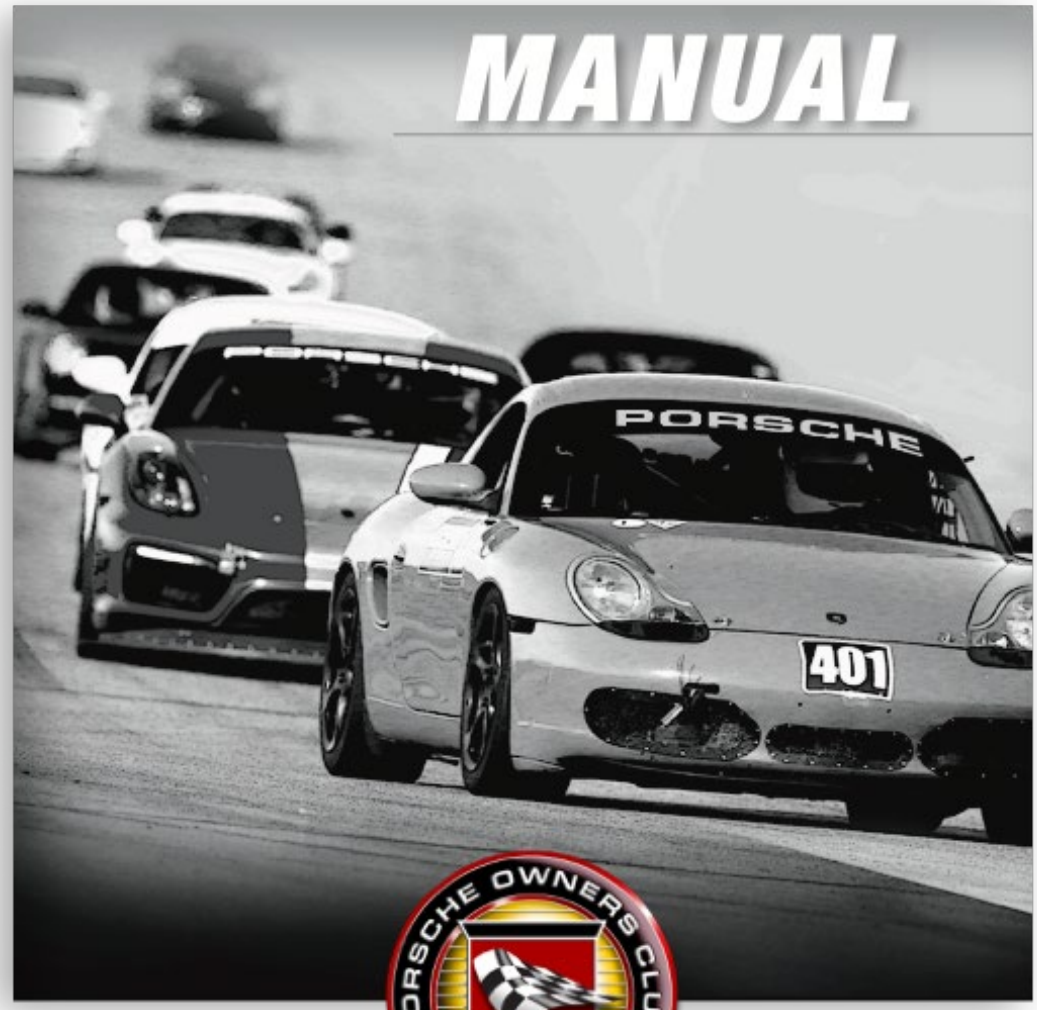
PERFORMANCE DRIVING SERIES



PORSCHE OWNERS CLUB

Revised 1/2023

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Porsche Club
Porsche Owners Club

WELCOME TO THE PERFORMANCE DRIVING SERIES

Welcome the Porsche Owners Club Performance Driving Series! Judging by the car you've chosen, you're a driver of a special breed and want to drive fast, safely. You're in the right place. The Porsche Owners Club prides itself on having the best driver education program in amateur racing.

We welcome many marques. Our favorite, as you might have guessed, is Porsche. Whatever you drive, with proper instruction, you can learn your car's potential, limitations and take it to its threshold, safely.

This introductory Performance Driving Series Manual focuses on the basic techniques of car control. Once you have mastered these principles, you will be qualified to learn more sophisticated car handling techniques. We provide instruction that can lead to earning your PDS, Time Trial and Cup Racing licenses. There's a lot to learn about safe, high-speed driving and we welcome your questions. Feel free to ask us anything along the way.

Along with classroom and on-track instruction, this manual will address how and why your car behaves the way it does. It will give you an understanding of proper procedures to maintain control of your vehicle at high speed and further develop your driving skills.

You are about to learn a great deal about car control. You'll also learn a lot about yourself and you'll probably have lots of questions. FAQs are listed on pages 24-25. Feel free to contact Jim Salzar, PDS Director, at pds@porscheclub.com if you can't find the answer you're looking for in this guide.

Buckle up and have fun!

SEATING POSITION

BE COMFORTABLE! BE SECURE! Your seat position should be such that you can reach all the controls comfortably (i.e., steering wheel, gear shift lever, all pedals). The back of your seat, as well as the bottom of your seat, should make as much contact with your body as possible. Next, grab the top of the steering wheel with both hands – do this without stretching. Sit as deeply into the seat as you can to maximize your lateral support. You don't want to slide around during high-speed turns. Press the clutch and brake pedals to the floor. Slide the seat forward and lock in place so that your knees are still bent. Adjust the seat back so that your elbow has a 90º bend.

SEAT BELTS AND SAFETY HARNESSES

Cars equipped with standard 3-point seat belts are allowed. Belts must be free of damage, fasten securely, lock, and retract properly.

