



In 2007 GTC imported the first R35 GT-R into Europe. We then spent the next 12 months pushing the GT-R to its limits for our research & development to take it to the next level.

Gathering data from use on the road as well as Silverstone, Brands Hatch, Mondello (Ireland), Duns fold park (Top Gear track), Rockingham, Santa Pod drag strip and of course the dyno ! For a bit of fun we even took our GT-R onto the Race of Champions track inside Wembley stadium !





### **NISSAN GT-R R35.**

The GT-R icon; revered and respected across the globe. The word "GT-R" to many motoring enthusiasts, will conjure images of technological prowess, devastating performance, and Japan's most successful entrant into the battle of the World's Ultimate Sports Car.

Throughout its evolution, the legend of the GT-R would always lead a noble fight against Porsche and Ferrari, restrained considerably by Nissan's pledge to uphold Japan's Gentleman Agreement, where all cars produced by the major Japanese Manufacturers, would never exceed 280ps. "Best Motoring" DVD Fans over the years have laid witness to some of the finest displays of automotive warfare between Japan's Elite and the Heavyweights of Europe, the GT-R never appearing to have the edge on circuit over the overpowering Porsche Turbo's.

The launch of the R35 Nissan GT-R would finally restore a warm, proud feeling inside every GT-R Fan's heart, ruffling feathers on its pre-launch with spectacularly quick lap times at the Nurburgring, Japan's new flagship fighter is waking Porsche owners up in the middle of the night dripping with sweat.

Whilst the heated debate continues on the Internet Message Forums between the Porsche GT Die-Hardts and Nissan GT-R Fanatics, of whose respective prize fighter rules, the superb new level of performance achieved by Nissan is admired by all true enthusiasts.

Some admirers however, like **GTC**, a UK Based Japanese Performance Specialist, have turned their hands and knowledge into developing the

Nissan R35-GTR into a machine that can only be unanimously crowned by all, as **"The Ultimate GT Champion"**, capable of cocking its leg against all challenging Prancing Horses & Stuttgart Heavyweights.

If 480hp/435lbft out of the factory wasn't enough for some, GTC can now offer Nissan R35 GT-R Owners the ammunition to obliterate all contenders, with their highly developed Performance Package; the "GTC 570HP & 600R PACKAGE"

### **Analysis of The Stock R35 GT-R..**



In stock trim, Nissan claim the GT-R produces in the region of 480bhp/435lbft from the VR38DETT V6 Twin Turbocharged Motor. However through testing of the various standard vehicles, power and torque levels varied tremendously from car to car, with results anywhere between est.490bhp max, and 478bhp min at the flywheel, and torque levels ranging from 430lbft to 450lbft. All cars tested have been 100% JDM Import Models with varying amounts of mileage on the odometer (Official UK Release date for Nissan GT-R is Spring '09). Whilst the power levels from stock vehicles varied a great deal, a number of common factors were noted across the range;

In stock form, the GT-R runs extremely rich (over fuelling) across the RPM range, in particular the turbo spool area at around 2,500->3000 rpm, and so rich after 4,500 rpm, that the Dyno's Wideband O2 Sensor max'd out

at 0.68 Lambda. This is most certainly an overcautious safety condition, typical of most mass produced performance cars.

Stock Boost Pressure was generally recorded at around 0.8bar max at 3250rpm, with fairly efficient boost control, dropping off to 0.6bar at the top of the RPM range.

Physically, the compact engine bay is very well designed with the low-slung twin IHI Turbochargers hidden on the hips of the V6 VR38DETT unapparent from first glance under the hood. The stock exhaust system is of average design, but with the presence of 4 Catalytic Converters (2 per bank), small diameter pipework in sections, and 'Bolt-On Tail Pipe Trims', there are a great deal of improvements to be achieved.

Although a rewarding drive, the GT-R can be drastically improved with a small degree of modification, in summary, bringing the car out of its Manufacturer's Conformity & Safety Focused Jelly-Mould, and truly letting the Twin Turbocharged V6 scream up throughout the RPM range to redline, emphasising the engine's power delivery.

GTC have formulated a very well researched Performance Package that aims to provide the customer with an even greater level of enjoyment from driving the car in all terms of driving experience.

