



BMW Drivers Club NSW Introduction to Motorsport

Sydney Motorsport Park - Amaroo



Know your vehicle:

We have a wide range of vehicles to deal with. 1979 E24 635csi, some E30s from the 1980s then there is an assortment with some relatively new or even show-room new cars daily drivers to MCars and possibly vehicles from other marques. Most cars have ABS (antilocking braking systems), some are manuals with three peddles where the driver selects the appropriate gear while others select their own gear in automatic or via a lever or paddles when the driver wants to have some control over gear selection. Some more modern cars have DSC with fancy yaw sensors and a switch that allows the driver to disable this. Cars vary in the ability to accelerate from 0 to 100 in 10 seconds, down to around 4 seconds. Be careful. You need to understand your cars characteristics, driving aids and driving hindrances.



Seating position

Adjust the seating to sit as low as practical, keeping forward vision clear, legs slightly bent when clutch/brake fully depressed and so that driver's wrists can rest on the top of the steering wheel.

Sit up straight – don't slouch

Adjustment of the Steering wheel position may be required for extension and / or height will also be required to get the correct position.

Head restraint, not headrest.

The seat belt should be placed across the lap as low and tight as possible, and the height of the shoulder anchor point to position the sash part of

the belt across your shoulder blade. Adjust your mirrors for clear view behind and both sides.

Positioning your hands on the Steering wheel at the 9 / 3 o'clock position and there should be no reason to move from this position for the entire lap.

i.e. there shall be no need to "shuffle" the hands on the steering wheel with a push pull action.

Additionally, if you need to use a hand on the wheel positioned with the knuckles facing upwards, you need to go to the gym or get your power steering fixed!

At all times, your hands need only apply enough pressure on the wheel sufficient to grip the wheel and turn it as necessary. Remember, the steering wheel is not part of your restraint in the vehicle and you should not be "white knuckled" hanging onto it.



Basic Car Control Techniques

• Track vs Road

One way

Use all the road width

• Braking

Brake in a straight line

Brake hard, feel ABS working – understand what ABS does and what are its effects

• Changing gears

Brake before changing down, gearboxes are more expensive

Don't change gear during cornering

Smooth, don't rush it

Careful not to over rev the engine on downshifts

Learn heel and toe technique

Cornering

- Keep hands at 9 <-> 3 on the steering wheel
- Don't shuffle, cross arms over instead if required
- Light grip in fingers, no white knuckles
- Keep eyes up, looking through the corner to the next corner
- Find the straightest line, using the full width of the circuit
- Front wheels steer the car, so you need to keep weight to the front
- Slow in, Fast out vs Fast in, Not out
- Understeer / oversteer

And lastly, Accelerating

- Smooth, the accelerator is not a digital device
- Build up speed gradually during the day
- Weight moves to the back wheels when accelerating
- Front & Four-wheel drive vs Rear wheel drive
- Use more RPM than on the road, listen and recognise the difference in engine noise
- Jackie Stewart – "Never push the gas unless you know you don't have to take it off"

Learn the Track

- Learn the layout before any speed
- Where is the next corner?
- Keep eyes up, looking forward
- Where do I want my car to be for the next corner?
 - Where is the Turn-in Point?
 - Where is the Apex of the corner?
 - Where is the exit?
 - Link corners together
- Where are areas of extra caution?
- Where are safe runoff areas?
- Where is the track exit?



Track Driving

- One-way road
- Use eyes, look forward and use mirrors
- Be aware of other cars around you, especially faster cars coming up behind
- Let faster cars pass. If you have been caught, then you are slower.
Don't power away on the straights.
- Slower cars hold your line, don't move over, just slow down a little if required
- Faster cars pass on the non "racing" line
- No passing in corners, only on straights
- If you go off the circuit, calm down and re-enter when safe

Preparation

- Empty car of all loose items, including boot
- Check tyre pressures. Generally, lower than for the road – depends on the tyre. Some tyres heat up
- Helmet on and adjusted – seat belt on and adjusted
- Get calm and relaxed before entering circuit
- Visualise the track layout each time
- Build up speed over the session as engine, tyre and brake temps etc. come up

Safety

- No timing, no racing, give everyone space. In later runs you may use your own in-car timing.
- Use instructors where available.
- Follow instructions from course officials
- Be cautious when driving and walking around in the pits and car park area
- Be aware of which groups are on track and when your group is next out
- Note sound restrictions.

Follow the Instructor laps

 We may use this technique. Be aware and join this if necessary.

Instructor leads a group of up to 5 followers.

Followers follow the leader closely, learning the leader's lines

Instructor drives and accelerates at a pace / rate so that the followers can keep up.

Followers – don't dawdle – keep up Instructor drives best lines. You are looking at instructor's

Track position (whereabouts on the track)

Braking points (when to get that foot on the brake and when to get it off)

Turn in points (don't turn too early or too late)

Apexes (find that apex, it is often not where you first think)

Turn exits and setup for the next turn

Take it in turns. On each lap on the main straight

The instructor will alert the followers by pointing right

the driver immediately behind the instructor moves right towards the right edge of the track and reduce speed,

the remaining 4 drivers will move up and take up the space.

The driver who has moved right will then join the end of the group in 5th place.

All followers, get to drive in turn in each of the 5 positions.

Instructor observes driving capabilities of the followers and

Drivers are moved from group to group on successive runs for best learning arrangements.

Where to look when on the track:

Keep your eyes up and look well ahead of where you are. Eg. Look for the apex of the corner beyond the one which you may be negotiating. If there is a vehicle in front of you, be cognisant of what it is doing but also look to see where YOUR vehicle should be on the track.

If there is a situation which may involve you in an accident, look for how you can avoid that accident.

You will ultimately end up where you were looking! (eg. when cars hit trees, in many instances it is dead centre of the car ...because that is where the driver was looking!)

When do I brake for a corner? As late as possible in a straight line before turning the steering wheel.

Performance driving requires the driver to use a level of "perception". Perception, in this instance is going to require the driver's ability to recognise her/his reaction time, the vehicle's capability to reduce speed, and the speed that the vehicle is capable of negotiating the situation in hand.

A jab on the brake transfers the car's weight to the front wheels and that improves turn-in.

Understeer:

This is a condition which occurs when the speed of the vehicle through a corner causes the front wheels to lose grip and the vehicle wants to “plough” straight ahead. The general driver reaction to this, is to reduce acceleration or apply some braking (lift-off), which causes more weight, and therefore more grip, to transfer to the front wheels and for the vehicle to then turn in the direction of the steering placement. Too much steering and too much “lift-off” can create another problem which is lift-off oversteer where the rear of the vehicle overtakes the front A Spin!

Oversteer:

Generally this will occur if you accelerate too early or too hard on the exit of a corner. As a rule of thumb, do NOT accelerate unless you are starting to unwind lock (or straightening the steering) on the exit of a turn and when you do accelerate, do so smoothly. Oversteer will require corrective action of reducing power and/or applying opposite steering lock to correct the angle of the vehicle.

What can cause Crashes during Driver Training

- Driving too fast for
 - a. your skill base and attitude
 - b. the capability of the vehicle – know your car!
 - c. your knowledge level of the track
- Not looking at where you want the car to go.
- Turning off the traction control system before you are ready for it.
- Not being smooth in your actions – steering, braking and acceleration
- Using kerbs/ripple strips - that can unbalance the vehicle
- Braking too hard in mid corner
- ‘Panic’: lift-off oversteer
- Accelerating too early and/or too much as you exit a corner
- Racing other drivers or cars
- Not actioning what the instructor advises in a timely manner

