



## The Sumiyaka Guide to Buying a Modified Mitsubishi GTO/3000GT

### Foreword

It is important to mention that due to the wide range of modifications possible for these cars, and the infinite number of combinations of aftermarket parts that could be fitted to any one car; this is only a guide for to the most common things to look out for when buying a GTO/3000GT to which modifications have been installed.

This guide is not a guarantee that the modifications on any particular car will work together or have been installed correctly, but it will endeavour to give you an understanding of what each modification does and why it may or may not be needed, and hopefully give you enough information the spot something that isn't right.

The first section will cover all GTO's Turbo and NA and the UK spec 3000GT, the second section will deal only with the Turbo cars, as these are the cars that suffer more often from improperly installed or inappropriate modifications. At the end of the guide you will find a guide to the more common terms and abbreviations you will see and hear when talking about modified GTO/3000GT's.

Whenever you contemplate buying a modified car it is important to research the modifications fitted to your intended purchase, and see why they would have been fitted, and whether they are appropriate to the other modifications on the car. Never take anyone's word for what is fitted, and insist on seeing a dyno graph to prove any claimed power figures, if a graph cannot be produced then ignore any claims made as to the cars power. Many sellers will exaggerate claims of the cars power to increase the value; as with any claim made by a seller, get written documentation to back up any claims made. Ask the seller questions about the modifications and why they were fitted. If the seller comes across as knowledgeable about the car and it's modifications, and what they say agrees with the research you have done for the modifications fitted, you can be reasonably confident the seller has done their homework before fitting them/having them fitted, and has fitted them for a purpose not just for bragging rights. Always rationalise the feedback you receive to your questions with the modifications fitted, if things don't add up; walk away and find another car.

It's also worth noting many modified cars have been driven hard for a lot of their life, and as such may show abnormal wear not to be expected on standard cars of equivalent mileage. This guide will hopefully help you to purchase a modified car without getting stung by unscrupulous sellers, don't be fooled by a shiny paint job and nice wheels, buy your car with your head not your heart. If you are not sure about a vehicle but really like it; get it checked over by someone more knowledgeable. Just because a car is modified it does not automatically mean the car has a higher value than a standard car of the same year/mileage. In some cases if the modifications have not been fitted correctly or are unsuitable or potentially harmful to the car, this will reduce the value of the car, and these faults will have to be rectified at a cost. One last point to make; the GTO/3000GT cannot be considered an economical car in standard form, highly modified examples will almost certainly use more fuel, and with the ever increasing cost of fuel in the UK it is important to ensure you can afford to run your new beast.

# SUMMAYA

## First, the Basics

### Air filter

There are as many aftermarket air filters as there are GTO's on the road, but as a rule of thumb ensure the filter has been fitted correctly is clean and does not foul or rub on any nearby wires, pipes or the bodywork. As long as it is clean and suitably sized for the car it only really comes down to personal preference and cost as to which make someone chooses to fit to their car.

### Induction Kit

As with air filters there are many different induction kits available. As with the air filter it is important to ensure correct fitment, good quality screw clips holding it in place, and no leaks. Cheap or faulty clips or a standard induction pipe on a car with higher than stock boost, will probably cause the pipe to blow off under high boost. It is also helpful though not essential to have pipes with rolled ends especially on turbo cars to prevent the pipe blowing off under boost.

### Brakes

Generally only a test drive will show problems with the brakes, but it is important to realise there is a difference in size between the early cars (up to 1993) and the later cars (1993 onwards); the later cars having bigger 315 mm front discs and twin piston rear callipers. Grooved discs will often make a rubbing/buzzing noise while driving and under braking, as long as they are fitted correctly and not worn out this is perfectly normal on some disc/pad combinations. For cars fitted with drilled discs it is important to inspect the holes very closely as these cars are known to crack drilled discs around the drillings. Dimpled discs or drilled and dimpled discs (discs that have only been partially drilled into the surface of the disc, but not right through) do not suffer from the same problem as drilled discs.

