

# TRACK DAY TIPS

Track days are an absolute hoot, and are often all the more fun if you do them in a car you have built yourself. With the ever-worsening British roads and clampdowns on speeding drivers, track days are the only decent opportunity for enthusiasts like ourselves get to give our cars a good thrashing. They are tremendous fun and allow you to explore the limits of your car's handling in relative safety. The key to getting the most out of a track day is preparation and maintenance.

As a racer and instructor I have written this article to provide a few sensible pointers as to how to look after your car before, during and after a track day. In order to provide some structure to the article I will cover each area of the car in turn, but not necessarily in any order of importance.

## **Wheels & Tyres**

Before setting-off you need to ensure that your wheels are balanced, otherwise the vibrations you suffer will numb the feedback through the steering wheel and impair your inch-perfect driving. You do not want to start a track day on brand new tyres, as the large tread depth will cause the tyres to overheat. This in turn will eliminate traction and progressive grip. Conversely you need to ensure that there is enough tread left to get you home after a day of serious abuse. If you have access to a second set of wheels then use them as you can keep a worn set of tyres on the spares and change the wheels over at the circuit and not have to worry about having bald tyres for the journey home. Another reason for using spare wheels on a track day is to protect your favourite (and possibly expensive) wheels from damage and corrosion caused by brake dust. The brakes take a hammering and will coat your wheels with extremely hot brake dust, which can eat into alloy wheel lacquer and lead to corrosion. The excessive heat generated by the brakes can also permanently discolor the wheel alloy. Before attending a track day you should carry out a visual inspection of the tyres to ensure they are in good condition. Check for cracking of the tread and tears in the tyre sidewall. The last thing you want is a blow-out at 80mph. If you are feeling really hardcore, you could take a set of slicks with you, but be warned; some track day organizers do not allow them and they will also put some serious stresses on your car. You will also find that the cornering forces you are able to generate with slicks will require you to fit a baffled sump in order to prevent oil surge.

Before going out onto the track ensure that you check the torque of all the wheel bolts and continue to do so throughout the day. When at the track, your main concern is to fine tune the tyre pressures. As you abuse the tyres on the track they will get hot and the pressures will rise so you will want to knock them down a bit to compensate (assuming they were set correctly in the first place). The best procedure for this is to do one track session and get the tyres nice and warm, then look carefully at the scuffing on the tread of the tyres. If the scuffing does not extend up to the edge of the tread then you need to lower the pressure by a couple of psi and if the scuffing extends onto the sidewalls then the tyres are too soft and require some more air. You need to consider things like the overall weight and weight distribution of the car (the more weight the more air is required) as well as the dynamics of the track.

The outside front wheel of a front drive car will do the most work and so get the hottest. As a result its cold pressure should be slightly lower than the other tyres. The more air you have in the tyre the stiffer you make the sidewall and so the more responsive the car is. This needs to be

balanced with maintaining a flat tyre foot print. Low profile tyres have small (and thus stronger) sidewalls and so require less air than higher profile tyres as they will roll off the rim less.

At the end of the day remember to reset the tyre pressures once the tyres have cooled down and carry out a quick check to make sure you have enough tread to get home and that the tyres are not beginning to fall apart. It sounds silly but I have seen sets of budget tyres literally fall apart well before the treads has worn down. Do not forget to take a tyre pump or compressor with you. It is all very well letting air out of your tyres to account for hot air expansion but you still need some way of being able to replace the air at the end of the day.

### **Brakes**

These take a complete hammering on a track day, and if they don't then you are not driving hard enough!

What may seem like good brakes on the road often do not stand up to the rigorous of track use without some maintenance. The main problem is brake fade caused by repeated stopping from high speed. You may think you brake hard on the road but I doubt you brake from 80 to 30, 3 times every couple of minutes for half an hour? If you intend to do any track days then I would strongly recommend that you invest in some drilled/grooved discs (on the front) and some decent fast road pads as these are far more resistant to brake fade than the standard items. I would also strongly advise you to use nothing but dot 5.1 brake fluid as dot 4 may boil within a few laps and give you that horrible spongy pedal feel [followed by the brown pant feeling as you plough straight on into a gravel-trap].

