

AMG Driving Academy

Driver's Handbook

PERFORMANCE



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AMG Driving Academy

AMG Driving Academy gives drivers the opportunity to improve their abilities—whether they are newly licensed or have years of experience – while letting them experience the qualities of Mercedes-AMG vehicles. We believe that most people are safer and happier behind the wheel if they have a better understanding of driving tendencies when dealing with emergencies. The good news is that learning can be fun. Consider it an adventure with a good cause.

With six levels of training in the U.S. – PERFORMANCE, ADVANCED, PRO, PRO+, DRIFT and DRIFT+ – we provide a progressive learning experience through classroom instruction and a significant amount of “behind the wheel” driving time while being coached by our world-class instructors.

Whether you’re interested in a safer commute, competition or simply like to drive, the skills that you’ll learn at AMG Driving Academy will help you to reach your goal.

At AMG Driving Academy, we teach emergency braking, skid control, proper cornering technique, line of sight and a variety of other skills. The main goal is to raise your awareness of all the elements that together constitute “good, safe” driving, whether on the street or racetrack.



An International Academy

You are now a part of the AMG family. We are a resource you are entitled to utilize anytime you believe we can help. You are also a member of a highly respected organization and should be proud of your achievements at the best driving school in the world.

AMG Driving Academy is truly a global program, allowing you to continually perfect your skills with a progression of programs to advance your learning—or to just experience some of the world's best tracks.



AMG Driving Academy Courses

International

For complete information on international courses, please visit www.mercedes-amg.com/en/world-of-amg/amg-driving-academy.html

United States

PERFORMANCE

- › Circuit of the Americas, Texas
- › Laguna Seca Raceway, California
- › Lime Rock Park, Connecticut
- › Road Atlanta, Georgia
- › Sonoma Raceway, California
- › The Concours Club, Florida

ADVANCED

- › Circuit of the Americas, Texas
- › Laguna Seca Raceway, California
- › Road Atlanta, Georgia
- › Sonoma Raceway, California

PRO

- › Circuit of the Americas, Texas
- › Laguna Seca Raceway, California
- › Road Atlanta, Georgia
- › Sonoma Raceway, California

PRO+

- › Circuit of the Americas, Texas
- › Laguna Seca Raceway, California

DRIFT

- › Circuit of the Americas, Texas
- › Road Atlanta, Georgia
- › Sonoma Raceway, California

DRIFT+

- › Circuit of the Americas, Texas
- › Laguna Seca Raceway, California

Getting Started

SEAT POSITION

Every sport has a ready, or balanced, position that allows the best chance of success. The poise of a great skier, golfer or tennis player comes from that stance. Whether it's a racecar or a street car, the same principle applies.

- Unless your physique makes this impossible, adjust the seat track so that, when pressing hard on the brake pedal, you still have a moderate bend at the knee.
- Also, try to allow clearance so your knee can move freely under the steering wheel.
- Now adjust the backrest so that, when your shoulders are against the seat back and your arm is resting on the top of the wheel, your wrist joint reaches the rim.
- This may not work for everybody in every car, but the closer you can get to this position, the more efficient you are likely to be in your control inputs.
- Buckle up the seat belts and make sure they fit snugly, especially the lap belt.



INCORRECT
Leg Position



INCORRECT
Arm Position



CORRECT
Leg Position



CORRECT
Arm Position

Handling the Wheel

One of the worst driving habits we see is the tendency to steer with one hand on top of the wheel and the other hand resting on the gear lever. You'd be hard pressed to find a less efficient position, either for getting good feedback from the car or for control in an emergency. (Now that most cars are equipped with airbags, driving in this position could result in your arm being thrown backwards if the airbag deploys—possibly resulting in injury.)

The recommended steering action is to keep both hands in the proper positions of 9 o'clock and 3 o'clock as you turn the wheel.

If you must change hand position due to extreme turning required, use a hand-overhand technique so one hand is always in control of the steering wheel.



Eye Work

A KEY FUNDAMENTAL

- Look where you want to be next, not where you are. Hands and feet follow the eyes!
- Proper use of your eyes will determine your control inputs and correct car placement.
- Look ahead and relax, and you will always feel in control and able to catch mistakes early.



Incorrect Car Position: Not Looking Ahead



Correct Car Position: Looking Ahead

Contact Patch

TIRES

Let's start with tires—the only connection between the vehicle and the road. Proper tire care improves vehicle performance and driving pleasure. When was the tire pressure last checked? This can't be verified visually; it requires a tire gauge. Even a few pounds of under-inflation will compromise a tire's capacity to stop and turn.