Check the level and colour of the brake fluid, ideally the fluid should be clean and at the correct level. Please note some performance DOT 4 and DOT 5.1 fluids are a darker colour than normal brake fluid, often a honey colour. Brake fluid should not be black or dark grey, if it is then it will need changing as the braking performance will be adversely effected by this.

If Stainless Steel braided hoses have been fitted, ensure they are fitted correctly into the mounting points on the chassis and suspension with the correct metal spring retaining clips. Cable ties are not suitable for this job and will fail a proper MOT. Ensure the hoses are routed correctly and not fouling/rubbing the wheels, tyres, suspension or chassis also check they are not stretched tight when the steering is turned fully in each direction.

### Wheels/Tyres

These cars are often fitted with aftermarket wheel/tyre combinations, it is important that the circumferences of all the tyres match (ideally the tyres on each axle should be the same make and type, and have equal wear) or adverse wear

# SUMMAYA

will occur in the transmission and drive components. Ensure the wheels/tyres do not foul/rub the body, brakes or suspension especially when on hard lock and going over bumps.

Due to the size of the brake discs and calipers it has been difficult in the past to get a good range of wheels for the GTO/3000GT, for this reason some wheels are fitted with spacers to allow clearance of the brakes and suspension. If spacers are fitted the best advice is the thinner the better; if spacers over 10mm have been fitted ensure the wheel studs have been changed for longer ones to accommodate the spacers. Failure to do this will mean not enough threads are left protruding through the wheel and potentially the wheels could come off. As a rule the smaller the spacer the better; some of the wider body kits available require the use of expensive split rim wheels in order to fit the body kit correctly. It has been known for excessively wide spacers to be fitted to normal wheels in order to fill the wheel arches out; this is very bad practice and causes enormous stress to the wheel bearings and suspension components, cars fitted with such spacers should be avoided.

## **Clutch**

Competition clutches can be expensive to replace and sometimes have their own special flywheel. Find out what is fitted to the car and the cost of replacing/overhauling it. Competition clutches can cost many hundreds of pounds to repair, and this needs to be considered when purchasing.

## **Suspension**

If the car has been lowered and the original shock absorbers are still fitted; in the case of the turbo cars ensure the ECS (Electronically Controlled Suspension) is still functioning correctly. As a general rule the tyre wear will be the best indication of correct suspension adjustment and alignment. Please note though; that if the car has been lowered significantly it will require modifications to the suspension components to allow the correct alignment to be achieved. These vary from adjustable top suspension mounts to specially made adjustable camber arms to allow for extra adjustment beyond standard. If the car has aftermarket suspension and has been lowered by more than 50mm [this varies from car to car, some need this modification with as little as 35mm drop] check to see these items have been fitted or you may find excessive tyre wear occurs. This is costly and can be dangerous at high speeds due to overheating the tyres, it may also have a detrimental effect on the cars handling.

Things to look for when aftermarket suspension has been fitted are:

Is the car comfortable to drive; some setups work well on the track but can be unbearable on roads. Is the suspension correct for the vehicle; this will only be checkable if you have researched the products fitted first. Are they fitted correctly; the rear shock absorbers only fit one way round on the stepped lower joint, some manufactures have only just realised this and you may find unit's that have been forced on or fitted the wrong way round. Finally; can you get repairs to the units in the UK or will they require complete replacement if they fail or expensive overseas shipment. If the latter is true you will have to budget for a complete set of suspension, as the replacement units will most likely not be compatible with ones currently fitted.

# SUMMYAISA

## Lighting

Some aftermarket body kits come with different lights than standard; ensure these meet the requirements for your country and work correctly. Often kits made for different domestic markets that have been imported to the UK, do not have lights that conform to UK regulations, and may be for left hand drive vehicles. In the UK rear fog lights should only come on when the driving lights are on; have a visible indicator in the car that they are on, and should work independently of the front fog lights. Under body lighting if fitted should conform to regulations, be securely fitted and the light units should not be visible. All wiring should be fused and correctly routed so as not to rub, be squashed or short circuit on the body or fittings, the same applies to any after market electrical items fitted to the car. Ensure the correct colour lenses are fitted to the lights as these requirements may differ between countries.