Braided lines will improve feedback and so help you control your braking on the limit. Make sure you have plenty of life in your pads and discs before setting off. It is not uncommon to get through an entire (or more) set of pads in a day and worn pads and discs will overheat quickly. It is often wise to take a spare set of pads with you just in case.

Throughout the day you need to keep an eye on the brake wear to ensure that they will have enough life left in them to get you home. At the end of each session you should do at least one cooling down lap to allow the brakes to cool slowly otherwise the discs could warp and or crack as they cool too rapidly. When parking between sessions, do NOT apply the handbrake as the hot rear pads can bind to the discs and then disintegrate when you release the handbrake. After the day it is always advisable to bleed the brakes fully. The brakes will have got very hot and so the fluid is likely to have boiled slightly causing some sponginess.

### **Gearbox**

There is not much you can do in the way of routine maintenance to the gearbox before a track day other than to ensure that the oil is topped up and is the correct grade. If the box is old/original I would recommend refilling it with fully synthetic oil and some Slick 50 additive. This will help smooth the changes and reduce any crunching between gears. You will notice the difference on the road as well as the track, especially when the box is cold. A point to note is that quick shifts are not necessarily a good idea for track days.

### **Engine**

This will take a fair caning during a trackday and so it is important to keep it well maintained. It goes without saying that you want to ensure the engine is set up correctly before embarking on

a track day, otherwise you will be down on power and losing some of the car's potential. Ensure that the timing is set so that there is no pinking present and if possible run the car on super unleaded during the day to completely eliminate any pinking. Pinking will cause the engine to overheat (locally) and thus suffer damage if allowed to continue. Ensure that the oil is in good condition and topped up to the max mark (this last bit is important). If the oil is old then do a quick flush and change. If your engine is high mileage then do not use fully synthetic as it will be too thin and will slip past the piston rings and valve guides causing the engine to smoke. Also, if the engine is new, do not use synthetic oil until it has done at least 15k and is well run in as synthetic oil can get squeezed past the piston rings and glaze the bores up. Ensure that the oil cap is secure on the engine as it is not unheard of for these to blow off as the oil pressure rises with engine revs.

Take a bottle of oil with you so that you can keep the engine topped up to the max mark. If you have a re-usable air filter then give it a wash and re-oil and carry out a basic visual check in the engine bay for loose items such as heat-shields, battery, mounting brackets etc. Check the timing and alternator belt tensions and condition. During the track day the engine will run a few degrees hotter than normal and so it is wise to make sure the cooling system is in tiptop condition. I would recommend flushing and cleaning the system before refilling with some fresh coolant, as this will just knock a few degrees off the running temp. Ensure that the coolant is topped up correctly and take some spare water with you in case it needs topping up trackside. If the engine runs quite hot then it would be worth fitting a lower spec fan cut in switch, which turns the fan on earlier, make sure you remember to keep an eagle eye on the temp gauge.

Do not race straight onto the track with the engine cold but do a few warm up laps to get the oil up to temperature. The tolerances in any engine are specified for hot running and so will be 'out' when the engine is cold. Best bet is to let the engine run a few minutes before you go out, but remember the brakes and tyres will still be cold.

The oil also does not work properly until it is hot, as it thins with temperature. After each session you should do a cool down lap to bring the temperature down slowly and prevent any contractive cracking of any parts in the engine. As metal heats up it expands and thus when it cools, it contracts. If it cools too quickly it will crack. If you find the temperature creeping up then back off slightly on the back straight to lose a few degrees. This will also allow faster cars past on the safest part of the track for overtaking. Obviously ignore this last comment if you are on a competitive day and are being timed. When parked up between sessions it is often prudent to leave the bonnet open to allow the engine bay to cool. This is more for the sake of the ancillaries rather than the engine itself. The latent heat from the engine will keep all the ancillaries very hot, which could damage them or at least impair their performance, the electrical items especially.

If you do regular track days then I would recommend that you change the oil between each event. It may sound over the top but your engine will last a lot longer for the sake of a few pounds. You may find that the oil pressure warning light flickers on during prolonged hard cornering. This is due to the engine oil being forced to one side of the engine and away from the oil pump pick up (one reason why it is essential to have the oil filled to the max mark). Check that you have plenty of oil, but if the problem persists then a baffled sump is the best solution.