BASIC RULES

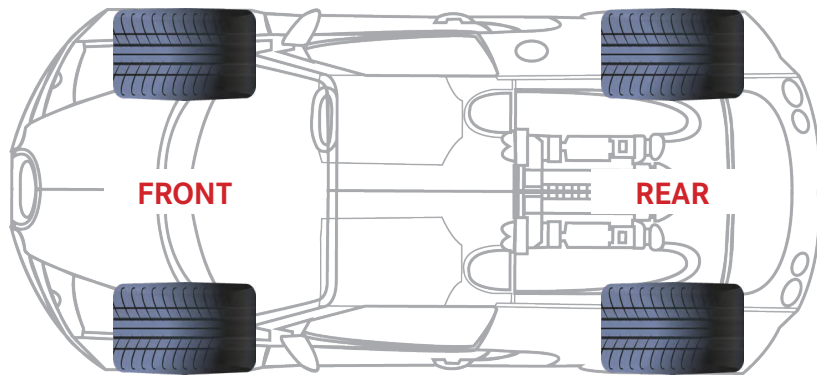
- Higher tire pressure (within the manufacturer's limits) generally produces better response and handling, though with a somewhat harsher ride.
- Tire pressure should be checked only when the tires are cold.
- Tire pressure should be checked frequently, as tires lose approximately 1 psi per month.
- The lower the pressure, the more likely the tire is to aquaplane in wet weather.
- Lower pressure does not improve winter traction—you want the tire to bite down to the pavement, not float on the snow.
- Four little patches of rubber, or contact patches, are the only things that keep your car headed in the chosen direction.
- Take care of your tires and be aware of weather that can limit the tires' effectiveness.

Vehicle Dynamics

LOAD TRANSFER

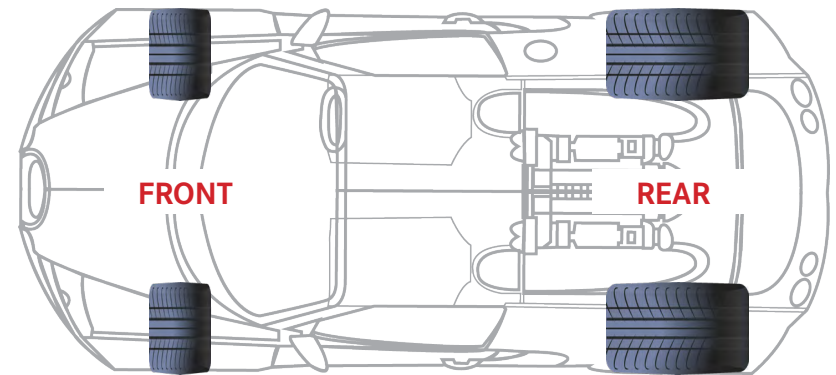
AT REST OR STEADY SPEED

An important element of vehicle dynamics that a driver should understand is load transfer. If a car is either at rest or balanced at a steady speed, the load and traction are equally distributed at the four contact patches.



ACCELERATING

When accelerating, the load will transfer rearward, increasing rear traction while decreasing front traction.

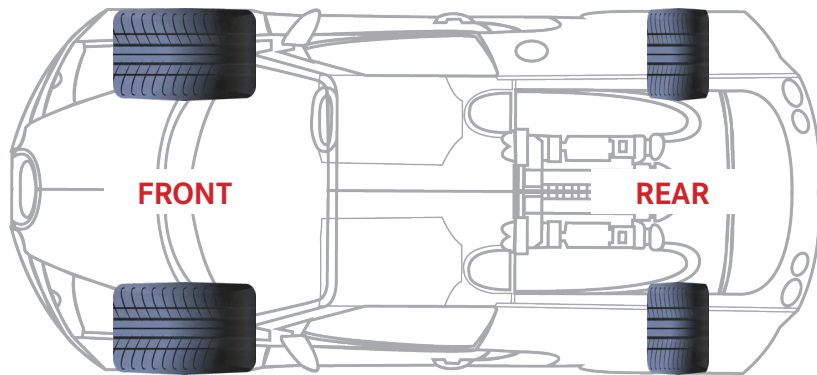


Vehicle Dynamics (Cont.)

LOAD TRANSFER (Cont.)

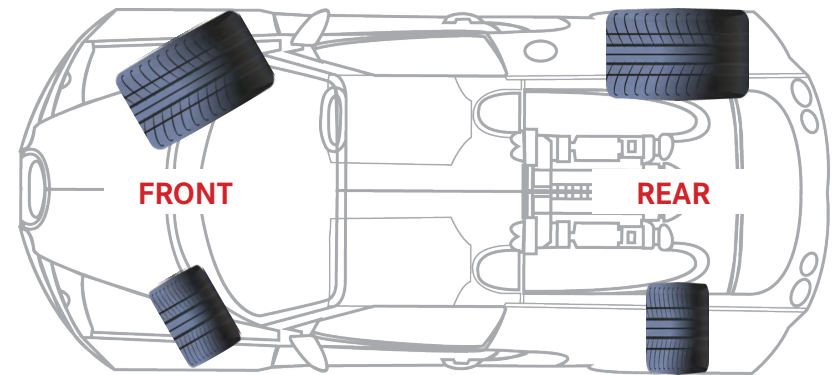
BRAKING

When braking, the load will transfer forward, increasing front traction while decreasing rear traction.