The GTC 570HP Conversion offers approx. 570-580bhp Total Power Output for the Nissan GT-R with a number of modifications;

- **3" Y-Pipe De-Cat (Replaces the 2<sup>nd</sup> Pair of Catalytic Converters)**
- **3" Cat-Back Rear Exhaust System with Quad Tail Pipes**
- **Cobb Tuning 'Access Port' with Stage 2 Map.**

### **Exhaust Upgrade.**



The 3" Y-Pipe + Rear Exhaust System is one of the first UK Built Exhaust System for the R35 GT-R, concentrates on reducing exhaust back-pressure/resistance for the exhaust gas, an improved flow of gas across the rear split, and overall higher exhaust gas speed throughout.

The Y-Pipe design was critical to promote this, with Engineers devoting a great deal of R&D time to concentrating on how the two banks exhaust gases met, ensuring to keep the exhaust gas flowing through the twin 3" pipes for as long as possible (to help to maintain higher gas speed), before meeting the 3" Collector Piece. The Y-Pipe also features Flexi-Sections (unlike many of the Japanese Aftermarket Exhaust Y Pipes) to reduce risk of cracking under car movement. The design also features Two High-Flow Bullet Resonators to tune the harmonics of the Exhaust, to remove any undesirable brashness of the exhaust tone.

The Rear Exhaust Section has been labelled a true work of art by GT-R Owners who have chosen to modify their exhaust system with the performance Part. The stock exhaust tone of the original system has generally been described as being far too quiet, not a true and fair representation of the immense, highly developed 3.8 V6 Power Plant. Without creating excess noise and leaving the owner with an intrusive, obnoxious exhaust tone, we focused on providing an exhaust tone that represented the High-End Prestige Image they felt the GT-R now belonged to, amidst the upper echelon of exhaust systems of the Exotica Tuning World from companies like 'Tubi'.

The sweeping Criss-Cross Pipework features all smooth Mandrel Bends, entirely in twin 3", promoting superior exhaust gas flow. The design allows the use of long high efficient Bullet Silencers made in-house as opposed to boxes, to allow for maximum flow and noise reduction. This design of the

bullets creates a very distinctive look for the new System. The final part of the exhaust system features elegant split equal length pipework of the quad 3" sections, finished with four Slash-Cut Mirror Polished 4.75" Outlet Tips, allowing a subtle yet high class aesthetic improvement over the cheap looking, add-on tail trims of the stock system.

The entire system weighs approximately 24kg, with the Front Y-Pipe weighing 7kg, and the Complete Rear Section 20kg. The stock system weighs 27kg. The GT System is manufactured from Industry-Highest Quality Grade of T304 1.0mm Walled Stainless Steel.

The GT system also features Motorsport derived solutions, including 3" V-Band Clamping, to join the separate exhaust sections together, as opposed to conventional 3 or 2 bolt Flanges that rely on gaskets and bolts to seal. The inclusion of a high quality Motorsport Grade V-Band Clamp ensures the best possible fitment and sealing between the Y Pipe De-Cat and the Cat Back Rear Section.

The GTC System offers customers a free-flowing and excellent fitting prestige product, at a reduced price compared to the rival systems (some costing over £3,500.00).

Noise Output for this System is 97dB at 4,500 rpm Static Test, and around 95dB at Drive-by.

### **Engine Control Mapping.**



Throughout the period of the launch of the GT-R, the general consensus was that the GT-R would be equipped with an ECU (Engine Control Unit) that could not be cracked by any of the most respected Aftermarket Tuners in the industry. The inclusion of CAN-Bus System in the GT-R (Controller Area Network – a system protocol where virtually every electrical component in the vehicle can communicate with each other, integrating together to form a network) would mean that an Aftermarket Full-Standalone ECU replacement (allowing full engine control by the Map Programming Engineer) would have to have the ability to work together in-chain with the entire system of components, in-effect, the ability to communicate with every electrical component, from e.g. the ABS Sensors utilising the same circuit paths as information sent from the Body Angle Sensor, the entire network of the GTR's components rely on the next component to operate correctly, all via the ECU....a mammoth task from every aspect. With such a highly intelligent new generation of Sports Car, came the task of mastering ways of allowing experts in to make the necessary adjustments.

Five companies have stood out to offer their ECU Key Cracking Skills for the GT-R; 'Mine's', 'Power House Amuse', 'Ecu-Tek', 'Haltech' and 'Cobb Tuning', with all of them addressing the goal of total engine control from various directions. The beauty of performance car tuning has always been in the combined efforts of the professionals involved, with a vast selection of ideas and results achieved.