## Body Kits

Make sure the body kit has been well fitted; look for the areas where the kit meets the car and look for cracks and misalignment of the panels. A properly fitted kit should not be distinguishable from the original bodywork, if it is obvious where the kit joins the panels then the kit has not been properly fitted. Ensure any bumpers, panels, skirts or spoilers have been securely fitted and meet the original bodywork correctly. Poorly fitted or loose items could come off when driving at speed and cause damage/injury to you, your car and others around you. Check to see the wheels/tyres do not foul body kit and the wheels are appropriate for the kit. Mismatched paint although not a major problem on a body kit, may suggest the kit has not been professionally fitted and sprayed or has had bodged repair to sell it, and may mean costly repairs to put right; especially rectifying other peoples mistakes and bodes. Aftermarket front bumpers/nose cones are often lower than the original they replace, and often incorporate splitters and air dams to deflect/divert the air. These often suffer from grounding, and can easily be damaged by speed ramps and kerbs etc. Check the front bumper/nose cone carefully for evidence of repair especially the lower edge. Badly repaired bumpers/nose cones will break again very easily and bits may fall off at high speed and cause damage to your car and others around you. Rear spoilers and wings must be securely mounted, with the correct fasteners and adhesives where necessary. Large forces can be generated by down-force and drag on large spoilers and wings, and poorly fitted or cheap ones can break off at high speeds and cause serious damage to other cars and injury to other motorists and pedestrians. It may also be possible that at high speeds a sudden loss in down-force or drag on the rear of the car could make the car behave unpredictably and go out of control. Correctly fitted spoilers or wings should feel solid and secure, and should not flex excessively when a load is applied to them. The exact behaviour will depend on the design/style of the spoiler or wing; just make sure you are happy with the way it has been fitted following these guidelines.

## Bonnets and other Panels

Light weight carbon fibre/fibreglass panels are becoming more popular now due to there strength and weight saving. The main points to note are: Bonnets may need extra securing in the way of bonnet pins or straps due to the increased flexibility of these items. This can easily be seen during a test drive if the edges start to lift as the speed increases. As with any aftermarket body part ensure it is securely fitted and matches/meets the rest of the bodywork around it correctly. The same applies to air scoops, vents, doors and any other aftermarket panels.

# SUMMARY

## Dials and Gauges

Aftermarket gauges and dials should not obstruct the drivers view, the instruments or other important switches/buttons in the car. Their electrical supplies should be fused and any wiring should be neatly run and secured as with any wiring to prevent rubbing, squashing or short circuits and with enough cable not to be under any tension. Most problems with aftermarket electronic equipment problem are due to incorrect wiring, bad routing or poor earthing. Make sure to ask what all the gauges do and what they should read during normal driving. It's no good having half a dozen different gauges/dials telling you everything that is going on with the engine if you don't know what they should be reading or what they show.

# SUMMAYAKA

## Serious Modifications

We now come on to the more serious modifications; this section is aimed primarily for turbocharged cars, although some points may be relevant to NA cars as well.

### Boost Controllers

One of the most common aftermarket modifications you will find on a Turbocharged car is a boost controller. These are many and varied so I will not go into any particular make; this section will only cover the main types.

Note: The stock boost gauge in the GTO/3000GT does not read boost: it is a function of calculations made by the cars ECU based on airflow, throttle position and engine revs. It cannot be relied upon to give an accurate indication of boost levels. The only way to be sure of a cars boost level is with a quality aftermarket boost gauge.