CORNERING

When cornering, the load will transfer to outside tires, increasing traction on the outside tires while decreasing traction on the inside tires.



LEFT TURN

Handling Terms

UNDERSTEER

“Understeer” describes a situation where the front of the car is losing traction and the vehicle is not responding well to steering inputs. In extreme cases, the car will leave the road, front end first.

What causes understeer? Acceleration can cause a loss of traction at the front of the vehicle. How do you fix this? Gently ease off the power until you’ve regained control of the vehicle.

Braking too late for a turn may also cause understeer. The proper fix is a gentle release of the brake pedal, just to the point where the car has traction available for turning.



UNDERSTEER

OVERSTEER

“Oversteer” is the term for a situation in which the rear tires have less traction than the front tires. The rear tires begin to slide and, if the driver fails to apply correction with the steering wheel, this can become a rearwheel skid. The most common cause of oversteer, both on the road and on the racetrack, is an overly abrupt release of the throttle. A rear-wheel skid can also be caused by an abrupt release of the brake pedal.



OVERSTEER

Correcting Oversteer

CPR

At AMG Driving Academy, we teach **CPR** as the method to correct an oversteer condition:

- “**C**” stands for CORRECT, turning steering wheel in the direction you want to go.
- “**P**” stands for the PAUSE, the moment between when the car stops its initial skid and when it starts to rebound in the opposite direction.
- “**R**” stands for RECOVER, the wheel comes back to the center and we drive away. Look where you want to go, not where you’re afraid of going as your hands follow your eyes.

Here’s a racing rule that makes a lot of sense on the street as well: “If you spin, push brake pedal in.”



CORRECT



PAUSE



RECOVER

Braking Skills

There's a lot more to good emergency braking than knowing which pedal to push. By following a few basic rules, you can optimize stopping ability—even in an unfamiliar car.

STRAIGHT-LINE BRAKING

Cars stop best in a straight line, requiring a quick transition off the throttle and a hard squeeze on the brake pedal. That's the only time when all the available traction is available for braking. ABS allows braking and turning. Without ABS, locking up the wheels increases stopping distance by about 30% and makes steering impossible.

To engage ABS, press hard on the brake pedal; do not pump the brakes. Application of brakes while the car is proceeding on a straight line allows the tires to have the maximum traction for braking.



STRAIGHT-LINE BRAKING

TRAIL-BRAKING

Trail-braking is a technique of braking in a straight line with continued braking while turning into a corner. This technique allows a driver to brake at a slightly later point and carry more speed into the corner. In order to maximize potential traction, progressively easing (“trailing”) off of the brake pedal while turning is required until brakes are fully released at the apex point of the turn and acceleration can begin.



TRAIL-BRAKING

Cornering Technique

There are four reference points for each corner that you must identify in advance by using your eyes to look ahead.

BRAKE POINT

A driver's first task is to prepare the car for a turn. This means slowing down in a straight line for maximum braking efficiency. The spot at which the brakes are first applied is called, appropriately, the "brake point."

TURN-IN POINT

This is the point at which you begin to turn the steering wheel—smoothly, not abruptly. As you start to turn the wheel, remember to look ahead for the next reference point.

APEX POINT

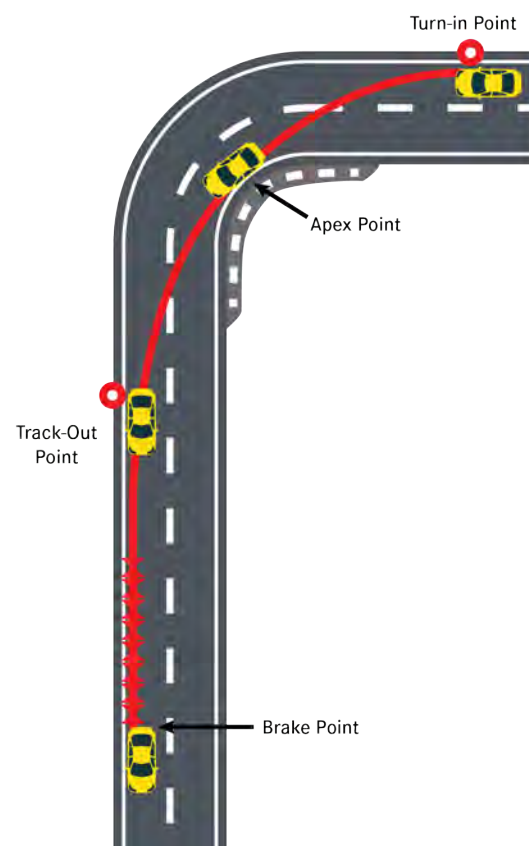
The apex is the inside point of a turn where you should aim the car to maximize the corner radius, thus maximizing potential cornering speed.