## **General Points**

Before setting-off make sure everything is in good condition. Any slightly worn parts want changing before and not after the day such as grumbly wheel bearings, wobbly ball joints etc. It is wise to take a few spares and tools with you such as gaffer tape, brake pads, jubilee clips, tie wraps, oil, water, and any other odds and sods you can think of as well as a good selection of useful nuts and bolts. Take some CV joint grease as these often loose grease on a track day (lots of steering lock and load can loosen the boots a bit) and require topping up to prevent damage. If you suffer any wheel/tyre clearance problems under normal driving conditions then do not do a track day until you have sorted this out. You would be surprised at how much more body roll you get when pushing hard round a track and mild rubbing on the road becomes dangerous tyre slicing on the track.

If you are concerned about your paintwork then you can apply masking tape to the leading edges of the panels and other prone parts of the car to prevent stone chips, as well as to the head lamps and fog lamps etc. The bottom line is that if you have just had a full respray and do not want any stone chips, do not do a track day, as stone chips are a fact of life on the track. This is more of a concern if you are sharing the track with open wheeled cars or slick shod cars as they tend to kick up more stones.

Before taking to the track you should if possible remove any loose objects from the car and secure anything else from moving around. These items need to be secured firmly as they will be subjected to some serious Gs. We tend to completely remove the spare wheel and all tools, parcel shelf, rear seats, sub, amp, and anything else that will come out easily. This is done both to reduce weight and to prevent things from flying around the cabin whilst on the limit. The last thing you want when trying to out-brake yourself into a corner is for your thermos flask of coffee to wedge itself under the brake pedal.

Make sure you own a SNELL helmet or can hire one at the track. Wear a long sleeved top and trousers as well as shoes that you are comfortable driving hard in. Racing gloves often help if you are using a standard steering wheel which is not the grippiest, as your palms will sweat when driving hard making the problem worse.

Make sure that you have plenty of petrol for the day, as the nearest filling station may be miles away from the track. Do not start the day with a full tank though as it can slop out of the tank on some cars when cornering hard, and will most certainly get you black-flagged.

Before setting off on the track make sure that your mirrors are all properly adjusted. You would be surprised by how much you use them and should always check them before turning into a corner. Although people should not be overtaking on a bend there is always some Muppet that has a go and you do not want to turn into him whilst he is engrossed in his red mist. Always keep an eye on the mirrors so you can see who is coming up behind you and are able to let them past at an appropriate moment. You may think that you're the fastest thing on earth, but be sensible (and realistic) cos the chap in the Caterham Superlight R or Kart will go past you as if you are stationary. It is not good etiquette to get in his way as you will find out for yourself when you try to get past someone who hasn't seen you and is taking all the wrong lines

With the exception of timed runs, a track day is not a race and should not be treated as such. Idiots will be black flagged and banned from further sessions. Be aware of what each flag means and keep an eye out for them as they are there for your safety.

- **Yellow means danger ahead, do not pass**
- **Waved yellow requires you to slow right down**
- **Blue means that you have a faster driver behind you so get out of the way as soon as it's safe to do so**
- **Red means end of session**
- **Black means you must come off the track.**

Pay attention to the organizers briefing and their rules and regulations as they are there for your benefit, and pay attention on the sighting laps to the layout of the track, the track surface and any hazards. Usually the organizers mark out braking points, turn in points, apexes and exit points on the corners so use them. Build on them and use them as a reference to fine-tune your driving to get the most from your car. They are not hard and fast markers but you can use them as indicators. If you have spent good money on adjustable suspension then adjust it as you would be surprised how different the car will handle with different set ups. Most of the time it is a case of trial and error so see what different set ups do for the handling, but remember, what is good for the track is not usually good for the road so don't forget to soften things up before your drive home. If you stiffen up the back end relative to the front you will induce oversteer and if you stiffen up the front relative to the back you will induce understeer. The principle also applies to your tyre pressures.

It doesn't matter what car you drive, track days really are fun for all. They are measured by the size of your grin rather than your lap time. If you expect your 15 year old hatch to keep pace with the latest M3 or EVO then you are naively mistaken, but that does not mean that you will not be having as much fun as the M3 driver.

At the end of the day, it's all about having fun and improving your skills.

Have fun, drive hard and most of all drive safe.

For additional information you can contact me on: 01202-669002

Terry C. Johns  
FIA & BTRDA Instructor  
**West Hants & Dorset Car Club**