The one vitally important thing to note for any car fitted with a boost controller is what the boost is set to, if the car has no aftermarket boost gauge there is no way of knowing what boost the car has been running and damage may have already been done to the engine. On a standard car any boost above 8 PSI can potentially cause harm to the engine if no other modifications have been done to support higher boost. If the car has any kind of boost controller and no aftermarket gauge be very cautious, and carry out very thorough checks to establish the condition of the engine. At the very least a full compression check by someone experienced with these cars is essential.

Whatever type of boost controller is fitted, make sure you get the instructions so you can make adjustments and changes if you need to. Instructions for some older units may no longer be available, and may have only been released in Japanese in the first place.

### Bleeder Valve Boost controllers

These are the most basic of controllers; they have been know to cause unstable boost and spiking on the GTO/3000GT's therefore I do not recommend these and I would be very thorough with any inspection of and engine on a car fitted with one. They are not suitable for a GTO/3000GT, and I would advise caution with any GTO/3000GT that has one fitted.

### MBC (Manual Boost Controller)

MBC's can be an effective way of controlling boost on the GTO/3000GT, but lack the finer point's of an EBC (Electronic Boost Controller). Make sure the pipe work to the MBC is correctly fitted and the correct size hoses have been used. Incorrect hoses or loose hoses can cause boost leaks and unstable/incorrect boost levels. Ensure the hoses are routed correctly and do not rub/foul on and part of the engine or engine bay, and they are not too close to hot parts like the turbos or manifolds. If the MBC is adjustable from inside the car make sure the hoses are fitted though a grommet where they pass through the bulkhead, to prevent chafing.

# SUMMAYA

## **EBC (Electronic Boost Controller)**

EBC's control the boost much more accurately than an MBC and can, depending on type; control the boost at different levels dependant on gear selected and/or engine revs. They can also be set to provide over boost protection and also an allowable preset over-boost operated by a button, for short durations to allow some extra power for overtaking etc. It is fairly safe to say with EBC's you get what you pay for, the more expensive units often having more functions and parameters than cheaper units. As with MBC's, and other electrical modifications check the installation and routing/fitment of the pipes and wires etc and follow the same installation rules as for the MBC.

## **Piggy Back Units**

The following section will cover units which are known as Piggy Back units because they still require the cars own ECU to carry out all the normal functions of running an engine. Any unit that interrupts and modifies the signals to or from the stock ECU come into this category.

Units that come under the heading piggy back units are wide and varied this guide will only cover the most common of these. When purchasing a modified car do your research first and find out what this does, if you cannot find any information on something fitted to a car and the seller has no information on it, you may need to replace it with something that can be tuned.

## **AFC (Air Flow Converter, also known as a Fuel Controller)**

Again as with boost controllers these come in many different makes and means of controlling/adjusting the fuelling of a car. The following is a guide to fuel controllers and will not go into any detail for any one type or make of controller

Primarily an AFC or fuel controller is a means of compensating for bigger injectors or other fuelling modifications, to modify the signal the cars stock ECU sees, so as to change the signal to the injectors. Due to the differences in the quality and octane ratings of fuels in different countries (we in the UK unfortunately have to put up with very low grade fuel, where as in Japan the fuel is much higher grade), and if your intended purchase is a fresh import it will probably require setting up for UK fuel. This cannot be done if the fuel controller cannot be accessed and reprogrammed; you will have to allow for this when making the decision to buy. One other thing to note at this point is, even if the fuel controller is programmable, are the instructions for the unit with the car. Without these it may be next to useless. Often these units only came with Japanese instructions, and if the unit is old (it could be ten or more years old) the instructions may no longer be available. This means finding someone with knowledge of the unit and then paying their prices to set it up.