TRACK-OUT POINT

This is the point at which you exit the turn with the car being straight and accelerating towards the next turn.

At AMG Driving Academy, the goal is to work on cornering technique and explore the car's limit and your limit by using the reference points to safely maximize the corner radius and ultimately speed. The wise approach is "slow in/fast out" on the track or, more realistically, "slow in/safe out" on the street.

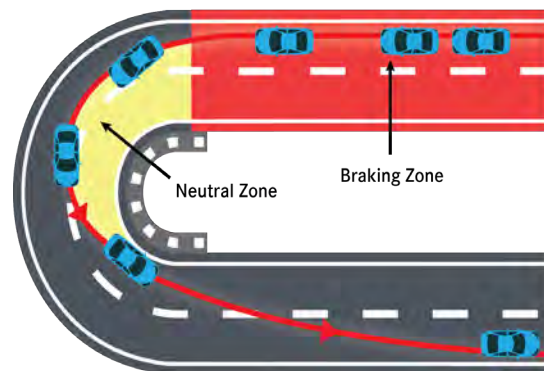
This can prove to be valuable training if your intention is to get involved in competitive racing or if you just want to make your daily driving smoother and more enjoyable.



Cornering Technique (cont.)

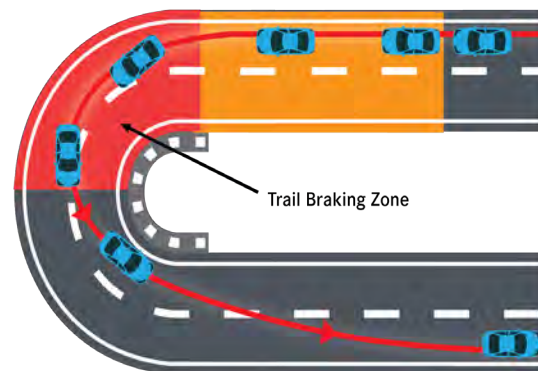
STRAIGHT-LINE BRAKING ZONE

A vast majority of your braking should be done in a straight line, where 100% of the tires' ability is available and can be maximized. It is important to get to the optimum brake pressure as soon as possible. This will lengthen your throttle time—and “he who goes the fastest for the longest wins.” Try and remember the old adage, “slow into a corner, fast out of a corner.”



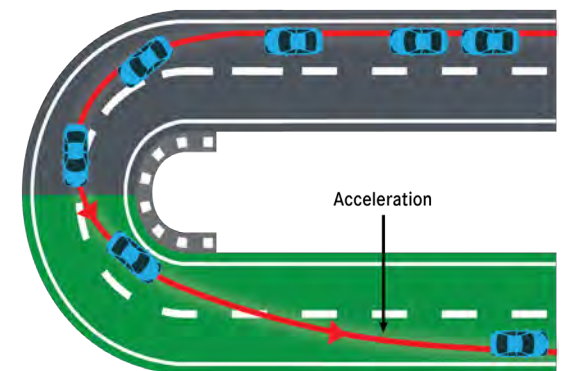
TRAIL BRAKING ZONE

As our turn-in cone approaches, you need to share some of the tires' grip between braking and steering. If we are going get to the apex, we need to “trail” the brake off, in direct response to the input level of steering. The car's speed will have lessened and your speed is going to be found by maximizing your radius. It's time to transition to the throttle. Find the accelerator, but don't turn it on like a light switch! Be patient for the sight picture to develop. Your eyes should have the track-out in sight.



ACCELERATION ZONE

Once you have decided that your line and speed give you the desired radius to the trackout, the throttle should begin to increase. Squeeze the accelerator down; once you have started to apply the throttle, try not to relinquish the rpm with a “lift” to correct a mistake late in the corner. If you pinch the wheel or have to give up throttle on the way out of a corner, you made a mistake on the way into the corner.

