MRT Performance
1 Averill St
Rhodes NSW 2138
AUSTRALIA

+61 2 9767 4545

Nissan Pulsar SSS/ST-L DiG 1.6

Standard Vehicle Overview

Engine: 1.6L 4cyl Direct Injected Single Turbo
Transmission Options: CVT or Manual
Drive Type: 2WD (Front) only
Approx Kerb Weight: 1297kg (depending on spec)
Quoted Flywheel Power: 140kw @ 5600rpm
Quoted Flywheel Torque: 240Nm @ 2000rpm
Typical Standard Power MRT Hub Dyno: 142kw
Typical Standard Torque MRT Hub Dyno: 240Nm
Standard Flywheel Power To Weight Ratio: 107.9kw/Tonne

OEM Strengths: Price, and they're generally of good quality finish.
OEM Weaknesses: Really (and we mean REALLY) tiny turbo that limits outright performance gains, chassis dynamics not great when pushed hard.

Performance Options

Owners have varying ideas of how they would like to improve their vehicles. Many have a predetermined figure in mind - how much faster they want to go, a certain amount of power, or a budget are all common themes, but these can usually be met in varying degrees by a staged upgrade path.

Through our decades of experience and extensive testing, we know that certain combinations of parts produce set results and this is how our kit options are developed. This allows you to easily select an option to meet your needs – of course you can always go nuts for the ultimate vehicle, but these are good starting points for most.

Future upgrades between kits is easy meaning you can start with an XA Kit and progress to another later. Already have an extensively modified vehicle and want more? Just ask!

The following options are available:

Performance Kits

- **XA Kit**
  15kw and up to 29% more torque.

Additional Options

- EcuTek ProECU kit with software tools for data logging, DTC check/clear and loading of alternate maps.
- Tuning for E85 or 98 RON.
- Remote tune available

Our Goal When Improving Your Vehicle .

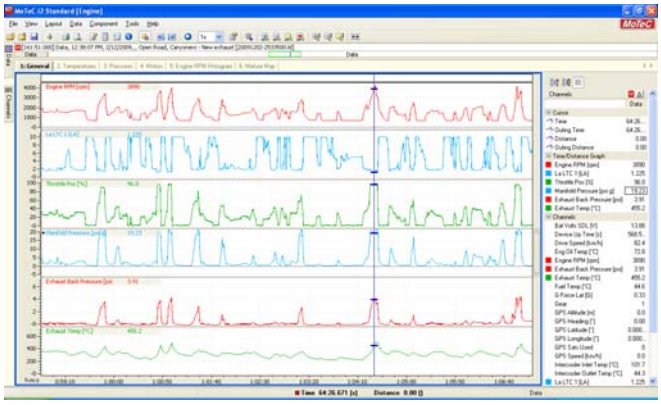
When chasing performance improvements, our key aim is to improve your vehicle as a whole in order to achieve a nice, balanced result. For the most part our clients use their cars for enjoyment in a variety of environments. Examples include day to day commuting, spirited highway or off road use, etc, but by far the most common is as a daily driver. On that basis, modifications which make a car too loud, unreliable, consume fuel like someone else is paying for it, drive poorly with no torque at lower rpm or ride harshly miss the mark.

We aim to take what the factory supplied you and improve on it. This requires thorough testing and development – that's why we only offer proven results and provide a warranty for all work we complete. Part of our development process is to understand and allow for the impact of tuning and mechanical changes under a wide range of circumstances, a scaled down version of what your vehicle manufacturer would have done when testing and setting up your car prior to public release.