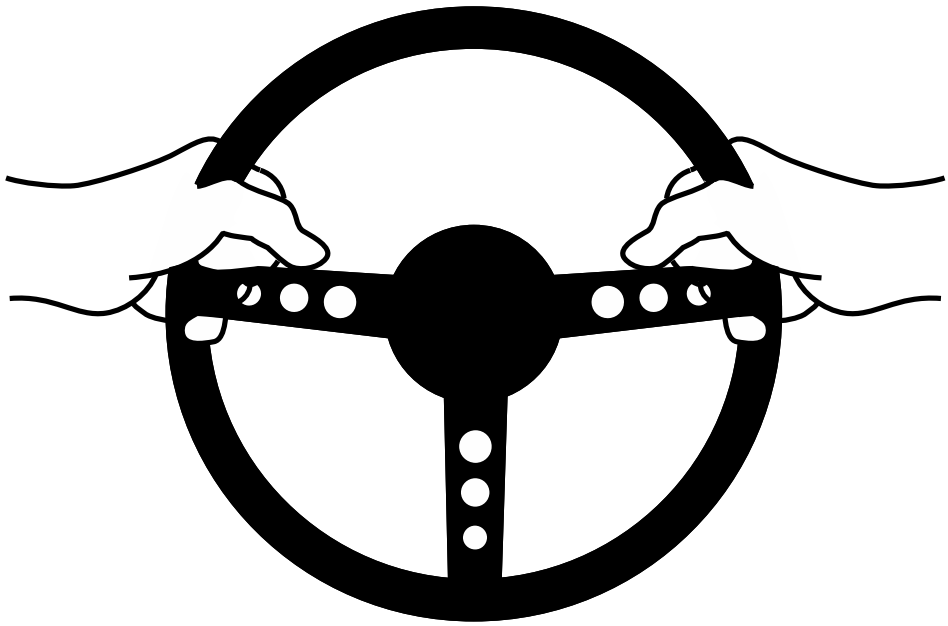
For cars equipped with 5- or 6-point harnesses: Harnesses should be adjusted to hold the driver securely in all directions, left, right, front, and back. As your track speed increases, you will experience lateral G forces that will try to push you sideways in your seat. If you are wearing your safety harness correctly, you will stay in your seat and not have to brace yourself with your arms, hands, feet, etc. Always be certain that the buckles of your shoulder harness are in the upper chest region and the lap belt buckle is set in the pelvic area to avoid injury in the event of impact.

MIRRORS

Adjust your mirrors before you start onto the track. Know your blind spots. Try setting your side-view mirrors a bit wider than normally used for street driving. Adjust for a minimal amount of head movement. Should you have to move your head too much to see what's going on around you, there is a tendency to turn the steering wheel as you turn your head. This may cause overreaction to situations and possible loss of car control. Being able to see and know what is going on behind and on each side of you will help you make smart decisions. Always check your mirrors when entering the track, on turn entry and exit.

STEERING WHEEL HAND POSITIONS

Place your hands on the steering wheel as close to the 9 o'clock and 3 o'clock positions as your steering wheel will allow. Your arms should be bent at a 90° angle. Now, with either hand, grip the top of the steering wheel. You should be able to do so without stretching. Keep a relaxed grip on the wheel. A white-knuckle grip will cause your hands, arms and shoulders to tense and fatigue. An overly tight grip also results in lost feedback coming through the steering wheel.



MANUAL SHIFTING

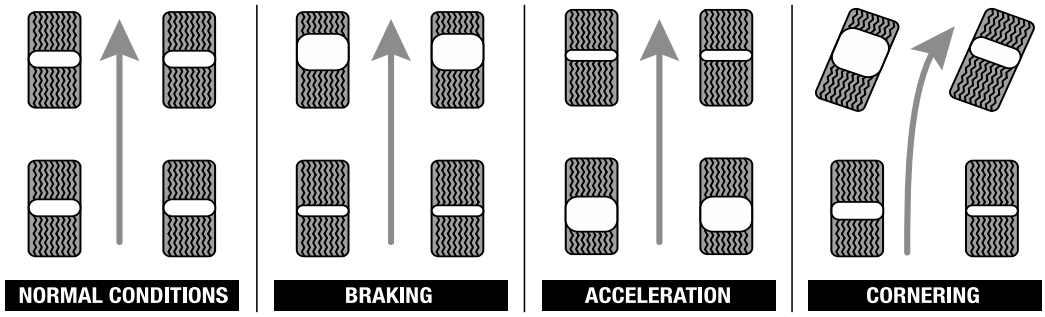
Treat the shift knob as if it was a raw egg. Cup it gently in the palm of your hand. Don't break the eggshell. Depress the clutch fully, match the RPMs with a quick "blip" of the throttle if necessary, then ease the shifter into gear. **The only time your right hand should be on the shift lever is when you're shifting. It should be on the steering wheel at all other times.**

THE FOUR CONTACT PATCHES

A CONTACT PATCH is the part of the tire in contact with the pavement. Control of your car is determined by how well you react to the messages received from these contact patches. Knowing how to interpret tire feedback is a useful skill. When all contact patches are the same size or as close as possible, the weight of the vehicle is distributed equally, and the car is properly balanced.

Every time we brake, corner, or accelerate, the contact patches change. When we accelerate, the contact patches grow in the rear and shrink in the front because of weight transfer to the rear of the car. Under braking, the front tire patches get larger while the rears decrease in size, again because of weight transfer. When cornering, the outside patches grow while the inside patches diminish. Managing weight transfer is an important factor at high speed.

SMOOTHNESS. That's the key to car control. Jamming on the brakes, throwing the car into a turn, or accelerating too aggressively may cause the tire contact patches to change too suddenly or too much and cause you to lose control of your vehicle.



Normal Conditions:	Braking:	Acceleration:	Cornering:
Neutral balance. Tire contact patches are equal.	Weight transfers to the front tires. Contact patches grow in front and get smaller in rear.	Contact patches grow in rear and get smaller in front.	Outside front tire contact patch grows the most, as the inside rear gets smaller.

HEEL AND TOE TECHNIQUE

(For cars equipped with a manual transmission)

The heel and toe technique is a method using three pedals (clutch, brake, throttle) with two feet. It could be called “ball of the foot/side of the foot” technique. Illustrations follow on page 6. Here’s the explanation:

The objective of heel and toe technique is to be able to brake for a turn, select the proper gear for that turn, do it while braking, and then apply the throttle through the turn for maximum control of your car. While this is a racing technique that allows you to downshift while under braking and then get back on power, it is very effective on the street as well, especially in situations where you must be in the proper gear at the proper time to perform an evasive maneuver.

In a situation that requires braking and a gear change, remove your foot from the throttle and step on the brake pedal with the ball of your right foot. The ball of your foot gives you the most “feel” and allows you to control the amount of pressure you are applying to the brakes.

The brakes should be applied smoothly while increasing the pressure as needed. In cars without ABS, do not jam on the brakes suddenly as this may cause one or more of the wheels to lock up and cause a loss of car control.

When the speed of your car has been reduced sufficiently to select the next lower gear, depress the clutch with your left foot while applying the brakes with the ball of your right foot.

The moment the clutch disengages, the engine speed will drop to an idle. If you were to change gears now and let the clutch out, the engine may be at 1000 RPMs while the transmission is turning at 4,000 RPMs. When the clutch engages, something has to give; either you will slip the clutch and cause your car to jerk, or you may lose traction to the rear wheels. In either case, you will upset the balance of your car and you could lose control.