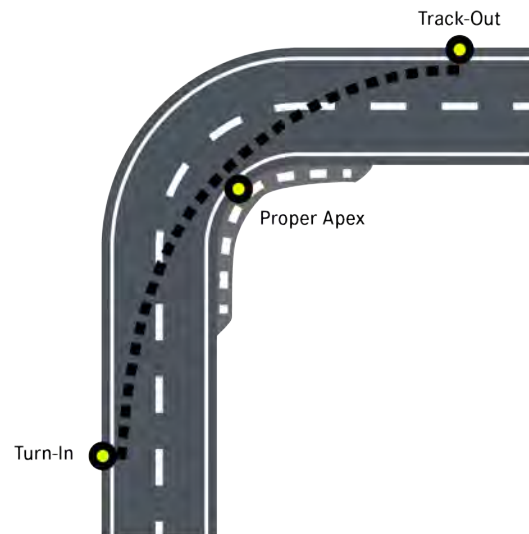


The Racing Line

The radius of an arc and the maximum speed on that arc are directly related.

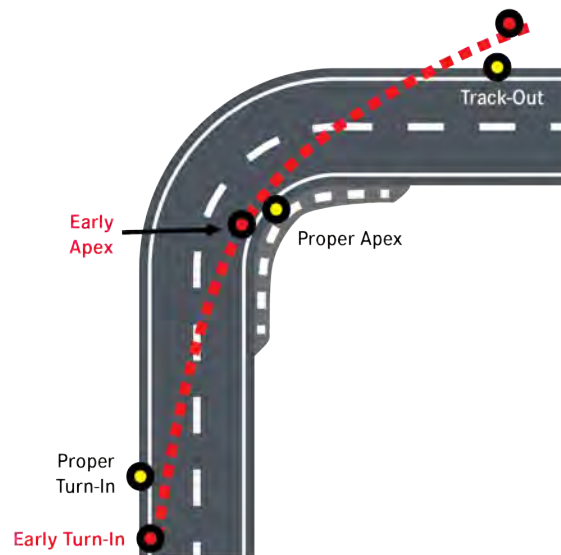
PROPER LINE

The biggest radius available in a corner is a smooth arc connecting the turn-in point, the apex and the track-out point. Since the line ultimately determines both cornering and straightaway speed, it is the fundamental building block of a good lap. Remember to use your eyes and look ahead and locate the reference points.



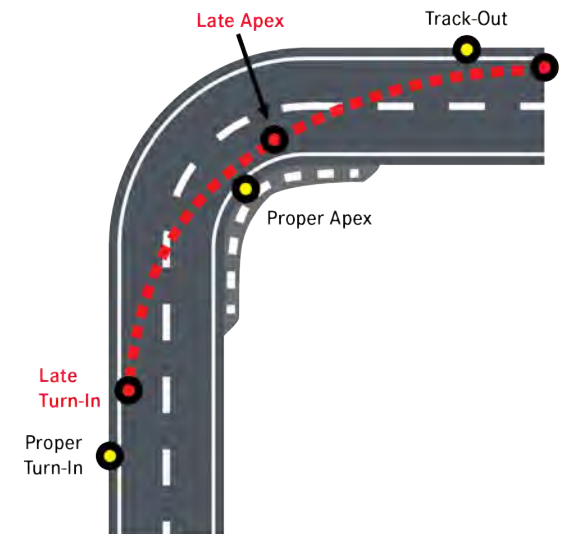
EARLY TURN-IN

Turning before the proper turn-in point causes an early apex and requires adding more steering and or slowing after the apex, otherwise the result can be an off-course excursion.



LATE TURN-IN

Turning after the proper turn-in point leads to a late apex and slower speed at the apex. The primary symptom of the late apex is having racetrack left to the outside in the second half of the corner.



Type of Turns

CONSTANT-RADIUS CORNER

The first type of turn is a fairly simple consistent radius leading onto a straight-away. If you are on a racetrack, you would use all the track available and create the largest radius possible and maximum speed in the turn.



DECREASING-RADIUS CORNER (Greater Than 90 Degrees)

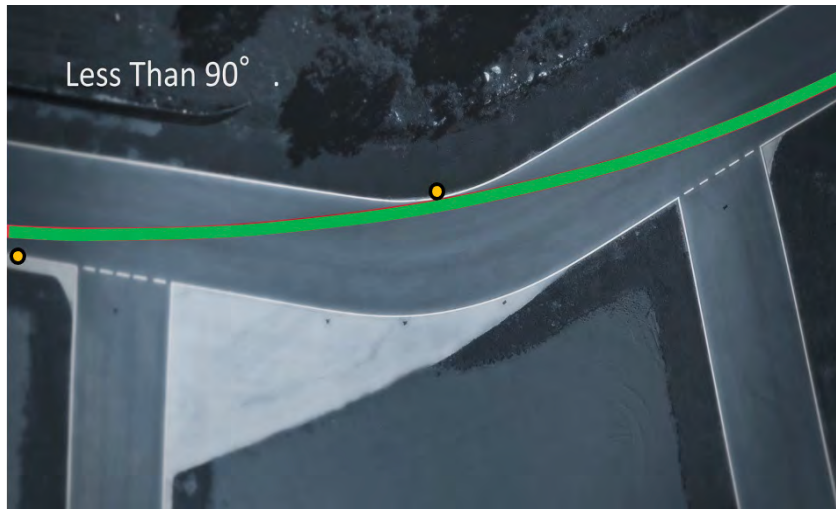
The second type of turn is one of the most troublesome we encounter on the highway or a racetrack: a decreasing-radius turn, such as a freeway on-ramp. The key here is to slow down, be patient and turn later, past the mid-point of the turn.