The first and most basic type fuel controller may simply have 5 or less dials which change the signal to the ECU and fool the ECU into thinking the air flow is different to the actual flow entering the engine. The controller intercepts the signal, and then changes it in accordance to the settings you have made on the dials and where in the rev range the engine is. This signal is then sent to the cars ECU and the injectors are fired in accordance to what the ECU thinks is happening. By doing this you can reduce the Duty Cycle of the injectors so bigger injectors will inject less, and so fuel correctly for the

# SUMMAYA

engine load. Without an AFC, fitting bigger injectors would simply flood the engine with fuel and cause it to run very rich and roughly. The more settings a controller has, the more accurately it can be adjusted throughout the cars rev range. So a controller with five dials will work better than one with three; and a controller with multiple set points will be more tuneable than one with five dials. These units can be successfully tuned by the amateur with a good knowledge of tuning and a few extra items I will cover later on.

We now come on to the more sophisticated of the first type of units; with multiple set points and a greater and finer range of adjustment. These are basically the same unit's that perform the same as the ones with dials; only they have the ability to make more accurate changes at multiple points in the rev range. When it comes to getting the tune right the more set points the better, so if the car is fitted and tuned correctly with one of these type of units, it will run much better than one with less adjustment. These later types of AFC or S-AFC (Super- Air Flow Converter) often have a digital display or laptop/dedicated programmer interface to allow tuning, and multiple set points to increase the accuracy and fine control of the unit. These will require a greater technical competence and more advanced equipment in order to tune them safely and correctly. Some systems can also be locked by the tuner and cannot be modified once this has been done.

The second type of fuel controller is one that replaces or does away with the standard Air Flow Metering system on the car. These systems often require specialist setting up and tuning on a dynamometer and will often require a laptop computer or dedicated programmer to tune. This type of controller replaces the stock airflow meter with a different one to allow for greater airflow and tunability.

The standard airflow meter (also known as the MAF, MAS or VKF meter) converts the flow of air passing through it to a frequency which the ECU then interprets as airflow. The most common replacement for these is a hotwire type of airflow meter, which has a varying voltage output depending on the amount of air passing over a heated wire, and requires another unit to convert the signal from the new air flow meter to a frequency the ECU can understand.

The third and final type of controller does away with the airflow meter completely. This system is called a speed density or MAP (Manifold Absolute Pressure) system. It uses manifold pressure, throttle position, air temperature and engine revs to calculate the air requirements of the engine; then converts the signal to one the cars ECU can understand. Many manufacturers now use this type of system as standard on many modern cars because of its benefits over the old airflow meter type systems. These are the best systems you can get for accuracy of tuning and control and remove all restrictions from the intake, but they are not cheap and will certainly require specialist tuning to set up.

With all the types of controllers listed above, if the car has been in the UK for some time find out who tuned the controller and try and get their contact details, you will need these later if you decide to make any changes to the cars setup. If it's a fresh import do your research and find someone local to you who is familiar with the type of system fitted. As with all electronic/electrical installations, observe the important points to look out for noted in previous sections.

## **ITC (Ignition Timing Controllers)**

# SUMMARY

Timing controllers are less common, but you can still find these fitted to highly modified cars. These units are often combined with the fuel controllers in one package, but you may find cars with separate timing controllers fitted. These perform the same basic task as the fuel controller, only these modify the timing inputs and outputs of the stock ECU. By interrupting the signal from the CAS (Crank Angle Sensor) the unit fools the ECU into thinking the crankshaft in the engine is in a different rotational position than it actually is. By doing this it can advance or retard the timing to allow more accurate tuning for more highly modified cars. Some of these units will require specialist tuning on a dyno. As with all electronic/electrical installations, observe the important points to look out for noted in previous sections.

## **Combined Fuel and Timing Controllers**

These units have all the functions of the units above, and often much more, these are still piggy back units and require the cars stock ECU to function. These will generally require specialist knowledge and equipment to tune and setup correctly. It is highly recommended to take these to a specialist with dyno facility to tune them. Incorrectly tuned and setup; these units can destroy even a sound engine very quickly, make sure you find out who tuned it and where they are, in order to have the car tuned at a later date. As with all electronic/electrical installations, observe the important points to look out for noted in previous sections.

