

## **Your Day at Connecticut Valley Chapter's Driver's School**

**To ALL Students attending Connecticut Valley Chapter's driving school.** The following is a general guide of useful information and an outline of what you need to know and will be learning at our driver's school.

### **NIGHT BEFORE THE EVENT**

Get plenty of rest (and no liquor/beer). Remove all unnecessary items from your car (floor mats, all of those loose items in your glove box, etc.) Load up your car so as not to rush in the morning. Please remember your helmet, your COMPLETED Pre-tech Inspection Form, and your Confidential Medical Form, which must be put in a sealed envelope with your name on the outside. Also, any special waiver form that may apply (Convertible Waiver for Advanced Students and Instructors ONLY, or Minor Waiver form which must be signed by BOTH parents AND NOTORIZED, or signed by both parents and directly witnessed at the school by the event Registrar.) Bring a tarp or a large Rubbermaid type storage container to protect your gear in the pits. Set your alarm just a little bit earlier to allow for the unexpected.

### **THE BIG DAY**

Use your driving time to the track to mentally prepare for the day. You will need your full attention for driving on the track. Make sure you arrive at the track with plenty (at least 3/4) of gas in the tank. Although gasoline is usually available at the track, it is racing octane and VERY expensive.

Remember not to speed on your way to the track. The police have their favorite places on Route 7 and love to wait for you!

Get to the track early. The gate is scheduled to open at 7:30, but often is opened earlier by track personnel. Getting there early gives you plenty of time to unload, register, get your car inspected, and set up your area in the paddock. The parking spot you pick in the paddock is where you to remove ALL loose equipment in your car. Empty your car BEFORE you get it inspected. Registration takes place in the second floor of the pit road tower. You will have to present your Driver's License, BMWCCA membership card, and the sealed envelope with your Confidential Medical Form at registration. Tech inspection takes place in pit lane. Bring your completed pre-tech form and helmet with your emptied car to tech inspection.

You will then attend the Mandatory Driver's Meeting. Check the day's schedule. You will attend classroom sessions as part of your learning experience.

### **BEFORE EACH TRACK SESSION**

- Check your oil level.
- Check your tire pressure. (Ask student's with similar cars what pressures they are running; typically 5 to 10 lbs. higher than on the street).
- Check your brake fluid. Brake fluid should be changed at least once per year,

whether you drive your car on the track or not.

- Check your head (not cylinder) to make sure you are ready!

Check your seating position. You should be able to rest your wrists on the top of the steering wheel without locking your elbows straight. This hand distance should allow you to rotate the wheel through any turn on the track. Reaching the gearshift and the pedals should not be a stretch. You should be able to depress the clutch pedal with your right foot while in your seat belt / harness.

## ON THE TRACK

Beginner and Novice driver's main objective is learning the line. Learning the line around Lime Rock is critical before you can attempt adding speed. Speed will only be achieved if you have properly mastered the line and are smooth in your execution when negotiating the turns. Please ask your Instructor questions. If you are not comfortable with how you are doing in a particular turn, ask for suggestions/comments.

## PASSING

Passing is only allowed in designated areas, and only when signaled by the driver of the car in front. A passing signal is made by putting the left hand out the window and pointing where you want the other car to pass. In General, the car in front of you will be on the outside of the track (left), holding its line, and you will pass to the inside (right), changing your line to pass. Watch your mirrors and let people pass if they are faster. Don't hold people up on the straights! If you find that you are driving in a group, pull into the pits and let the group go. You will learn a lot more if you are not following someone else's bumper.

## A FEW GENERAL TRACK REMINDERS

- BMW CCA Rules require that both driver and passenger side windows be fully down, and doors unlocked whenever the car is on the track. Sunroofs must be closed/latched.
- If you happen to go off the track, stay cool and drive straight off while slowing down (remember, "both feet in".) Do not attempt to drive back onto the track until you have slowed down; look to the corner workers nearest you for a signal that it is safe to reenter the track surface. Steering your car back onto the track at speed will most likely cause a severe spin and possible flip.
- Remember that you LOVE your car and are supposed to drive it home!
- You MUST report to the Track Steward in the Pit Lane at Start/Finnish if you go off the track.
- If you cannot drive back onto the track – STAY IN YOUR CAR until Lime Rock personnel get to your car to help you. Only leave your car if it is a danger to you (i.e. it is on fire!) If you MUST get out of your car, do not stand near it. Go BEHIND the nearest safety wall (Armco or Jersey Barrier). Stay behind it. Do not stand in front or sit on the barrier.