Therefore, just a split second after depressing the clutch and before the engine speed drops too much, roll your right foot over onto the throttle pedal using the right side of your foot, and while maintaining pressure on the brake pedal, “blip” the throttle.

The “blip” will raise the engine RPMs so that as you change gears and let the clutch out, the engine and transmission will be going the same speed and the gear change will be smooth.

HEEL AND TOE ILLUSTRATED

ORDER OF EVENTS

A. Right foot from accelerator pedal to brake pedal (Figures 1 & 2)
B. Depress clutch with left foot (Figure 3)
C. Change gears (Figure 3)
D. “Blip” throttle just prior to releasing clutch to bring RPMs up (Figure 3)
E. Engage clutch (Figures 4 & 5)
F. Finish braking and step on accelerator (Figures 4 & 5)

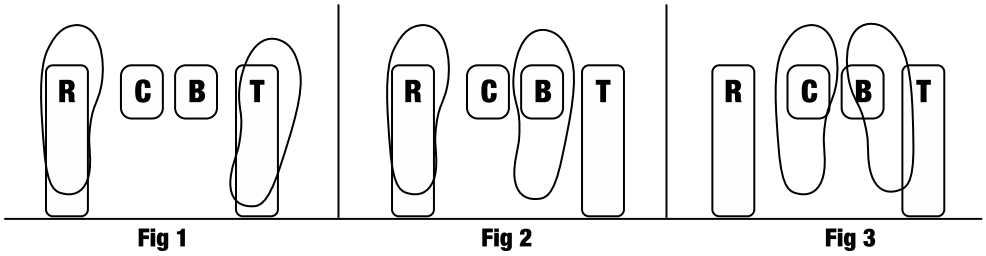


Fig 1 Fig 2 Fig 3

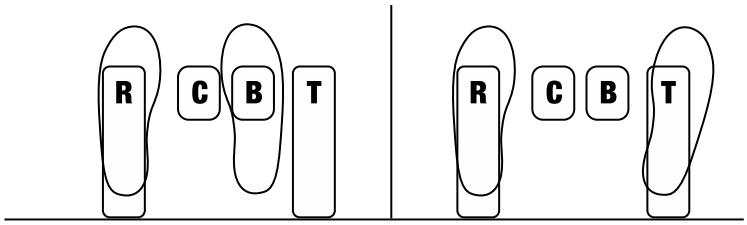
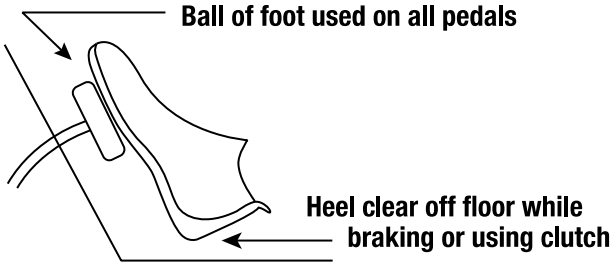


Fig 4 Fig 5

R. Foot Rest
C. Clutch
B. Brake
T. Throttle



Note: The foot rest is also known as the “dead pedal.”

GENERAL INFORMATION

Check your car. Yes, even after your tech inspection. Refer to the suggested list on pages 14 -15 of this manual.

PDS drivers are required to wear long sleeve shirts, long pants and closed toe shoes. Empty your pockets.

Remove all loose objects from your car including floor mats, charging cables, garage door remotes, etc.

Use the restroom before going on the track. A full bladder doesn't help you drive faster.

ON THE TRACK

TRACK ENTRY

When entering the course, wait for instructions from the grid and hot pit workers. If they signal for you to wait, stop until they give you permission to go. Check your mirrors when entering the track. Stay to the same side of the course you entered on, even if it's the slower part of the track, until you have built enough speed to blend onto the racing line.

For the first lap or two, take it easy. Warm up your tires, brakes, engine, gearbox, etc., and especially your senses. Observe where the corner workers are stationed. Look for visual reference markers such as orange cones, pavement cracks, changes in the color of pavement, signage, flagpoles, etc. They'll prove helpful when at speed.

Check out the off-track conditions for ruts, embankments, fences, drainage ditches, etc. Look for service roads and alternate exit routes.

Memorize where the flag stations and corner workers are located. **Know the meanings of all the flags. Flag information begins on page 24 of this manual.**

Always be alert for changes in track conditions. It is sometimes very difficult for the corner workers to see an oil spill or car part on the track.

Concentrate on the proper line into turns, proper apex and proper exit for maximum speed. Take it a step at a time. Adjust your driving in small increments. Speed comes with smoothness and consistency.

TRACK EXIT

At the end of a session or whenever you have decided to come in off the track, as you enter the last turn preceding the pit lane or course exit, put your left arm out the car window and up in the air with a closed fist to indicate that you are leaving the course and are no longer at high speed. Reduce your speed and exit the track safely. If possible, stay off the racing line.

CORNERING

Every corner on a track has a maximum speed or limit at which it can be driven. Your ability to find the limits of your car and comfort zone will determine the speed at which you will be able to negotiate each turn. The terms “corner” and “turn” are used interchangeably in this section.

We will always be able to go fastest with our foot to the floor and the steering wheel pointed straight ahead. But, as we approach a turn and start turning the steering wheel, we slow down even if we have our foot to the floor. By turning, we have created a sideways load on the car. If we exceed the limit of adhesion (or grip) of the tires, they will begin to travel sideways, “scrubbing” off speed or slowing the car.

Our objective, then, should be, first, to minimize the turn on the steering wheel, and second, to straighten the wheel as soon as we exit the turn and apply maximum power as soon as possible.

The basic idea of taking a turn is to go in slower and come out faster. Some turns require a different strategy. Start with slow in, fast out.

YOUR <u>EXIT SPEED</u> OUT OF A TURN IS AN EXTREMELY IMPORTANT FACTOR IN GOING FASTER AND REDUCING YOUR LAP TIMES.

The proper sequence of events in negotiating a turn are as follows:

1. At your braking point, apply the brakes with the ball of your right foot.

2. Downshift, if necessary.

3. Finish braking at the turn-in point of a turn (where you “commit” to turn-in).

4. Now, in the corner itself are three basic parts:

A. With proper hand position on the wheel, turn-in to the turn and smoothly apply the throttle. (ENTRY)

B. As the car turns in, apply more throttle without upsetting the balance of the car and clip the APEX (innermost part of a turn).

C. Guide the car from the apex to your exit point (or “track-out” point) and apply full power as soon as possible. Straighten out the steering wheel as quickly as you can as you EXIT the turn. Straightening out the steering wheel is also known as “unwinding the wheel.”