## **Bigger or Hybrid Turbos**

These can make a very big difference to the power of a car, and there are many options that could be fitted. It is important to get as much information about the turbos fitted as possible. This will allow for any future repairs and overhauls to be quickly carried out, and allow you to contact the original supplier should a problem arise with them. For example are they a bolt on upgrade or did they require custom manifolds/downpipes to fit. Are they an off the shelf item or were they specially made hybrids.

Find out what potential power they are expected to produce and what power they currently produce. Make sure this claim is backed up by a current dyno graph for the car.

## **Bigger Injectors**

All decent power increases will require bigger injectors; make sure you find out what size injectors are fitted and what make, this will help later if you need to tune the car or replace a faulty injector. Some fuel controllers require the injector size to be set to allow for a degree of correction before the fine tuning is done, this becomes difficult if you don't know what size the injectors are fitted.

## **Fuelling Modifications**

Even simple upgrades will require a degree of upgrading to be done to the fuel system. This can be as simple as fitting a new fuel filter and wiring modifications to the stock fuel pump to improve its performance, to high flow fuel pumps, adjustable fuel pressure regulators, bigger fuel rails and many options in between and above. A simple rule of thumb is;

# SUMMARY

the more power the car produces the more fuelling is required, therefore more modifications will be required to the fuel system to run correctly. Often just fitting a boost controller and raising the boost above 8 PSI will require minor modifications to supply enough fuel for the boost requirements, these modifications are often referred to as the hotwire mod. As with all electronic/electrical installations, observe the important points to look out for noted in previous sections, and pay special attention to the routing of the fuel lines to ensure there are no leaks and the pipes are not rubbing or fouling on anything.

# SUMMARY

## Very Serious Modifications

The items covered in this section go beyond the normal add-ons fitted to modified cars, and as such will require specialist servicing, tuning and repair. Be very careful when buying a car in this category as specialist repairs will be very expensive, and may mean your car is off the road for long periods due to parts needing to be ordered from manufacturers in other countries whose normal market may not be the UK.

### Stand Alone ECU's

These units replace the cars stock ECU and take over all its functions. It's not uncommon that these units can only be tuned by an approved specialist, and may cost serious money to tune, take into account the hourly rate for dyno tuning if your intended purchase comes under this section of modifications. This is a very important consideration, as you may not be able just pop to your local motor factor or garage if parts or repairs are needed. It is critical these units are tuned properly. There are some so called plug and play systems available but these still require an in depth technical knowledge to tune and install. If the car you are looking at buying is fitted with a stand alone ECU, ask lots of questions and get as much information as you can. Contact a specialist that deals with the unit fitted to the car, and get an idea of costs for tuning and repair etc. As with all electronic/electrical installations, observe the important points to look out for noted in previous sections.

### Engine Modifications

Specifics of engine modifications are too specialised and varied to go into in great depth in this guide, but a few simple rules can help you ensure you don't get a duff one. Find out who built the engine and if it has a guarantee that is transferable to a new owner. Don't take the sellers word for anything; insist on seeing receipts for all the work that has been carried out. If possible contact the garage that carried out the work and confirm what has been done. This is also a good opportunity to find out if they are knowledgeable about GTO/3000GT's and if they are local to you if things go wrong or you require their services in the future. If the engine came from Japan with the car ignore anything that is claimed about the engine unless there is written proof and you can read Japanese. Give it the same considerations as you would for any car without history and make allowances for problems. It is not uncommon for more highly modified cars have any old second hand engine fitted before they are sold, to allow them to get top price. Twin turbos have even been known to be fitted with NA engines in order to sell them. Only a compression test can give an indication of the engines condition, but not a guarantee. Many other things could be wrong that do not show up on a compression test, as with any car get it inspected by a specialist; this is especially true with cars like these. Get a written specification of the engine, this will come in very useful if you later decide to carry out more modifications or you need parts. A detailed list of parts fitted and a folder of receipts; not only shows that the seller is passionate about his car, it also helps you budget for any replacement parts it might need in the future, and where these can be obtained.