## THE DAY'S SCHEDULE

You are given a schedule for the day with your packet at registration. Know your schedule. Keep it with you. Listen for announcements. This is a tightly run event and you need to be on time for your assignments.

## SCHEDULE TERMS

**TRACK** This is your driving time on the track. Use it well.

**PIT** PIT means you should be getting your car in line, ready to pull into the Pit Lane to go on the track. You will be stopped in the False Grid area and someone will check that you haven't put anything back into your car, that you have your helmet, and that you are lining up for the correct run group. Watch out for people walking around: BE CAREFUL.

**CLASS** Attend your MANDATORY scheduled classroom sessions – attendance will be taken. Get all that you can out of your day at the track. The Classroom Instructor is there to help you improve your on-track experience. Ask questions. If you miss your classroom sessions, you will not be allowed to drive. NO REFUND.

All Instructors are introduced at the Mandatory Driver's Meeting. After the meeting, meet with your instructor and decide where you will meet before each session you will have on the track. Be in the staging area, ready to run, at least 10 minutes before your track time is scheduled to begin. Your car will be checked for any items that should not be in there. The False Grid Official will confiscate any loose items, and you will have to remember to retrieve them after your run group.

When the false grid official signals you to move into the hot pits;

- If your instructor is in your car, drive slowly and stage to your left, along the outside pit wall, in single file.
- If your instructor is not yet in your car, drive slowly and stay to the right, along the inner pit wall. Stop in a pit box, just before start/finish, and wait for your instructor there.

Cars coming off the track from the session before yours, will drive down pit lane in the center lane, and exit into the paddock. You will receive a signal from the Pit Out Official when you can enter the track for your session.

Do not hesitate when signaled by the Pit Out Official to enter the track.

## FLAGS

As you lap the track, you will notice flagging stations. Notice were all of the manned stations are located during your first couple of laps - they are your eyes around corners! The corner worker will be informing the drivers of anything up ahead of them that may cause them trouble. As a driver, you will appreciate the help you get from those at the flagging stations. The flags are displayed at each corner station and are in effect from that corner and until you reach a manned corner station that is displaying no flag or a different flag giving you other instructions on how to proceed.

**YELLOW:** Caution! No Passing! This flag will be pulled in after 2-3 laps, in case another incident occurs. *This does not necessarily mean that the situation has been cleared up.*

**STANDING YELLOW:** Indicates trouble on the course in the vicinity you are entering. Slow down and be alert. There may be a disabled car ahead off the driving line. There is NO PASSING under the yellow.

**WAVING YELLOW:** Means imminent danger. Get ready to avoid a serious hazard. A car may be disabled in the middle of the course and you will have to avoid it. This is a serious flag and needs immediate and complete attention.

**STRIPED YELLOW with RED:** This is a debris or slippery surface flag and something very upsetting is waiting on the track for you. If it is OIL or ANTIFREEZE, the flag should be waving and you need to slow down and get ready for a possible slide. A standing Yellow & Red usually means debris, such as dirt from an off course excursion, or a car body part is on the track and you are to be careful or it will make you its next victim. This flag will be pulled in after 2-3 laps, in case another incident occurs. *This does not necessarily mean that the situation has been cleared up.*

**RED:** Serious trouble! Do not slam on your brakes, but come to a controlled stop as soon as possible, and pull to the side of the track, off the driving line, within sight of a manned flag station, but still on the track surface. Do not move until signaled by a corner worker. Do not get out of your car. If you should be signaled to get out of your car by a corner worker or track official, get out and move *behind* the track barriers immediately. Track officials will not let the ambulance or fire truck onto the track until we have stopped all of the cars on the track.