One company that has stood out with its unique solution to adjusting the engine control system on the GT-R, is Cobb Tuning, a US Company specialising in ECU Remapping Hardware. The company was one of the first in the world to release a device allowing full ECU Access on the Nissan GT-R, and has reached global success in its products' simplicity and effectiveness.

The Cobb Tuning 'AccessPORT is a Simple Hardware Interface that allows the User to communicate with their GT-R ECU. The Hand-Held Device connects easily to the OBDII Communication Electrical Port in the Driver Cabin, at which point, the User has the ability to make a number of safe and fool-proof adjustments in the ECU.

The AccessPORT main function is to allow the User to install and switch between pre-designed Fuel and Ignition Maps in order to change the performance of the car. The Pre-Designed Maps are tried, tested and built by Cobb Tuning themselves, who have developed a great number of variants of maps based on, Country of Origin (where the car was built), Fuel Used, and Modifications on the Car.

The Different Maps available at any time to the User include;

1. Stock Style Map (As from Factory, but with Speed De-Limiter)
2. Anti-Theft Map (Car will not start, security map)
3. Valet-Mode Map (ECU prevents car from being driven hard with reduced rev limit and power)
4. Stage 1 Map (For cars with Aftermarket Cat-Back Exhaust Systems)

## 5. Stage 2 Map (For cars with Aftermarket Cat-Back Exhaust System + High Flow Catalytic Converters, or De-Cat Pipes)

Each map, can easily be loaded into the ECU via the AccessPORT at the User's will, with the safe knowledge that the original existing Map from Factory can be saved and restored at any period. Each of the Performance Increasing Maps are available in various different Fuel Types (USA to Europe to Japan). Another key feature is the development program offered by Cobb Tuning, where maps are constantly being upgraded, altered and improved, with an increasing amount of maps available for free download by the user. In addition, the AccessPORT allows Diagnostic Functions, in its ability to check and remove Trouble Codes that the ECU may store in relation to the condition of the car, e.g. Tyre Pressure Warning Lights, which can only otherwise be extinguished by Nissan Dealerships. The ease in which the AccessPORT allows interaction between the user and ECU is remarkable, and through its distinctive disadvantages (no actual ability to build custom maps, no remapping software available, and the maps are all generic), the Access Port has proven to be a hit with GT-R Owners.

For that very reason, GTC (who are an official UK Dealer for Cobb Tuning) began to test the Access Port during its Beta Testing Period, and throughout the development, have been impressed with the results achieved in terms of practicality, user-friendliness, and success in increasing the performance of the GT-R, combined with their improved Exhaust System. The AccessPORT is supplied, synchronised, and installed by GTC during the 560HP Conversion, and the most suitable Map is applied to the ECU. The User is able to swap back to the original Nissan Factory Map at any period, which is ideal for owners concerned with Manufacturer's Warranty; the map swapping leaves no trace on the ECU.

The Stage 1 Map supplied raises maximum boost pressure to around **0.9 bar**, whilst the Stage 2 Map (as used in the 560HP Package) raises maximum boost pressure to around **1.1bar**.

The net result offered by GTC is a complete transformation in the way the R35 GT-R drives. Customers have reported "Night and Day" transformation of the car, with the performance increases very apparent during test driving.

Typically, the 560HP Conversion will achieve est.560-570bhp at the flywheel @ 6750rpm, est.550lbft @ 3,600 rpm at a reliable 1.1bar

Compared to Stock; est.480bhp at the flywheel @ 6250rpm, est.450lbft @ 3750rpm at 0.8bar.

**This is a net gain of around +90bhp (+18%) and +100lbft (+22%) at the flywheel.**

The key factors are;  
- Ease of installation,

- Rewarding results in terms of performance transformation with zero drawbacks, - Safety of the upgrade in terms of longevity of the engine and transmission systems in the car.

With a great deal of research and development devoted in tuning and racing the Nissan R35 GT-R, combined with the unique passion that the entire team personally have in the GT-R and it's heritage, fortunate owners of the new super car from Nissan are awarded with one of the highest level of quality of Performance Upgrade Packages ever offered in the U.K.

What is a Stage 1, Stage 2?

-Stage 1= a STOCK GTR or ONLY an axle back exhaust. NO intakes. Fully catted.

-Stage 2= CATTED Downpipes, and a **full** exhaust(can be catted or catless mid). NO Intakes. Drop in filters are OK. Intercooler pipes are OK.

Does a mid pipe make me Stage 2?