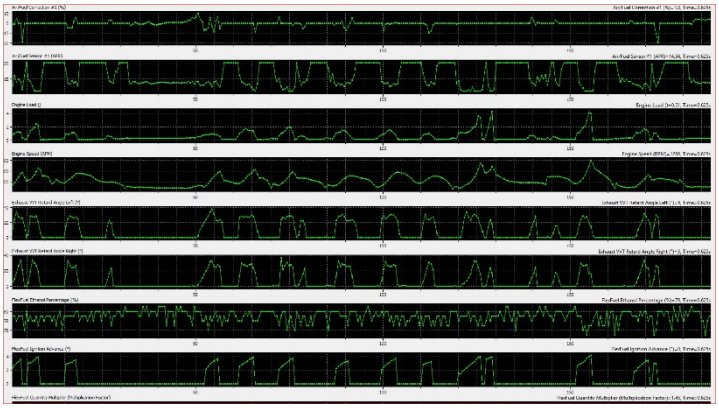
Motec SDL3 Data Logger & Display.

Example Of Sensor Array For Test Data.

MRT Dyno Room Testing.



Motec i2 Data Analysis Software - Review of test data



EcuTek ProECU OEM ECU Software – Review of test data

In summary, you can rely on us to meet your needs with your vehicle no matter what you outcome you are aiming for. We run an extensive R&D program for each vehicle that we release parts or tuning upgrades for, we have a proven track record with over 20 years in the industry, and we can work to whatever scale you require (from the kit options shown in this document right through to one off custom builds and race/rally vehicle preparation).

This is also why we can offer industry leading warranty, reliable torque and power gains for work completed, and a complete satisfaction guarantee!

Warranty And Satisfaction Guarantee

When sold new, the manufacturer of your car provides a fairly specific warranty that covers a variety of things for a predetermined amount of time or distance travelled. Problems caused by poorly thought out or performed modifications however are generally not one of them! Where a problem with your car is completely unrelated to any modifications made (for example, your air conditioning fails 12 months after you have a power kit fitted) this is generally STILL covered by your factory warranty. However, if you increase the performance output of your engine and your transmission fails, it is unlikely they will be too interested in repairing it under the terms of their normal warranty.

Fortunately, where a full MRT Power Kit is fitted and your vehicle would have otherwise been covered by the manufacturers standard new vehicle warranty, the affected items will be covered by us (or your fitting reseller). As an example, if you have an engine failure as a result of work we complete, we will rectify it under our warranty instead. In simple terms, if we fit something to your car which impacts on its reliability, we will cover the problem under the terms of our warranty.

This continues for the duration of your factory warranty whilst you remain the owner. There are some exceptions such as outright race or track use of course, but more information can be found on our website at http://www.mrtperformance.com.au/about-us/the-best-warranty). And if your car is outside its factory warranty period, we will still warrant the work we complete for a period of time so you have less to worry about when driving your pride and joy.

Certificate Of Authenticity

Be sure you get what you pay for! With the success of the MRT Power kits over the years, some companies try to pass off inferior parts and tuning options that replicate what we do. However, we guarantee your satisfaction because we only use proven parts and the best engine management system technology available (OEM or aftermarket).

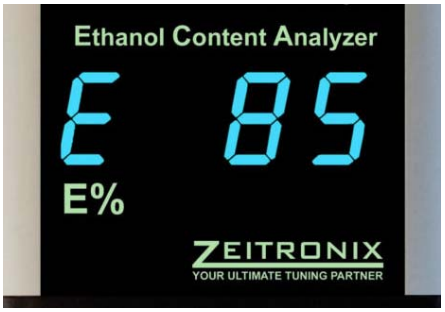
With each tune or upgrade completed, you will be provided with an individually numbered Certificate Of Authenticity to show what has been completed on your vehicle.

Fuel Types – Petrol Engine Options

For the most part, manufacturers of all petrol engine equipped performance vehicles generally specify the use of 98 RON fuel. 98 RON is widely available and that's the generally accepted best option to achieve the optimum performance from your vehicle. All of our kits are designed to be used with 98 Octane fuel (eg Shell V-Power, Caltex Vortex 98, BP Ultimate 98, etc) as a result.

In many parts of Australia, you may also have another alternative if you are chasing peak performance. In recent times, the availability of E85 fuel has become more widespread. E85 typically consists of a blend of up to 85% ethanol and 15% regular unleaded fuel, although this blend can vary depending on the refiner, your location and the time of year (for example Caltex Bio E-Flex is up to 85% but typically closer to 70% ethanol and 30% regular unleaded).