Type of Turns (Cont.)

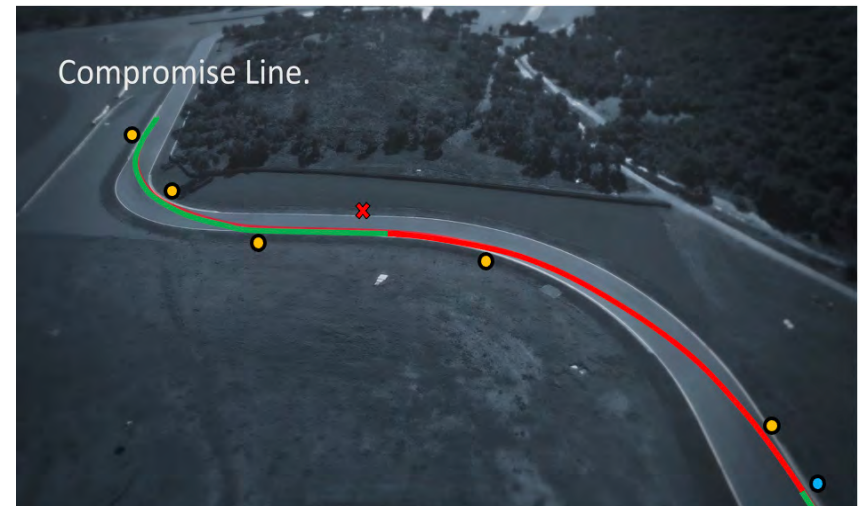
INCREASING-RADIUS CORNER (Less Than 90 Degrees)

The third type of turn is an increasing-radius, one that has a larger radius at the exit than entrance. This type turn requires an earlier turn-in than a constant-radius turn, which allows an earlier application of throttle and increased exit speed.



COMPROMISE CORNER

The last type of corner worth mentioning is a compromise corner, a combination of two corners that typically leads onto a long straightaway. The correct technique here is to give up speed in the first corner to maximize your speed through the second corner and onto the straightaway.

