rigidity.

The only other body mods at this stage involved seam welding around the engine bay, while Anthony

DYNO TUNING HAS SEEN JUST OVER 300 REAR WHEEL HP PRODUCED, YET THE PRODUCTION OF LOW DOWN TORQUE HAS BEEN THE FOCUS



Fully built SR20DET carries camshafts & hybrid GT35 / 40 turbo designed specifically to get around the IPRA required 36mm turbo inlet. No dirty, oil stained, ratty engine bay here folks. Who says race cars cannot have a professional level of presentation about them?



Cabin is pure race, but oh so tidy.



Intake side is surprisingly stock, but 720cc Nismo injectors are in use



Fully custom built coils use Koni shocks & Kings Springs

Calculations, pondering and much thought also went into the building of the car's SR20DET engine, but we've dealt with that aspect in a separate breakout story as there's quite a bit to it. As mentioned above, the car was stripped right at the start and that meant removing all of the factory sound deadening as well as most of the trim.

In addition to the roll cage, the cabin is now home to a Velo head restraint style race seat, OMP harness and other race touches such as a Momo steering wheel with quick release boss and just a couple of extra gauges.

The thing that stands out about the race office of this S14 though is just how nice it is. Race cars really shouldn't be this well presented and it's true for the rest of the car too. Yet it shows a level of professionalism that many others could well take a lesson from.

And there's little doubt either, that you won't find a better example of the whole IPRA ethos about producing a race car that is closely related to a road car. Ashly's package would only really need to have a less obvious roll cage, some trim added back in and the turbo restrictor removed to produce an awesome streeter.

Who says you can't blur the lines sometimes? 🗝️



ASHLEY BARNETT

AGE: 34

OCCUPATION: Sales Manager for United Oil

PREVIOUS RIDES: petrol powered Radio Controlled cars, go karts, Datsun 1600 with twin Weber L18, Mitsubishi Scorpion IPRA racer with stroker turbo 4G63

I'D LIKE TO THANK: My wife Debbie for being understanding, Steve and Jeff Thomas for all their help and technical advice, John at Top Racing your time and help, Danny at Garage 101 for your assistance, Willie for getting up early and crewing at the track, Westy for lending a hand, Graham at United Oil for your help, Dad for helping out, Turps for thinking outside the square, Sean my neighbour for lending a hand with heavy things, Anthony Arnold at Damage Control Panel & Paint, Mum for being me mum



C-West front bumper & side skirts work beautifully with 17" Enkeis and ride height.

It's just a road car with some graphics and a cage officer, truly it is!

FAST FACTS

1998 Nissan
Silvia S14a



UNDER THE HOOD

ENGINE: Nissan SR20DET

ENGINE MODS: Prepared S14 block with diesel stepped liners, stock oil pump, GReddy winged sump, HKS remote oil filter kit, oil cooler, stock prepped crankshaft, Eagle rods, Wiseco pistons, Stock head, specially developed camshafts, stock valve gear, HKS adjustable cam gears

INDUCTION: Garret hybrid based turbocharger with mandatory 36mm intake restrictor & 50mm APEXi wastegate on 6 Boost manifold, K & N pod filter, PWR 76mm thick front mount intercooler, stock throttle body, stock intake plenum & tig welded light alloy piping.

FUELLING: Tomei pre pump, 2.5 litre surge pot, Bosch 910 main pump, stainless delivery line, 720cc Nismo injectors, stock Nissan fuel pressure regulator

ECU & IGNITION: Wolf 3D Version 4 ECU, stock Nissan coil packs & Autolite Iridium spark plugs.

EXHAUST: Straight dump to atmosphere from wastegate, 3" dump from turbo into single, mild steel 3" exhaust system

DRIVELINE

GEARBOX: stock RB25DET

DIFFERENTIAL: R33 GT-R 4.1:1 ratio diff and axles

BRAKES: **F:** Wilwood 6-piston billet callipers & 330mm x 35mm Wilwood 2-piece rotors, **R:** Wilwood 4-piston billet callipers, 309mm x 24mm 2 piece Wilwood rotors, Ferodo DS3000 Pads front and rear, braided brake lines front & rear, Wilwood brake bias adjuster, Brake booster removed

CLUTCH: OS Giken twin plate clutch and chrome moly flywheel assembly

SUSPENSION: Wilkinson Suspension multi adjustable threaded struts front & rear, Koni Racing adjustable shock absorbers & King springs all round – 250lb front/200lb rear. Super Pro eccentric bushes front & rear, R32 GT-R aluminium uprights rear, front only swaybar – Whiteline 30mm

WHEELS/TYRES

Enkei RPF1 17" X 9" rims wrapped in 255/40/17 Yokohama A048 control tyres

INTERIOR

Stripped, Steve Maitland Engineering roll cage, Momo steering wheel & removable boss, Velo had restraint race seat, OMP harness, Autometer gauges for oil & water temp, boost & oil pressure, Water temp & oil pressure warning lights, multi LED shift light

ICE: With Scotch and Coke at the end of a race thanks

EXTERIOR

Mildly rolled guards, C West front bumper, C West side skirts, C West rear skirts, Ganador mirrors, genuine Nissan white paintwork, custom graphics

PERFORMANCE

320Hp @ rear wheels, PB of 64.5 seconds on debut on the long circuit Barbagallo raceway