The addition of ethanol to regular unleaded increases the octane rating and oxygenation of the fuel and it also burns a little cooler within the cylinder (all good things from a performance perspective). Downsides? Your engine requires specific tuning to suit. Additionally, because the energy content per ml in alcohol based fuels is lower compared with regular 98 RON you need to inject more of it to have the engine run efficiently. In the real world, that means that consumption of E85 is much higher per 100/km travelled when compared to regular 98 RON fuel (around 40% greater on average).



This gives rise to the potential for scenarios where sometimes you might want your car running on E85 (for maximum torque and power), and running on 98 RON at others (commonly due to a lack of availability of E85 where you are with your car at the time, or because you need increased range from the next tank of fuel). As a result of the significant differences in ECU calibration required for the running of either, you can't just use one fuel or the other in your vehicle without changing ECU mapping to suit.

Most late model vehicles can run on either E85 or 98 RON when configured and setup correctly, but a select few can run on both in varying percentages with some additional modifications. Unfortunately, the Nissan Pulsar DiG ECU doesn't presently support the additional hardware and software required for on the fly adjustment. That doesn't mean you are out of options though – it just means you'll need to either choose a fuel you will be running on all the time, or optionally ask us to create two or maps for you and acquire an EcuTek Programming Kit to load in your map of choice depending on the fuel type you're running.

Is it worth it? Output increases of up to 20% more torque and 20-25kw more power are routinely seen on E85 over and above the same engine configuration on 98 RON. Additionally, where available, E85 is usually cheaper to purchase per Litre than 98 RON so the case is compelling. Of course there are pros and cons but for more information just ask.

Alternately, if you are in a remote part of Australia and can't get 98 RON or E85 fuel on a regular basis, then we can provide a revised tune to suit lower octane 95 RON to suit. Please contact your nearest MRT reseller for further details on any potential impacts on performance (engines generally need to be detuned slightly to retain reliability when being run on lower octane fuel).

Fuel Economy

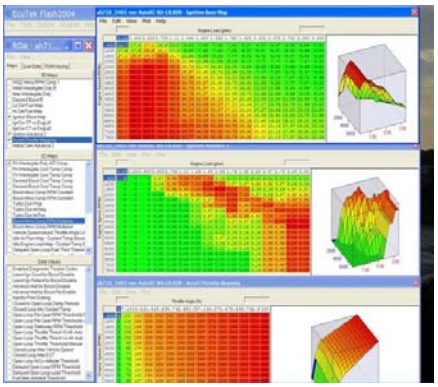
A query we often get relates to fuel consumption. No matter what fuel type you are running, when we modify your vehicle in order to extract better performance two things generally happen:

- We need to make the engine more efficient throughout the rev range whether by fitment of additional parts, or changes to engine operating parameters.

- Whether standard or with performance orientated parts fitted, ECU mapping is optimized to ensure the engine is operating with the most suitable settings for the combination of parts fitted.

As a result, during normal day to day driving your engine is actually working more efficiently to produce the same output it did previously, and burning less fuel as a result. Of course when you are working the engine harder to extract higher levels of performance you will burn more fuel, but this is a very small proportion of the time spent driving so generally they balance each other out for a negligible change or nominal improvement.