Remember: The fastest line is a straight line. Everything being equal, **the fastest driver is the first to straighten out the steering wheel and the first to apply maximum power on the exit of a turn.**

CORNER ENTRY, APEX AND EXIT

Always look where you want to go. While at speed, if you are looking at the end of the straight leading into the next turn, chances are you’ll drive straight off the track. Look ahead into the next turn. Plan your approach. Always look ahead.

A proper apex is the goal. Once you locate the proper apex and can execute a smooth maneuver, you can adjust your apex for maximum exit speed.

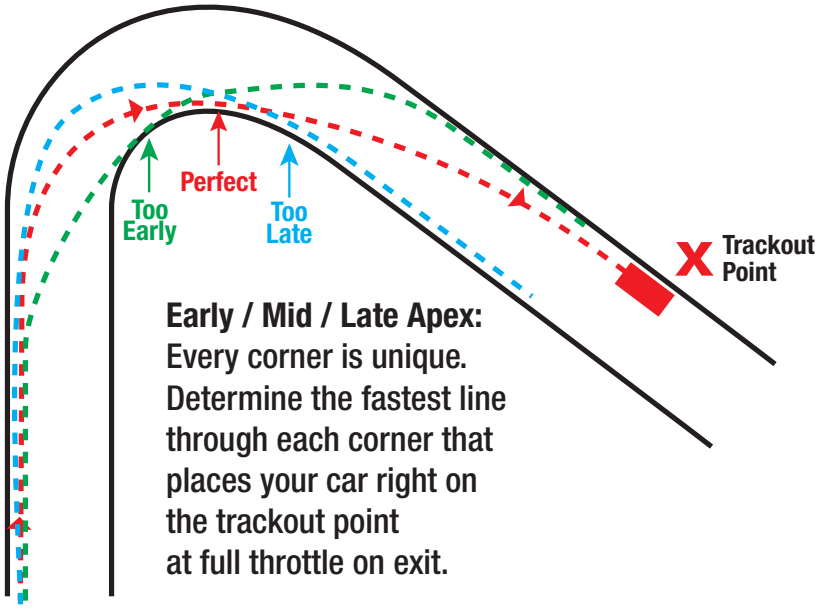
The early apex is the line through a corner that many newer drivers tend to take. It is the shortest way through a corner but usually not the fastest. Often, it forces you to run out of track upon your corner exit. Not fun.

Most often, a late apex is the fastest way out of a corner. The car will get most of its cornering done during the first third of the corner under trailing brake, and therefore you will be able to give it full throttle much earlier and will allow you maximum exit speed. In most cases, you will be able to achieve full throttle approaching or at the apex rather than waiting for the corner exit. Fun!

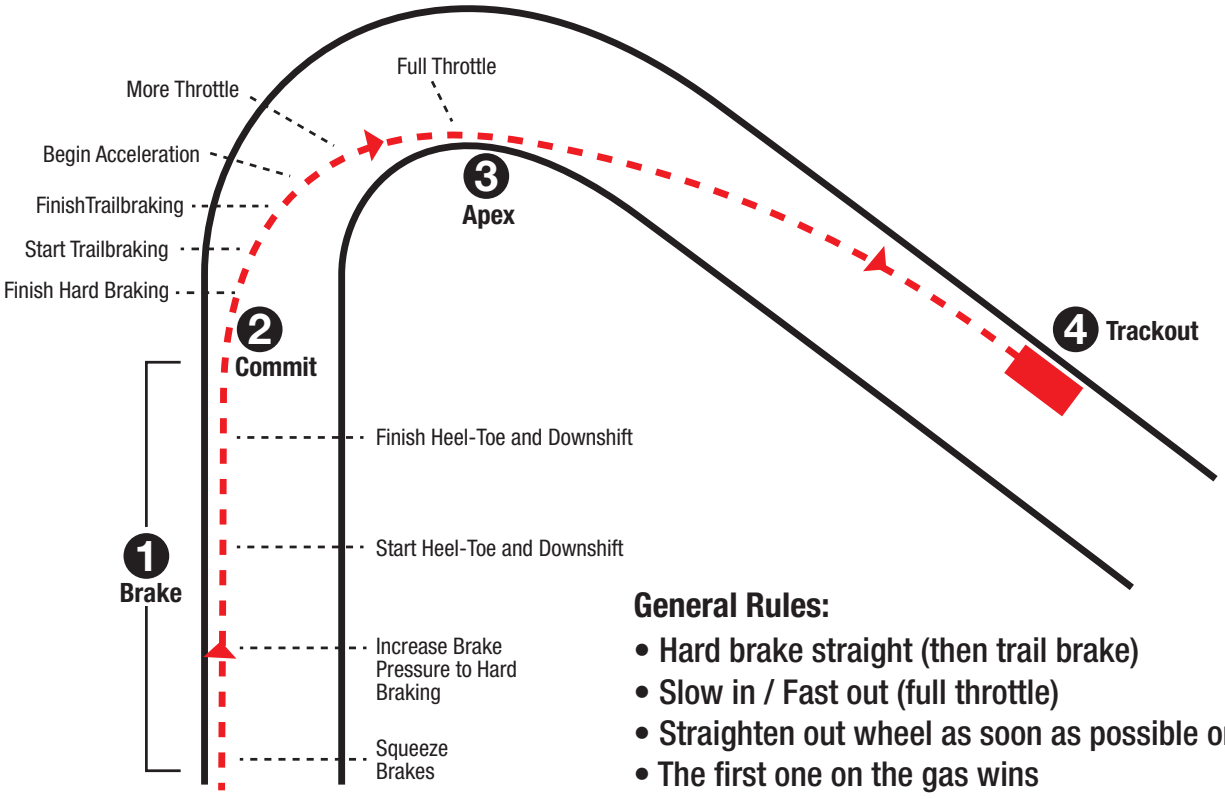
Check out the illustration on the next page.

CORNERING

1) Brake
2) Commit
3) Apex
4) Trackout



Early / Mid / Late Apex:
Every corner is unique. Determine the fastest line through each corner that places your car right on the trackout point at full throttle on exit.



General Rules:

- Hard brake straight (then trail brake)
- Slow in / Fast out (full throttle)
- Straighten out wheel as soon as possible on exit
- The first one on the gas wins
- Use the whole track...You paid for it (tight apex to trackout point)

Remember: The fastest line is a STRAIGHT LINE. Everything being equal, the fastest driver is the first to straighten out the wheel and the first to apply maximum power.