-If you are running 100Octane or better, the Stage 2\*\*91/93/97\*\* mapping is OK. On pump, I would start at the Stage 1 and data log the car. Be sure your AFR(on the AP is at 12.0 or richer). On an external wideband sensor, the AFR will be 11.3 - 11.5. Then you could try the Stage 2 mapping, look for consistent timing(lower at peak TQ, scaling up to redline) and AFR in the same range. In NO WAY am I endorsing the Stage 2 for mid pipe equipped cars, but you can try it if you are willing to do the logging.

Can I use an octane booster to run the higher octane maps?

-The short answer here is NO. I have not designed ANY of the maps to work this way. There are far too may variables.

What is the most boost I can run? What is peak boost?

-This really depends on what level of modification your car is at and what Octane you are running. A safe reference point is 1BAR on pump and 1.2bar on race gas(100 Octane or better). Generally, a Stage 1 car will be very happy at 1 BAR and a Stage 2 at 1.18BAR. The stock fuel system has physical limitations. At sea level, the stock fuel system will run 100% injector duty cycles at 1.22BAR(AFR 11.8). So, if you are willing to run race gas, Q16 is my choice, then the tuner can gain some headroom and run more boost.

Do I really need actuators?

-Actuators are the second best mod you can do for your GTR(aside from an AccessPort of course 😊) They will allow you to hold greater boost levels

at redline. Here is the BIG 'BUT'. The current Off The Shelf maps are NOT designed to run high boost levels at redline. YOU MUST HAVE A CUSTOM TUNE!!! The simplest explanation is that you will run too much timing and not enough fuel.

Is the tranny made of glass, or can I push it?

-To be honest, we really do not know just yet. There are plenty of rumors out there, but I have never broken one yet. I have seen drive shaft failures, but no gearbox failures.

Does going to catless downpipes really effect my tune?

-YES!!!! It makes a huge difference. It will dramatically effect the spool characteristics of the turbos. You will be able to hit full boost earlier, thus entering a lean spool condition. To put it simply, spooling earlier will lean out the tune at peak torque. Not good. You should consider a custom tune at that time.

Can a CEL(check engine light/ECU code) really hurt performance?

-Yes. The real downside here is that you may not even see the code!! There are two primary symptoms you should look for. 1.Low boost. Suddenly, your car is performing poorly and is hitting substantially lower boost levels., 2. Significantly richer AFR under load. If you see that your AP was logging 12.0AFR under load and now you see 11.4, that is a big red flag. Go into the trouble shooting screen, take note of the codes. Reset the ECU.

## **Turbo Outlets**



The most economical way to increase power off the GTR R35 is to replace the restrictive catalytic converters to the Turbo Outlet pipes. Produced from SUS304 stainless high heat resistance with TIG welding. These pipes weigh only 3.4 kg, stock being 10.3 kg. Plus the benefit of increased power!

GTC turbo outlet pipe set is used to increase horsepower considerably by its large diameter piping and removal of the first set of catalytic converters. These are produce in UK to very high quality.

In testing different outlets sizes and shapes, the 3 in turbo downpipe design was found to be the most efficient size downpipe that would make big power, and provide your GTR a great throaty sound. These pieces are made with all the precision and care of those from Japan without the Japanese premium price. Designed to fit perfectly and install with relative ease.

Specifications:

The GTC Turbo Downpipes are 3 inches in diameter and utilize ½ inch flanges for a great look and fit. These pipes will allow the VR38 BEAST out of its cage as they remove the power robbing pre-cats and provide your turbo's with some room to breathe. The result of removing these highly restrictive catalytic converters is a deep growl, improved turbo spool, and an overall improvement in the responsiveness in the car throughout the power band.

GTC Turbo outlets SUS304 pair **£500 + vat**

Amuse Turbo outlets SUS304 \$2,690 / 198,000 yen / £1,500

Garage Saurus Turbo outlets \$2000 / £1,428

### **GTC Front pipe, Stainless Steel, Resonated.**

The GTC Down pipe for the R35 GT-R. Made out of SUS304 stainless steel with professional TIG welding process. 50% weight reduction (Stock 13.65kg vs 6.82kg). Pipe Diameter: x2 76mm with x2 Flex into x1 89mm SUS pipe to improve exhaust efficiency, horsepower and engine response. We highly recommend the use of this pipe together with the GTC exhaust system for best power gains.

£380 inc vat

### **Forge Actuators**

Stock Actuator: 8psi

Forge Actuator Blue Spring: 12psi

Forge Actuator Red Spring: 15psi

The Forge actuator allows for higher boost levels, less boost tamper, and more power. But are still reaching the limits of the stock turbocharger and injectors. At about 18psi sustained boost is seeing the stock injectors maxing out 100% duty cycle, which delivers about 525whp (baseline stock is 390-400whp).