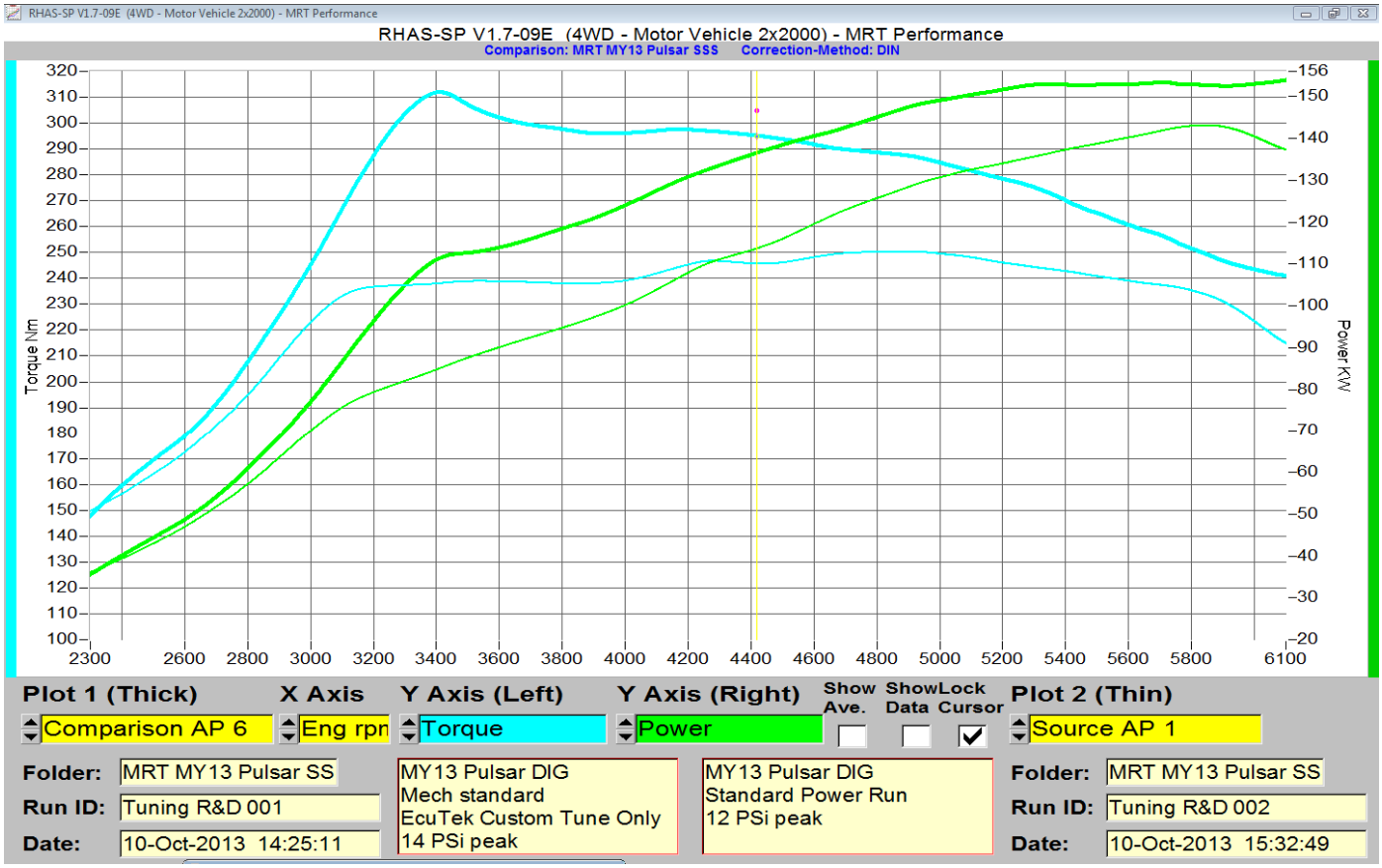
Your Vehicle – XA Kit



This is our entry level kit, and the primary modification is complete remapping of the OEM engine management system with a focus on improvements to midrange torque and day to day drivability. Peak power output is limited by the standard mechanical configuration on your vehicle, but that also means it retains standard noise levels and completely standard appearance inside and out.

Kit Inclusions

- Full engine management system recalibration using mapping extensively developed on dyno and road, and custom alterations to suit your specific vehicle.
- On road diagnostics, testing and adjustment
- MRT Tuned Certificate Of Authenticity
- Satisfaction guarantee



Your Vehicle – XB Kit

The XB kit is a midrange kit designed more for the owner who wants that little bit more from their vehicle, both in terms of performance and sound. Unfortunately the Pulsar turbo size really restricts any further gains from here, and aftermarket replacement options are limited. We have completed a variety of testing with exhaust and intake combinations, and also tried various wastegate actuator upgrades. None yield significant increases in performance at all, however if you want a sportier note from your engine through fitment of an exhaust system just ask for more information.