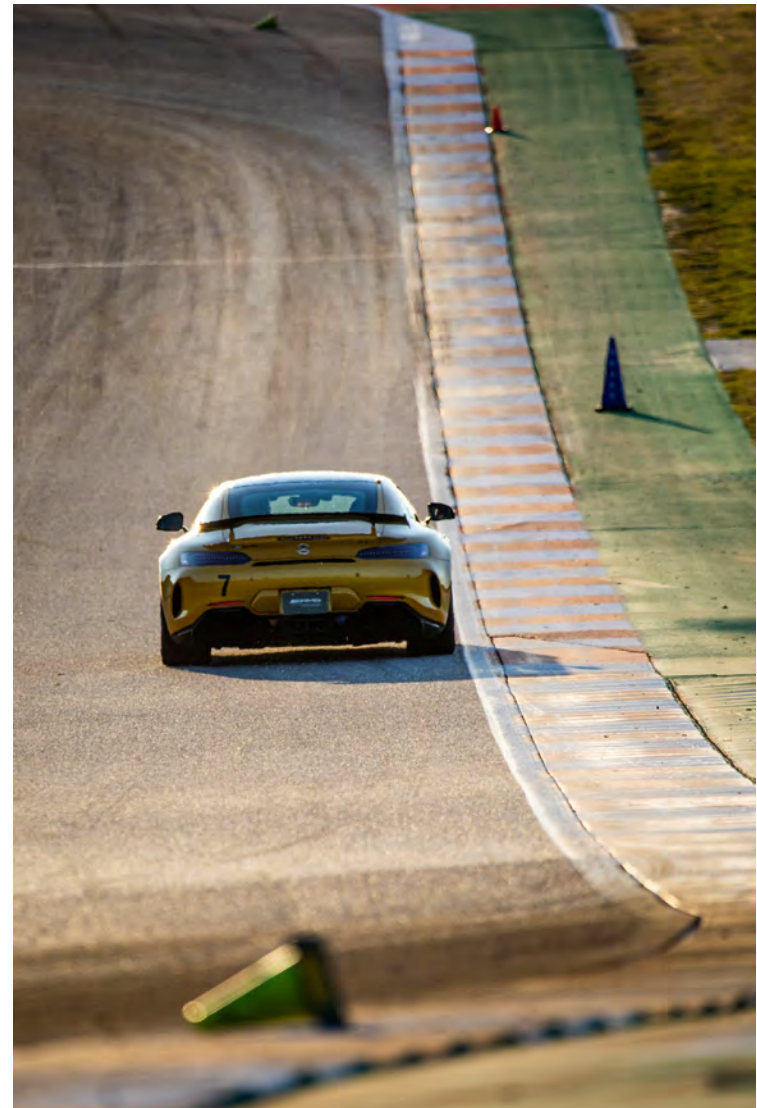


Putting It All Together

The Real World

The techniques discussed so far, used in conjunction with a very capable AMG vehicle, can save your life, help you to achieve a fast lap time on the racetrack or simply help you to enjoy driving more. Ideally, you will be sufficiently aware that you will see situations develop and respond before they become critical. None of these skills work in a vacuum. Ideally you will be sufficiently aware—almost paranoid in fact—that you will see situations develop and respond before they become critical. Remember, we cannot teach judgment—though we hope that, once you have experienced what can and cannot be done with a car, the correct responses will be made naturally. Good driving requires anticipation and a willingness to devote a high degree of attention to safety.

It also helps to understand that we all need to coexist when driving. Watch the pattern of traffic and try not to get into unnecessary conflict with your fellow drivers. Remember that an angry driver, whether on the racetrack or highway, can be a danger to everyone.



Exercise Module Learning Objectives

Skid Pad (Wet Cornering)

OBJECTIVE

Highlight the benefit of ESP and all of the safety the system provides. Experience feedback from vehicle to driver. Showcase the confident feeling provided as systems engage.

DRIVER FOCUS

Develop understanding of basic vehicle dynamics, including weight transfer, understeer and oversteer, correcting slides with CPR (Correct, Pause and Recover), and practice looking (eye work) through. At the dry end of the course, utilize the cones to practice proper cornering procedure and practice looking (eyework) through the corner to the track-out.

SYSTEM ACTIVATIONS

- Electronic Stability Program (ESP)
- Anti-lock Brakes (ABS)
- AMG Dynamic Select
- AMG Ride Control Sport Suspension



Exercise Module Learning Objectives (Cont.)

Timed Slalom Competition

OBJECTIVE

Use the cones as “gates” to create a zigzag course to showcase the maneuverability of AMG vehicles and test the driver’s ability to negotiate the course in the least amount of time without incurring penalties. Each cone that is hit during the competition phase will result in a time penalty that will be added to the driver’s score.

DRIVER FOCUS

Drivers must use proper vision and steering control to guide the vehicle through the course as efficiently as possible. Focus on maintaining visual attention throughout the entire exercise, making smooth steering inputs and managing load transfer of the vehicle.

SYSTEM ACTIVATIONS

- Electronic Stability Program (ESP)
- ESP Dynamic Cornering Assist
- Anti-lock Brakes (ABS)
- 4MATIC+ all-wheel drive



Exercise Module Learning Objectives (Cont.)

Drag Race / ABS Brakes on Lane Change

DRAG RACE / ABS BRAKES ON LANE CHANGE OBJECTIVE

Incorporate various vehicle systems and several driver techniques during a very dynamic exercise. Highlight AMG vehicles' ability to accelerate, brake and maneuver.

DRIVER FOCUS

Fine tune your reaction times. Maximize brake application by using proper seating position. Develop eye work as we start to emphasize the importance of looking where you want to end up.

SYSTEM ACTIVATIONS

- Electronic Stability Program (ESP)
- Anti-lock Brakes (ABS)
- 4MATIC+ all-wheel drive
- Air Body Control Suspension



Exercise Module Learning Objectives (Cont.)

Lead/Follow with Line Technique

LINE TECHNIQUE OBJECTIVE

Learn the fundamentals of cornering, from entry to apex to track-out, and how to identify the proper line. Begin to work on the different types of corners, understanding their differences and exploring the car's limits.

DRIVER FOCUS

Understand the transition between corner segments: braking, turning and accelerating. Particular attention will be paid to reinforcement of the importance of hand position, eye work, control coordination and smoothness.

SYSTEM ACTIVATIONS

- AMG Dynamic Select
- AMG Ride Control Sport Suspension
- Active rear-wheel steering
- Electronic Stability Program (ESP)
- ESP Dynamic Cornering Assist



Exercise Module Learning Objectives (Cont.)

Lead/Follow Sessions

LEAD/FOLLOW OBJECTIVE

Put all the basic training skills together for a one-of-a-kind experience: a structured lapping session.

DRIVER FOCUS

Apply all the basic fundamentals. Learn the racing line, proper cornering techniques, eye work, footwork, hand position and concentration.