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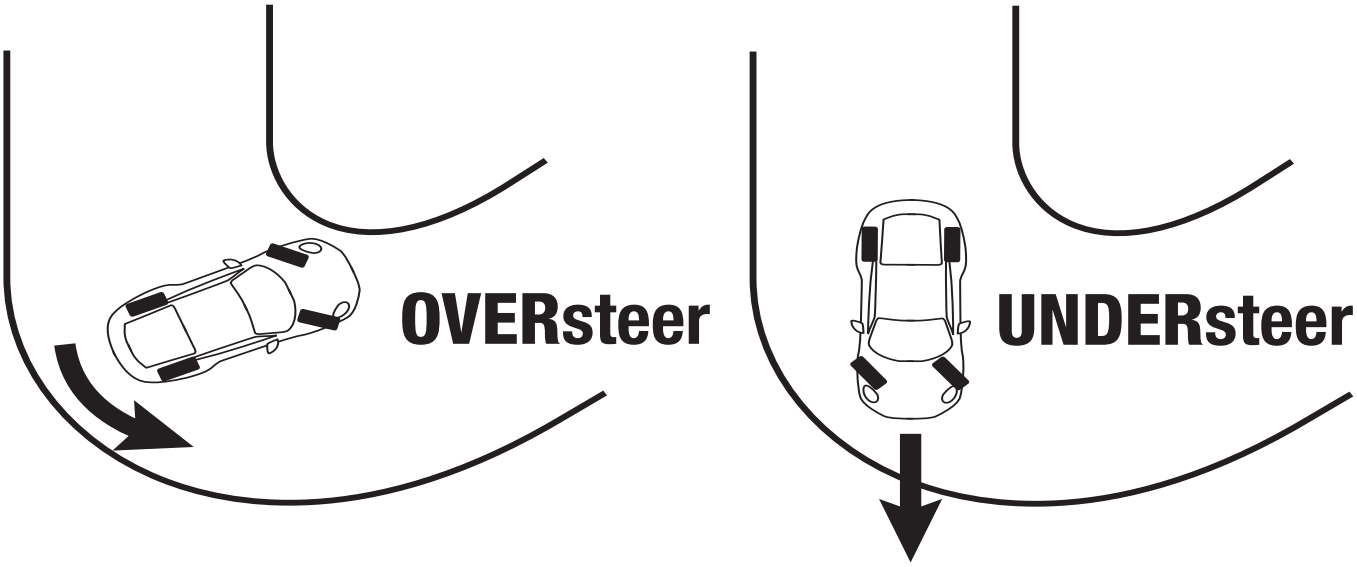
TRAIL BRAKE TECHNIQUE

This is the technique of controlling abrupt weight transfer while cornering.

Before you enter a corner, you squeeze on brakes gently, increase brake pressure, heel and toe downshift if driving a manual, continue trailing brake with progressively less pressure into the first third of the corner, release brake smoothly, apply throttle gently, then smoothly increase throttle input to accelerate out of the corner.

OVERSTEER AND UNDERSTEER



OVERSTEER: A car oversteers, or is “loose,” when, as you turn the steering wheel, the car wants to turn more than what your input calls for. The rear end of the car starts to slide out due to loss of traction.

Oversteer may be caused by lifting from the accelerator while turning and/or braking into a turn, especially if either are done too severely. Severe braking while turning, causing the rear wheels to lock up, will create a strong oversteer condition usually ending in a spin.

To correct for oversteer, turn the steering wheel in the same direction that the rear of the car is headed. This is called “reverse lock.” Then gently press on the throttle to transfer weight to the rear of the car. As the rear of the car comes back into line, straighten the steering wheel and accelerate.

It is very easy to “over-correct” an oversteer condition with the result being that the car will straighten out and then spin the other way. Once you gain traction on all four tires, you will end up going where the front wheels are pointed.

UNDERSTEER: A car understeers or “pushes” when you turn the steering wheel, and the car doesn’t turn in as much as you have turned the wheel. The car tends to go straight due to a lack of traction on the front tires. Understeer can be caused by entering a turn too fast and/or turning in too late or too suddenly.

To correct for understeer, gently lift off the throttle. This move transfers the weight of the vehicle forward onto the front wheels thereby increasing the size of the front tire contact patch and increasing traction.

Under more extreme conditions, you may even have to apply the brakes to transfer a greater amount of weight to the front tires. DO IT SMOOTHLY! If you get the front wheels locked up, you will lose control of your steering and you will go straight or in the direction of your vehicle’s momentum.

NEUTRAL STEERING: Your goal is to always keep your car in a neutral steering orientation so that it is doing exactly what you tell it to do. By having a basic understanding of over/understeer, contact patch and weight transfer, you can balance your car through proper use of the brake and throttle. BE SMOOTH.

OVERSTEER AND UNDERSTEER

Cause and Correction

OVERSTEER: A rear wheel skid (or slide)

Some examples follow -

Cause: Too much speed in a corner and/or turning the steering wheel abruptly.

Correction: First add steering into the direction the rear end is sliding. On dry pavement, add some throttle to transfer weight to rear wheels. When rear end starts coming back, correct steering quickly into opposite direction to counteract second skid. As the car comes out of its second skid, straighten the steering wheel smoothly and continue the proper line.

Cause: Too much braking causing rear wheels to lock.

Correction: Come off the brakes quickly and add steering in the direction the rear end is sliding. When the rear end starts coming back, correct your steering quickly to get back on the proper racing line.

Cause: Quickly spinning rear wheels (rear wheel drive car).

Correction: Ease off throttle to stop rear wheels from spinning, and quickly add steering in the direction the rear end is sliding. When the rear end starts coming back, quickly add steering again to get back on the proper racing line.

UNDERSTEER: A front wheel skid or (slide)

Cause: Too much speed in a corner.

Correction: Correct by easing off throttle to transfer weight to front wheels, add steering to get back to the proper line.

Cause: Too much braking causing front wheels to lock.

Correction: Ease off brakes to get front wheels unlocked (or rolling), add steering to get back to the proper line.

Cause: Quickly spinning front wheels (front wheel drive car).

Correction: Ease off throttle to stop front wheels from spinning and to transfer weight to front tires, add steering to get proper line back. Then get back on throttle immediately, 1/2 to 3/4 throttle, (adjust as necessary).

If on **wet pavement,** correct steering very quickly with full lock (as far as the wheel will turn) into the direction the rear end is sliding, ease off throttle and stay off brakes altogether, letting the sidewalls scrub off speed and gain adhesion. Keep correcting steering wheel until slide is caught and you can gain proper line back.