# SUMMAYA

## **FMIC/SMIC (Front Mounted Intercooler/Side Mounted Intercooler)**

Many of the modifications mentioned above may require the benefit of a FMIC to help them work to maximum efficiency. FMIC's come in many different shapes and sizes, but as rule of thumb bigger isn't always better; unless the car is fitted with very big turbos then a huge FMIC can sometimes be detrimental to the cars performance. With any aftermarket intercooler setup it is far more important to get the sizing correct, than to fit the biggest one possible. Check to see if the crash bar has been partially or completely removed, a good intercooler installation should not require removal or modification to the crash bar. As with any modification make sure the pipe work does not foul/rub on the engine, body or chassis, and ensure the intercooler itself is securely attached to the car. If the body or nose cone have been modified to fit the intercooler, follow the guide for body kits for the things to look for.

Even if you have followed all the advice in this guide and the buyers guide, there is no guarantee what condition the engine and transmission are like inside. Whenever you buy one of these cars do it with your eyes open and be prepared to spend money to sort any problems that may occur once you have bought it. It is no good spending your whole budget on the car then not being able to run it because you cannot afford the repairs it needs.

## **Transmission**

It is unusual to find serious transmission modifications fitted to a GTO/3000GT other than an uprated clutch as described earlier. However highly modified engines producing high horse power will be prone to breaking transmission components on hard launches. Modifications you may find are but not limited to: One piece carbon prop shaft, these have been know to have clearance issues and sometimes cause vibrations. Uprated output shaft and coupling; either a Kormex or an M300 unit, the later being the strongest of the two; this transfers the drive from the gearbox to the transfer box. LSD (Limited Slip Differential) fitted to the gearbox, the standard box has a conventional differential to drive the front wheels, and a viscose coupling to split the drive front to back, LSD's are available for the GTO/3000GT Getrag gearbox. It is worth noting the standard transfer box on earlier cars is a weaker unit than on the later cars due to a smaller input shaft and coupling. As with any modification make sure you get as much information as possible about the modifications to the transmission and paperwork and receipts to prove the work has been done and who carried it out.

## **Abbreviations and Terms**

- AFC/SAFC = Air Flow Converter/Super Air Flow Converter, also known as a Fuel Controller or fuel Computer.
- ITC = Ignition Timing Controller
- MAF = Mass Air Flow Meter, also known as Air Flow Meter, MAS, VKF, Hot Wire Sensor and other terms; they all refer to a component that carries out the same basic function.
- MAP = Manifold Absolute Pressure; can mean a sensor or type of fuel controller, which can also be referred to as Speed density.
- CAS = Crank Angle Sensor, can also refer to a Cam Angle Sensor
- LSD = Limited Slip Differential
- TPS = Throttle Position Sensor

# SUMIYAKA

- Boost = The pressure created by the turbos in the intake system
- PSI = Pounds per Square Inch (a measurement of pressure)
- FMIC = Front Mounted Intercooler
- SMIC = Side Mounted Intercooler
- NA = Normally Aspirated (refers to a conventional non turbo engine)
- FPR = Fuel Pressure Regulator
- AFPR = Adjustable Fuel Pressure Regulator
- IAT = Intake Air Temperature
- Charge Temps = Temperature of the air entering the engine.
- Dynamometer = Also known as a Rolling Road or Dyno, they come in different types but for a GTO/3000GT you will need a four wheel drive Dyno.

**This guide was written by:**

**Russell Kateley**

**[Sumiyaka Ltd](#)**

Copyright © 2005 Sumiyaka Limited <http://sumiyaka.co.uk> Sumiyaka, Unit 2, Doublebois Industrial Estate, Doublebois, Cornwall. PL14 6LE ++44 (0)1579 321010

For further information, try reading the other Tips & Guides we have compiled; they are all free and available to download at <http://www.sumiyaka.co.uk/html/tips.htm>

**However, ANY reproduction without acknowledgement to its contributors shall not be taken lightly.**