Your Vehicle – Custom Options

If you are at this level, you've come way past what the vehicle manufacturer ever had in mind when engineering your car for sale. That means many factory components require swapping out for alternate items of a design more suited for the torque and power levels you have in mind. Apart from a custom turbo configuration, this likely includes engine internals, transmission or driveline upgrades and numerous other bolt on bits.

At this level, the requirements are wide and varied depending on what you want to achieve, so please contact us for further information and to discuss your goals.

Frequently Asked Questions

Do the modifications void my new car warranty?

(Also refer the details on the Factory Warranty Guarantee listed separately in this document)
One of the most common queries we get in relation to performance upgrades on new models is the potential effects on factory warranty. To that extent, Subaru retain the right to refuse claims on warranty where the item being claimed on has been modified or changed from factory specification.

However, to date we are yet to have any vehicle fitted with one of the MRT Power Kit upgrades fail as a direct result of the improvements made, with hundreds of kits supplied and fitted to date Australia wide. We also offer a warranty against manufacturer defect on all parts we supply. We also spend countless hours on research and development of parts, tuning, and the associated effects of these changes on the rest of the vehicle.

If I have one type of kit, can I upgrade at a later stage if I want more?

Easily! All of our parts are designed to be compatible with other items. For example if you have one type of kit, upgrading to the next level simply consists of adding any additional parts that may be required (eg upgrading from a rear muffler only to a full exhaust system, updating ECU tuning to suit, etc).

The cost to upgrade depends on what parts you already have fitted. As a guide it's generally around the difference in price between your kit and the next + any additional labour associated with the changeover that isn't covered in the kit.

How long does the work take?

The XA kit can usually be completed within 1 day. When booking your car with us (or your local authorised outlet) the total time your vehicle is required will be reconfirmed for you as well.

I have already made some modifications, can I get the same results as seen above?

A lot of customers perform modifications in stages, partly due to budget constraints and partly because it starts in stages and then the bug bites and performance becomes an obsession. All of the modifications listed above can be performed around what you already have. Depending on the quality and type of items fitted, we will get performance gains as close as feasible to the above. Of course to make sure you get the gains the vehicle is capable of, just make sure you use MRT parts from the beginning! ☺

Will my modifications still allow me to service my car with a dealer?

We would like you to choose us for your regular servicing, but should you choose not to there are no hardware or software changes that will stop a Subaru Dealer using their factory equipment. Additionally if they reset your ECU it still retains its enhanced settings.

Does my car go on the dyno, and will I get a dyno graph?

All initial testing, development and verification of results has been (and continues to be) completed on our in house 4WD Dynapack Chassis Dyno. The tune on your vehicle is customized to suit your specific engine using a range of on road data acquisition and adjustment, however dyno time is not normally included as part of our kits. This is due to the level of testing and development already completed on associated mapping work. Dyno tuning can be completed if you wish however, at a slight extra cost.

Where can I get the work done?

Any authorised MRT reseller can easily complete the above work for you, or assist in designing a series of modifications around your requirements. For further information and contact details please check out our website at http://www.mrtperformance.com.au/resources/mrt-partners-and-authorised-outlets.

Of course if you have any other queries that we have missed, or need further information either give us a call directly on (02) 9767 4545 or get in touch with your local reseller.

* Whilst realistic and achievable on all models noted, gains quoted are subject to 10% variation due to fuel quality and temperature variations in various areas of Australia. If you've concerns about any aspect of the work to be completed, please just ask us (or your local Authorised MRT Distributor)!

** Kits are NOT dyno tuned at time of fitment in most cases. We spend hundreds of hours on dyno and road at the development stage to eliminate unnecessary expense for you. This knowledge is incorporated in mapping designed for each kit, then refined in your car with road testing and diagnostics. Before and after power runs, or custom dyno tuning for every last kw are both feasible however additional costs will apply.