**BLACK:** Either something is wrong with your car, or you are guilty of a rules violation. You must acknowledge the flag (in a friendly way!) and report immediately to the pit middle steward in pit lane, near the start/finish line in the hot pits. The worse the infraction, the longer we take to explain it, and the longer you will sit in the pits. The black flag and your car number will be displayed at Station 10 (just before you go under the bridge) on your left. It is very important that you move OFF LINE when you are shown the black flag - you could be leaking fluids onto the track surface.

**BLUE:** This is the passing flag. You will see this flag at Start/Finish and at any flagging

station before a straight where passing is allowed. It means there is a faster car behind you that you should let it pass on the Straight. It is used as an 'advisory flag', in case you are not aware of the car behind you that may want to pass.

**CHECKERED FLAG:** End of session. This flag will be displayed at the Start/Finish line. You should cool your car and brakes down by driving this 'cool down' lap at slower speeds (45-50 mph) and come into the pits. Be sure to use the PIT IN signal (a raised fist out the window, higher than the roof) starting at the bridge. DO NOT take a second cool down lap. Workers will possibly be on the track and the next run group is waiting for you to exit so they can have their time on the track.

## **DRIVING EVENT RULES**

Please read these items carefully. Safety is MOST important. Anyone deemed to be driving or behaving in an unsafe manner is subject to immediate ejection from the event. You get one warning, and you just got it!

### **GENERAL**

Adjust your speeds according to the conditions of the track (wet/dry/hot/cold). Be sure to check your tires, brakes, oil, and lug nut torque frequently. Having extra fluids and brake parts with you is advisable.

Before you enter the pit area, clear your car interior of all loose items. Check the door pockets, trunk, glove box, counsel storage, under your seats, etc. Remember that garage door opener on the visor, and the EZ Pass on the windshield! Remove hub caps, floor mats and check your car numbers to be sure they are securely attached.

HINT: Leaving hub caps, floor mats, and excess items at home gives you more time to relax and enjoy the day!

Comfortable, well fitting garments are recommended. Long pants and long sleeve shirts are mandatory regardless of the temperature. The pants and shirts must either be 100% cotton or wool, or of a fire resistant material such as Nomex, Kevlar, or PBI. Sandals, shorts, skirts and dresses are not allowed in the car or pits. Nylon or bulky jackets are not recommended, but we recognize that they may be worn OVER an acceptable long sleeve shirt ONLY in very wet or cold conditions. Thick soles on shoes and work boots should be avoided as they decrease your feel of the pedals.

## **STAGING, TRACK ENTRY AND TRACK EXIT**

STAGING: Enter the hot pits *only* after the false grid official signals *you* to do so.

- If your instructor is in your car, drive slowly (20 mph max) and stage to your left, along the outside pit wall, in single file.
- If your instructor is not yet in your car, drive slowly (20 mph max) and stay to the right, along the inner pit wall. Stop in a pit box, just before start/finish, and wait for your instructor there.

**ENTERING THE TRACK:** When the track opens for your session, go out in single file upon the Pit Out Official's signal and **KEEP TO THE FAR RIGHT** until you are into turn one, Big Bend. You must **NEVER** exit the pits and proceed across the track into the normal driving line - cars may be coming at full speed down the straight and you will not be able to get out of the way. Pulling out across the track will result in a **BLACK FLAG**. In all sessions, run the first few laps at reduced speed to gradually warm up your tires, get your oil up to temperature up and get yourself mentally re-acclimated to the track and the current track conditions. Listen to your Instructor!