Upgrading to larger injectors is very straightforward, and we have calibrations for different sized injectors from RC Engineering. For those that want more power, a turbo upgrade is the next logical step.

The stock OEM turbo's are rated at about 30 lb/min worth of air each, so should see 600bhp out of them. Based on experiences on the dyno, tuners are seeing about 525whp. The turbo upgrades coming onto the market, will flow 40 lb + worth of airflow, which would give a maximum power of 800bhp.

We also noted that air inlet temps are reaching 120F after 4-5 consecutive runs, pointing towards the definite need for high capacity intercoolers.

### **GTC 600R package**



GTC Y-Pipe De-cat  
Cobb Tuning accessPORT with custom map  
GTC Turbo outlets  
Forge Actuators

Note although HKS offers Denso rebranded spark plugs in their package, we feel the factory plug DILKAR8A8 NGK heat range 8, which is cold already, more than up to the job of handling 600bhp.

HKS 570GT kit £4,050 + vat

GTC 600R kit £2,200 + vat

### **GTC TITAN Full Titanium Exhaust & Y-Pipe**

Please see very special separate pdf

### **GTC Suspension**



The GTC kit consists of pillow ball upper mounts and a full conversion to turn the stock Bilstein dampers into a height adjustable coilover kit. This system comes with selected custom springs (20k front and 12k rear).

They can be installed without damage or modification to the stock shocks.

Full adjustment of the stock suspension is retained with this system.

The kit includes springs, strut tops, height adjusting collars and new rubber bump stops.

The R35 GT-R GTC coil-over spring kit features fully ride height adjustability while maintaining the factory electronically adjustable suspension. The factory shocks are very well built so it is not necessary to upgrade but we found the factory springs are too soft and it causes a lot of body roll and understeer. Stiffer springs to reduce body roll when cornering and reduce nose dive under hard braking. With this setup, the car will be easier to control and appears less understeering.

Besides lowering the ride height, you also have the ability to adjust corner weight balance to ensure all shocks have the same amount of stroke and shock travel. Testing on 3 UK circuits, handling will be significantly improved.

Kit comes with pillow ball (spherical bearing) upper mounts, to increase the suspension feedback by eliminating deflection from factory rubber bushings. The mount is made out of Forged A2017 aluminium for weight reduction and durability.

Spring sleeves are made out of CNC machined chromoly steel with rust

proof coating against corrosion. We offer bolt-lock type spring perches (single) for easy adjustment. The spring perches are made out of CNC machined forged A2017 aluminium to handle high stress and quality assurance.

Coil-springs are made with cold forming process and it meets SAE standards. Special designed tapered shape to increase shock travel and to reduce binding. GTC kit comes with F. 20k and R.12k.

Fitting time 5 Hours.

### **DYMAG CARBON-MAGNESIUM WHEELS**

These rims are sold in a set of four. They are produced with MagnAlum (a Magnesium-Aluminum hybrid material) centers and carbon fiber rim barrels. Unlike old Dymag wheels, GTC is only selling the brand new MagnAum centers which are an improvement on the old material (released in UK in October 2008).

The width and offset are fully custom set, however we can make recommendations based on consultation.

Sample weights: A 20x9.5" wheel weighs 17lbs, 20x11" weighs 20 lbs.

Standard colors include: Silver, Gloss Black, Matte Black, Anthracite grey.

Optional colors are additional.

For those looking for 19" applications, we can offer those as well at reduced price.



\*\*\*Coming soon \*\*\*

**Light Kit**

### **400mm GT-R Brake Rotors**

GTC developed, tried & tested Big Brake Rotor Kit for use with the factory calliper. 400mm front discs and replacement brackets.

The kit has been developed to improve drivability and braking performance. Much better value compared to the likes of Garage Saurus etc..



### **Carbon GT-R Brake Rotors**

1 set of front carbon brake kit (carbon rotors x 2pcs, carbon pad X 4pcs)

These are very special. Want the legendary R35 Spec-V carbon brakes ?  
But don't want to spend \$36,000... here is the answer for all racing needs.



**GTC Vented Aero bonnet**



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**GTC Front Spoiler**

**GTC Rear Wing**

**GTC Carbon trunk**

**GTC Carbon vented fenders**

**GTC Carbon vents**