PASSING PROTOCOL

If you are the car being passed:
As you approach a passing zone and wish to let a faster car by, signal the driver to pass on your left by using your arm fully extended with your index finger pointing straight out the window. Signal one point-by for each car you want to let pass. When giving another driver a point-by, make sure you give him/her enough room to make the pass safely and lift off your throttle. Never signal a pass and then race the passing car to the corner! Check your mirrors before turning in to the next turn to make certain there are no other cars attempting a late pass.

If permitted, to let a faster car pass on the exit of a turn, ideally you should move to the right and point the faster car by to the left, as described above. It is always advisable to communicate with the other driver using hand signals, but your first concern should be to maintain control of your car and if you need both of your hands on the steering wheel to maintain that control, then wait to give a point-by on a safer segment of the track.

When in doubt, **maintain your line!** The overtaking driver will get by safely if you maintain a predictable line.

If you are the overtaking car: You have the responsibility of making a safe pass. Our rules dictate that all drivers in a passing situation have the responsibility of giving each other "racing room" to complete a pass safely.

If a driver directly ahead of you signals a point-by, **you are not obligated to make the pass.** Pass only on designated segments of the track when you feel safe doing so.

IF YOU GO OFF COURSE

If your car suffers a mechanical problem, pull off the track surface as far as possible and away from any oncoming traffic. **DO NOT GET OUT OF YOUR CAR.** Tap your hand on the roof of the car to let the corner worker know that you are ok.

If you lose control of your car and go off course, once you regain control proceed toward the track surface, place your arm in the air to inform the corner worker that you are ready to enter the track. Wait for instruction from the corner worker. As you enter the track stay on the same side you entered from and do not cut in front of oncoming traffic. If there is no corner worker to assist you in re-entry to the track, then check for oncoming traffic and enter on your own. **ALWAYS STAY IN YOUR CAR UNLESS IT IS ON FIRE.**

BE PREPARED

Thorough vehicle preparation will increase your confidence to develop the skills we all enjoy practicing at our events. This preparation not only includes familiarity with the applicable rules and allowances for your class, but, more importantly, a complete inspection to assure that all systems are performing correctly.

P.O.C. Tech Inspection prior to every event (required) is primarily a safety inspection which will uncover gross discrepancies. It should not be substituted for your own self-inspection. You must take the time to thoroughly examine your vehicle in order to assure yourself of optimum performance and safety.

The following is a checklist of some of the areas you might wish to cover in your inspection. This list is primarily for street legal cars. The checklist for purpose-built racecars is more detailed. Refer to the POC General Competition Rules (GCRs) for more complete details.

DRIVER SAFETY ITEMS: (per POC GCRs)

- Helmet: Snell SA2015 or newer
- Full Length Pants, long sleeve shirt, and closed toe shoes
- **GT Class Cars** are required to wear Time Trial clothing (Nomex suit, Nomex socks and shoes)

CAR SAFETY ITEMS: (per POC GCR's)

- Seat secure & loose items removed
  For GT Class Car only - Seat Manufacture Date _____
- Battery: positive terminal covered
- Firewall: metal wall with no holes into cockpit
- NOTE: 3-point belts are allowed. Belts must be free of damage, fasten securely, lock and retract properly.
- Cars equipped with harnesses: Belts must be no older than 5 years and properly installed with cotter pins in belt hooks.

TIRES AND WHEELS

- Tread: depth satisfactory
- Tread: no cuts or visible defects
- Lug Nuts: sufficient engagement & torque

SUSPENSION AND STEERING:

- Wheel Bearings
- Tie Rods
- Play in steering
- Shocks
- No Leaks (brake fluid, grease)

BRAKING SYSTEM:

- Brake lines
- Brake pads
- Brake pedal pressure
- Brake lights
- Rotor condition

ENGINECOMPARTMENT:

- No fluid leaks (oil, water, fuel), check hoses and belts
- Fluid reservoirs properly secured and caps tight
- Clean engine area
- Throttle pedal – proper operation and return spring function
- Fluid levels correct

BODY & EXTERIOR:

- Car Markings: number & class in correct locations
- Hoods & Doors: appropriate latching mechanisms
- Front and Rear tow hooks: suitable for rescue
- Windshield (glass): no cracks
- Windshield (Lexan): proper mounting & bracing

Check our General Competition Rules (GCRs) for more safety preparation details.

SPECIAL NOTE:

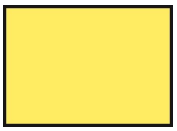
The next page is extremely important. Please study it carefully. A more detailed explanation of flags and safety regulations can be found in our GCRs.

https://www.porscheclub.com/technical/poc-gcrs/

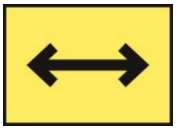
FLAGS

All drivers must fully understand and adhere to the following flags:

Green: The Green Flag means go; course is open and clear.

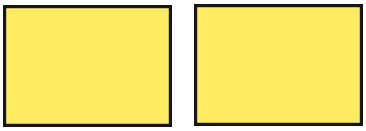


Yellow: NO PASSING. Stationary Yellow Flag means reduce speed enough to respond to unusual hazard(s).



Waving Yellow Flag: NO PASSING. This means the course may be blocked ahead, be prepared to stop, however, do not stop unless necessary and always be aware of vehicles close around you. The prohibition on passing starts at the line on the racetrack perpendicular to the point of the first displayed yellow flag(s); The pass must be completed by this point. However, in cases where the incident is clearly visible and is in close proximity to the yellow flag(s), such that passing on approach to the yellow flag(s) would put someone in danger, passing on approach to the yellow flag(s) will be considered dangerous/reckless driving and will incur a one lap penalty or possible 13/13, at the discretion of the Competition Committee.

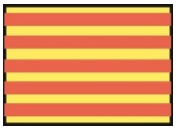
Once past the yellow flag(s) a pass may not be INITIATED until you are completely past the incident(s) and you have a clear view of an incident-free track between you and the next manned flag station, and it is clear that that flag station is not displaying a yellow flag. Timing a pass such that it occurs at or immediately after an incident and therefore requires accelerating adjacent to the incident will be considered dangerous/reckless driving and will incur a one lap penalty or possible 13/13, at the discretion of the Competition Committee.



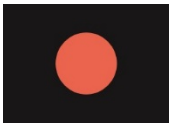
Double Yellow - NO PASSING. Reduce speed enough to respond to hazard(s) on the course. The overall leader of the race will slow to 55 MPH or less and collect the entire field. There will be no split starts after a double yellow and all cars should collect in a single file line. Racing will only resume with a green flag at the start/finish line. If the leader of the race does not slow to 55 MPH, they will be black flagged, and the next car will take over the leader's responsibility of collecting the field.