**PIT IN:** After the checkered flag ends your session, cool down your car and brakes. After braking for Big Bend, you should do the remainder of the cool down lap slow enough that you don't need to use your brakes again until slowing for Pit In. Give your Pit In Signal (a raised fist out the window higher than the roof of the car) at the bridge after West Bend and stay to the right side of the track. Exit the track into pit lane at reduced speed. Pit lane speed limit is 20 MPH. Stay in the middle lane, between the pit boxes on your right and the left (pit out) lane. As you near the end of pit lane, put on your right turn signal so the Pit Out Official can verify that you are exiting pit lane into the paddock. Do not drop off your instructor until you are well into the paddock. The paddock has a counter-clockwise, one way traffic pattern **EXCEPT** for the short lane straight out of the pit exit. Cars exiting pit lane have the right-of-way at the pit exit and the paddock lane straight ahead. The speed limit in the paddock is 5 MPH. Follow the one-way traffic pattern in the paddock. Do not cut randomly across the area. Go to your paddock parking area and let your car cool down. Leave your car in gear. Do **NOT** set your emergency brake. Setting your emergency brake can cause your brake rotors to warp or allow chunks of brake pad material to bond to the rotor. Once parked, raising your car's hood is a good idea.

## ON THE TRACK

1. **Pass only in designated areas** (see chart, below). Be sure you have the time and the room before you initiate a pass. Wait for a passing signal from the car you wish to pass. No signal, no pass! You will get a **BLACK FLAG** if a worker sees you passing without first getting a pass signal.
2. **Watch your mirrors!** The driver being overtaken **MUST** give a "pass signal" to each and every passing car. A passing signal is made by putting the left hand out the window and pointing where you want the other car to pass. This is usually to the right at Lime Rock.
3. **Don't group together!** If a line starts to form, enter the pits, and then re-enter the track after a pause to give you a gap away from the line of cars. Remember, the pit lane speed limit is 20 MPH. Be careful!
4. **Concentrate, concentrate.** Vehicles at speed need smooth, decisive and balanced maneuvers. If you are frazzled by so much input, you are going too

fast. The key to performance driving is balance. Keep to "the line" and feel what your car is telling you.

5. **Flags are extremely important.** That is why we review them in this document. We will go over them again at the driver's meeting!
6. **Track drivers adage:** If you spin, BOTH FEET IN (brake and clutch). When in doubt, BOTH FEET OUT. This will make more sense after your classroom sessions. Don't forget, if you miss your classroom, you will miss track time.

## **PARTICIPANT PASSING PROCEDURES**

### **GETTING PASSED**

When it becomes apparent that someone wants to pass, stay on line, give a clear, specific passing signal – a point of the index finger, over the roof of the car to signal which side they should pass you on. At Lime Rock, passing is almost always done on the right (opposite of normal street driving).

- Once the passing car pulls out from behind you to pass, lift slightly off the throttle to allow the pass to be completed quickly, this is very important when it is a car with less power than yours. **DO NOT SLOW DOWN QUICKLY** as the person passing you may not expect such a quick maneuver, and may run up your bumper.
- Do not resume hard acceleration until the other car has completed the pass.
- You must give a clear signal to each car passing you. Even if there are multiple cars lined up in a row.
- The car being passed should remain on the line. The overtaking car should go off-line to pass.
- Be courteous – let those faster cars get by you.
- If you are faster on the straights but slower in the turns, **LET THE OTHER CAR BY** – they will be away from you after the next turn.

### **PASSING**

- After receiving the appropriate signal, check your mirrors, pull off-line and accelerate past the car you are overtaking.
- Be sure to make a clean, complete pass and do not come back onto the line until the lane is clear.
- Do not pass too close to the braking area at the end of the straight. All passes must be complete before the braking zone.
- **DO NOT PASS WITHOUT A SIGNAL. NO SIGNAL=NO PASS. YOU WILL BE BLACK FLAGGED FOR PASSING WITHOUT GETTING A SIGNAL FROM THE CAR AHEAD OF YOU.** Repeated Black Flags will result in the end of your driving day with Connecticut Valley Chapter. **NO REFUNDS!**
- If somebody is not letting you by, do not tailgate. Give them some room and flash your lights to let them know you would like to pass. If you still don't get pointed by, pull into the pits, drive slowly down pit lane (speed limit, 20 MPH) to pit out,

and wait at pit out for a few seconds for clear track. By waiting for a few seconds at pit out, you will not quickly catch up to the same car. If this happened repeatedly with the same car, report it to the Official at Pit Middle.