SYSTEM ACTIVATIONS

- AMG Dynamic Select
- AMG Ride Control Sport Suspension
- Active rear-wheel steering
- Electronic Stability Program (ESP)
- ESP Dynamic Cornering Assist



Glossary

APEX

The clipping point on the inside of a corner where the car is at the correct angle for a perfect exit onto the next section of the track.

AQUAPLANE (HYDROPLANE)

In wet weather, tires can lose contact with the road by “going up”/ riding up on top of the water.

AUTOCROSS

A miniature racetrack, often set up in a parking lot with cones.

BRAKE POINT

A specific reference on or next to the track that drivers use to start the application of brakes. Smart drivers start with a conservative brake point and move it closer to the corner until exit speed is compromised.

“BREATHING” THE THROTTLE

A lift (in varying degrees) off the throttle to neutralize understeer.

COMMAND FLAGS

Flags requiring action on the part of the driver.

CONTACT PATCH

That part of a tire that is in contact with the road at any one point in time.

CORNER ENTRY

The section of track between the brake point and where throttle application starts.

CORRECT

The first phase in handling a slide (CPR) is “Correct.” The driver looks where he would like to go and turns the steering wheel toward the direction in which the rear of the car is sliding.

CPR

A skid-control technique involving Correct, Pause and Recover.

EARLY APEX

An early apex requires additional steering input beyond the clipping point of a corner. This is generally the most common line mistake, but “early apexing” can be used if there is an increase in elevation and/or cornering grip after the apex.

EXIT SPEED

The speed of a car at the track-out point of the corner.

FAST HANDS

Moving the steering wheel quickly.

FLAGS

Used to communicate with the driver.

GRIP

The traction of tires in braking, turning and accelerating. Generally measured in units of “G” (g).

LADDER SYSTEM

AMG Driving Academy’s unique system that can take drivers from a driving school all the way up to motorsports’ top ranks.

LATE APEX

A clipping point on the inside of a turn that permits a decrease of steering angle during the second half of a corner. Generally used to permit acceleration, especially if grip is decreased for any reason in the last part of a turn.

LEAD/FOLLOW

A method used to learn the racing line where the driver follows an instructor around the racetrack.

LIMIT

The absolute maximum of the car’s capability.

LINE

The optimum path around the racetrack. The line can vary with track conditions and the type of car being driven.

LOOSE

Synonymous with oversteer.

LIFT

Coming off or reducing throttle.

LOAD TRANSFER

The change in the vertical downforce on a tire that results from braking, turning or accelerating.

MAINTENANCE THROTTLE

Throttle application intended to maintain the current speed of the car and, thereby, settle the balance of the chassis.

MODULATION

Changing the pressure on the brake or throttle in an effort to keep the tires near, but not over, their traction limits.

OVERSTEER

Synonymous with “loose,” when the rear tires are operating at a greater slip angle and working harder than the front tires (i.e., the rear of the car is sliding sideways).

PAUSE

During a skid, the moment when the movement of the rear of the car toward the outside stops. The springs are about to rebound and transfer weight toward the inside tires. This precedes the Recover phase of CPR.

PIT LANE/HOT PITS

An area adjacent to the racetrack where cars are worked on during practice, qualifying or a race. “To pit” means to make a pit stop.

RECOVER

Recover is the third phase of skid control (CPR). As a slide stops, the outside springs unload, transferring weight to the inside tires. Good drivers know that they must straighten the steering wheel to prevent a second-reaction hook-slide.

REFERENCE POINT

Any point on or beside the racetrack that a driver uses to trigger some action; turning in, apexing, brake application point, etc.

SKID PAD

A piece of pavement used to measure a car’s cornering capabilities, often wetted down to help develop a driver’s car control.

STRAIGHT (STRAIGHTAWAY)

Self-explanatory, except that if the portion of the circuit can be driven as fast as the car can go, the road doesn’t necessarily have to be perfectly straight to be considered part of the straightaway.

THROTTLE

The gas pedal.

THROTTLE APPLICATION POINT

The point in a turn where a driver begins to apply power to drive away from the corner.

TRACK-OUT

The point that the car touches the outside edge of the road at the exit of a corner or the point in a corner when the hands are straight and there is no cornering load.

TRAIL-BRAKING

Combining the car’s braking and turning abilities simultaneously in the area beyond the turn-in point. This is a very efficient use of a tire’s traction capability and enables the driver to safely brake later. It also helps the car turn into a corner.

TURN-IN

The point at which the driver first turns the steering wheel, transitioning the car from the straight into the corner.

UNDERSTEER

Synonymous with “push” and “tight.” The slip angle of the front tires is greater than the slip angle of the rear tires when the car is cornering at the limit. The car is turning less than the steering input or radius would dictate.



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