Red: Red Flag indicates an emergency situation. Look in mirror(s), pull safely to trackside and stop in view of nearest corner worker. **Remain stopped until instructed otherwise.** You will resume under a full course Black flag condition.

Blue with Yellow Diagonal Stripe: This is the "Passing Flag" warning of potentially faster cars behind you. Look in mirror(s) and allow faster car(s) to safely pass (in designated areas for groups with point-by passing). This is an advisory flag but should be obeyed as soon as it is safe in PDS and Time Trial groups. Rapid compliance with the "Passing Flag" in Cup Racing groups may consider the current race situation (e.g. are you in a close race with an in-class car).

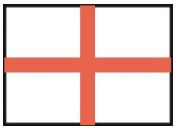


Red with Yellow Stripes (Track Condition Flag): This flag warns of debris, slippery fluids and/or any changing track conditions requiring caution and reduced speed. Typically, the flag will only be displayed for two laps (even if the condition continues). After that time, the driver is expected to account for the track conditions.



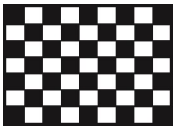
Black with Orange Dot ("Meatball"): Your vehicle reportedly has a mechanical problem. Using the designated track exit, proceed to the Black Flag Station with extreme caution. If your car is dropping fluid, drive off of the racing line and, if possible, the track surface.

Black: You have been identified as having made an infraction. If the Black flag is furled (i.e. rolled up), then the driver must discontinue his present driving behavior or face an open Black Flag. An open Black Flag signals that the driver must proceed immediately to the pits via the designated course exit and report to the Black Flag Station. Full course Black Flags signify that all drivers are to discontinue racing (no passing), slow down and proceed single file using the designated track exit to the Black Flag Station. Any racer who ignores a Black Flag during a race shall be assessed a one-minute penalty for each Black Flag passed. During a race, any driver passing under Black Flag All will be assessed a stop and go penalty under green flag conditions. If the infraction occurs on the last lap or two and it is not possible to assess the stop and go penalty or video evidence of the infraction is provided after the race, the racer shall be penalized one lap.



White: The White Flag warns of a service vehicle on course. Typically, but not always, the white flag will also have a red cross if a service vehicle is on course. Proceed with caution. You may not pass a service vehicle unless instructed to do so. This permission to pass is typically indicated by a person on the service vehicle waving you by. Look for a person on the back of the service vehicle or a wave by from

the driver's side window of the service vehicle. Permission to pass may alternatively be indicated by the service vehicle driving slowly off line. In this case, use extra caution as permission is less clear. In all cases, show respect to the service vehicle and reduce speed appropriately. The White Flag (with no red cross) may also be displayed at the Starter stand as an indication of the last lap before the Checkered Flag (for race groups only).



Checkered: The Checkered Flag announces you have completed your final lap. Proceed to the pits using the designated track exit. For PDS and Time Trial groups, the checkered flag may be shown at the start-finish and an additional location.

Passing Under Yellow/Double Yellow: Any driver in a non-race event who passes under a Yellow Flag condition and does not give the position(s) back to the car(s) passed, will be black flagged and removed from the track for the remainder of that session. During a race, any driver who passes under yellow and does not give the position(s) back to the car(s) passed safely will be black flagged and assessed a stop and go penalty. If the infraction occurs on the last lap or two and it is not possible to assess the stop and go penalty or video evidence of the infraction is provided after the race, the racer shall be penalized one lap.

SOME RACING AND HIGH-SPEED DRIVING TERMS

Accelerate – Increase vehicle speed.

B.O.B. – Beginning of braking.

Balance – The relationship between the load on each wheel and their ability to turn, brake and apply power. Equal balance or neutral is best.

Braking Point – A designated point on a course usually at a fixed distance from a turn at which you begin application of the brakes.

Broad slide – A controlled sideways slide greatly reducing vehicle speed.

Cadence Braking or Modulating – Actually modulating the brake pedal pressure to maintain threshold braking.

Camber of Road:

> Negative Camber - The road is sloping away from you, thus causing loss of traction. This may cause a front or rear wheel slide.
> Positive Camber (a banked corner) - Outside tires maintain excellent traction. In the event of loss of traction due to locked wheels or a spin, the car will go downhill.
> Off-Camber – When the road slopes away from the inside of a turn.

Center of gravity – The point within a car where it is exactly balanced in all directions.

Chicane – A tricky “kink” in the roadway. Somewhat like “esses.”

Clipping Point – Apex, or that point along a curve where a car should touch or come very close to the inside of the track.

Clutch Slip – Allowing the engine to race with the car moving slowly (i.e., holding a car on a hill by slightly engaging the clutch).

Coefficient of Friction – The ratio of the force a tire can generate to its load, typically ranging from zero (ice) to one (paved surface).

Constant Radius – When the arc of a turn remains constant.

Contact Patch – The area of the tire in actual contact with the ground.

Dead Pedal – A resting or bracing area immediately to the left of the clutch pedal. It is useful during hard cornering. It is sometimes referred to as a foot rest.

Decelerate – To decrease vehicle speed.

Decreasing Radius – When the arc of a turn gets sharper and sharper.

Downshift – Changing from a higher to a lower gear.

Drafting - Following another car very closely making it possible for you to achieve a higher rate of speed, lowering your wind resistance. It will also save some fuel. This is also referred to as "slipstreaming."

Drift – Driving in a controlled skid.

E.O.B. – End of braking.

Early Apex – When the clipping point or apex occurs before the planned apex point. Not good. Not fun.

Engine Braking – Using the engine and transmission to slow the car.

Entry Point – That point at which one begins a turning maneuver.

Exit Point – The desired path at the point of exit of a cornering maneuver.

Feathering – Gentle application of throttle pedal pressure.

Geometric Apex – The middle part of a turn.

Hairpin Turn – A very sharp 180° turn.

Head Lean – Leaning the head excessively while negotiating a turn.

Heel & Toe – Ball of the foot and side of the foot operation of brake and throttle.

Increasing Radius – When the arc of a turn becomes wider and wider.

Late Apex – Clipping the inside of the track after the apex point. Often faster and more fun.

Lateral resistance – The side force generated by a tire during cornering.

Lock – A turn of the steering wheel.

Loose or Hanging it Out – Slang for purposefully driving with oversteer. A sort of controlled rear end skid.

Lug – Operating the engine at too low an RPM requiring flooring the gas pedal.

Max Torque – The maximum torque value attained and the RPM at which it occurs.

Neutral Steering – When the car is neither over or understeering and maintains traction on all four wheels.