- ALL PASSES MUST be completed by the braking zone at the end of the straight.
- NO PASSING IN THE CORNERS OR UNDER A YELLOW FLAG CONDITION. If you continually pass without a signal, pass too late at the end of a straight, or pass in no-passing areas, you may be told you are done for the day.

### PASSING AREAS BY RUN GROUPS

RUN GROUP	FRONT STRAIGHT	NO NAME STRAIGHT	BACK STRAIGHT
Beginner (Red)	X	X	
Novice (White)	X	X	
Intermediate (Yellow)	X	X	X
Advanced (Green)	X	X	X

### DEFINITIONS

**Acceleration Point:** Point at which throttle is applied.

**Apex:** The point in a turn where the car comes closest to the inside edge of the track with respect to entering and exiting the turn.

**Balance:** A car is said to be balanced, or neutral, if neither oversteer nor understeer dominate the car's handling. A car may stay neutral under a wide range of inputs, but may be forced into an understeer or oversteer condition.

**BOTS:** A straight line braking system of driving. BOTS stands for **B**rake, **O**ff (the brake), **T**urn, **S**queeze (on the throttle), where braking is completed before turning into the corner, followed by a progressive squeeze on the throttle to accelerate through and out of the corner. The point where the driver turns into the corner is the slowest part of the turn.

**Brake Point:** Point on the track when the brakes are applied.

**Camber:** The angle created between a perpendicular and the horizontal plane of the track is referred to as positive, zero, or negative. Examples: A banked turn as having positive camber, a negative, or off camber turn where track slopes away or to the outside of the turn.

**Contact Patch:** The footprint area of a tire, where the rubber is in contact with the road.

**Drift:** When a car is moving in a direction different from the front/rear centerline. If the drift angle exceeds the tire slip angle it is called a slide or skid.

**Driving Line:** The car position around the track which is fastest, determined by where the car brakes, enters the corner, apexes, and exits (tracks out) for each of the corners.

**Early Apex:** Turning in towards the apex with a shorter arc from the turn in point, or turning in to a point that was visually judged closer to the turn in point. Earlier apexes usually cause an earlier track out point and a car angle that is pointed more towards the outside of the turning arc from the apex. If the car continues to accelerate without correction, it will run off the track, outside of the turn.

**Friction Circle:** The dynamic forces between adhesion limits, weight transfer and motion in all horizontal directions.

**Heel & Toe:** Using the right foot on the brake and accelerator at the same time to brake the car and raise the engine RPMs to downshift to the next lower gear before turning in. The front part of foot can be tipped or rocked to the right from the brake onto the throttle pedal.

**Late Apex:** Late apex is turning towards the apex with a wider arc than it looks visually. Delaying the turn in "late" so the arc through the corner after the apex allows the track out point to be further around the turn. The car angle at the track out point is more aligned under power, but the track out point is later. As a result, the car will not be able to attain as high a speed as it would have if it apexed correctly. (A late apex is generally safer than an early apex.)

**Left Foot Braking:** Using the left foot to apply braking while under some degree of power in the corner to stabilize the car. Left foot braking can induce understeer.

**Neutral Steering:** Car turns as desired.

**Oversteer:** The rear end of the car over rotates in the corner, slides out usually towards the outside of the turn. The rear tires are losing traction before the front.

**Slip Angle:** The difference between the direction in which the tire is pointing and the direction the tire is moving.

**Smoothness:** All car control inputs – steering, braking, shifting, and accelerating are done with minimal disruption to weight transfer.

**Threshold Braking:** Very hard application of the brakes just before the threshold of wheel lockup, or losing traction.

**Track out:** The point on the track with respect to exiting a turn, where a car is no longer in the arc of the turn being exited. At this point, the car will either be going straight, or initiating turn in to the next turn.

**TTO:** Trailing Throttle Oversteer. Oversteer due to lifting off the throttle while turning.

**Turn In Point:** The location on the track where the driver turns the steering wheel to initiate a turn, with respect to entering a turn.

**Understeer:** Car under rotates in a corner, and slides straight, “pushing” or “plowing”. The front tires are losing traction before the rear.