Over-rev – To run the engine at a greater RPM than is desirable or healthy for the engine.

Oversteer – A condition during cornering in which the car wants to turn into the corner more sharply than the steering input and the rear end starts to break loose.

Plow or Push – Slang for excessive understeer.

Power Curve – Relative horsepower available at each engine RPM.

Power Slide - Controlled slide with throttle, maintaining proper line through corner (used mainly on hairpins or slow turns.

Pumping the Brakes – Modulating the brake pedal to regain pedal height. Not a good sign!

Radius – A measurement of radius of curvature used to define curves, i.e. increasing radius and decreasing radius.

Reaction time – the time it takes a driver to respond to some indication of a need for a response (approximately .25 to .50 seconds).

Red Line – Maximum useable RPM. Operation above this value will produce less power and/or cause engine damage.

Red Mist - Anger that causes a driver to make bad decisions.

Riding the Clutch – Driving with the clutch partially engaged or slipping.

Riding the Shift – Driving with one hand resting on the shift lever.

Rolling Resistance – The force required (as in pushing a car) to make a tire roll.

RPM – Engine revolutions per minute or “Revs”.

Sawing – A rapid oscillation of the steering wheel by the driver while entering a turn.

Scrubbing – Greatly reducing the vehicle speed by causing the wheels to skid rather than roll.

Shift Point – The RPM at which one shifts (up or down a gear).

Skid – To force the tires to slide rather than roll when braking, or to slide sideways.

Slalom – Weaving through a series of designed markers, cones or obstacles.

Slip Angle – The angle between the direction a tire is pointing and the direction it is rolling while negotiating a turn.

Spin – Uncontrolled skid when the car rotates in a circular path.

Stabbing the Brakes – Sudden forceful application of the brakes causing skidding. Mis-applied cadence braking.

Stopping Distance – The minimum distance required to stop a car usually including driver reaction time.

Straights – Those portions of a course in which no turns occur.

The Esses or “Ss” – Two or more connected curves or turns which alternate in direction.

The Limit – The maximum forward, rearward or sideways force at the tires while accelerating, cornering or braking.

The Line - Imaginary path of a car as it maneuvers around a track finding the proper apexes and using the entire width of the pavement to your best advantage and maximum speed. Also known as the “racing line.”

The Line – The best possible path through a course, all factors considered.

Throttle Steer – Applying throttle to induce rear steering action. Also called “Power Oversteer.”

Torque – The engine’s ability to produce twisting force.

Traction – A tire's ability to adhere to a road surface. Also a function of weight and contact patch.

Trail Braking – Using a low and then decreasing brake pedal pressure going into and partially through a turn in contrast to the complete release of the brake before turning in.

Turn-In-Point – The point at which you turn the steering wheel to enter a turn.

Understeer – A condition during cornering in which the car does not turn as much as the steering input.

Upshift – Changing from a lower to a higher gear.

Weight transfer – The transfer of weight from one side or end of a car to another side or end upon turning, acceleration or braking.

Wheel Spin – The drive wheels turn but there is no grip.

Your First Performance Driving Series Event FAQs

What exactly is the Performance Driving Series (PDS)?
It's a series of entry-level driver education and competition events. It offers you the opportunity to learn the performance capabilities of your car and develop your driving skills in a legal, controlled environment.

I've never driven on a track before. What about instruction?
This is the perfect place to start. POC Instructors are available and matched to individual drivers' needs. The cost of instruction is included in your registration fee.

How do I get paired with an instructor?
When you register for your first few events, you'll need to contact our PDS Director, Jim Salzar. Jim can be reached at pds@porscheclub.com He'll ask you about your previous driving experience, the type of car you'll be bringing to the track, and about your goals. He'll also be able to answer any additional questions you might have and explain how your instructor will work with you.

I have some track experience. Do I still need an instructor?
You need to speak with Jim Salzar, to determine what is required to qualify for your PDS license. Only PDS licensed drivers and/or drivers who have been 'signed-off' by their instructors are allowed to solo at PDS events.

How fast will I be able to drive?
Your speed will depend on your understanding and mastery of smooth driving lines and car control skills.

Who else will be driving on the track with me?
You will be assigned to a 'Run Group,' designated by a color. Students usually drive in the Yellow group, depending on experience and type of car.

How do I know if my car is okay to drive on the track?
Safety is extremely important to us. All drivers are required to have a Tech Inspection performed on their cars. Among other items that are checked, your car must have adequate brake pads, tires tread and working brake lights. Download and print a PDS Tech Inspection form from the POC website. A list of POC approved Tech Inspection Stations is also available on the website. Get your inspection done a few days before the event. That way, if something is wrong with your car, you'll have time to address it. It is not acceptable for you to only "self-tech" your car, but it is advisable to carefully double-check that everything is in good working order. There is a list of some items we suggest you inspect on pages 14-15. It is possible to have your car inspected at the event. There is a twenty-dollar fee for Tech Inspection at the track. You will not be allowed to drive your car if it does not pass POC inspection.

What is a transponder? Why do I need one?
A transponder is a small electronic device that you'll attach to your car at the track. It can be easily zip-tied to a license plate bracket or tow hook. The transponder is used to time your laps. If you don't have a transponder, you won't be eligible for an award for fast lap times.

Car classification is mandatory. How do I know what "class" my car is in?
Cars are classified by their weight, horsepower, tires and modifications. You can find a downloadable form on our website https://www.porscheclub.com that is a useful tool. There is also an easy to use class calculator at https://results.porscheclub.com/calculator. The complete GCRs are available on the website.

What do I need to bring to the event as far as my car is concerned?
Your car tool kit (including a tow hook), a good tire pressure gauge and a torque wrench are an excellent start. You might also want to purchase some blue painters tape (3M). From time to time, small pebbles or debris could come into contact with your car. You can minimize possible damage by covering vulnerable areas such as the front bumper, headlight lenses and the front fender/hood areas. The tape removes easily and will not damage your paint. Paper towels and some glass cleaner also come in handy.

Anything else I should bring?
You might enjoy a camera, folding chair, hat, sunscreen, some bottled water, a sports-type drink and some snacks. Check the weather forecast!

What kind of clothing should I wear?
A long-sleeved shirt, long pants and closed-toe shoes are required. More developed cars require more safety equipment. Check the GCRs. You'll also need an approved helmet. If you don't have access to a helmet, loaners are usually available at the track. However, it's best to have your own, properly fitting helmet.

I have a few questions. Who can I contact?
Jim Salzar, our PDS Director. He can be reached at pds@porscheclub.com

BE SAFE AND HAVE FUN!