

DRIVERS SCHOOL INFORMATION AND CHECKLIST

If you have considered attending an SCCA Drivers School here is the guideline of what you will need to know and do.

OBTAINING YOUR NOVICE PERMIT

Any SCCA member, who possesses a current SCCA Membership Card, is 18 or more years old and holds a valid operator's license in the state of residence may apply for a Novice Permit. The following 4 items are required to have a Novice Permit issued to you.

1. An SCCA Physical Form completed by YOUR doctor and signed on both sides.
2. Two (2) passport size photos.
3. A photocopy of your current membership card.
4. Your driver's license.

NOVICE PERMIT

Your Novice Permit serves as your license. You will be required to present it at each event until you receive your Regional License. **DO NOT LOOSE IT.** If you do you will have to do everything over. Your Novice Permit will go into effect on the same date as your membership. You may renew your Permit one time at the same cost as a new permit.

If you completed an SCCA approved professional school, you should staple a copy of your certificate in your Novice Permit.

MINORS (16-17 YEARS OF AGE)

A SCCA member, who is over 16 years of age, holds a valid Operator's Permit in his/her state of resident that allows the solo operation of a motor vehicle, may apply for a Novice Permit to the National Office **ONLY.** Only the National Office may issue permits to minors.

GENERAL COMPETITION RULES (GCR)

This should be the **FIRST** thing that you get on the phone and get coming to you. You can order your copy of the GCR from the National Office, or the Merchandise Chairperson of your **REGION.** When you receive it thumb through it and get to know it. The GCR contains a lot important information about how our Club works, rules, safety equipment and procedures.

ENTRY FORMS

Entry forms should be filled in complete and mailed to the Registrar with funds enclosed. If you do not receive an entry form, call Roebing Road Raceway or go on the Internet at www.roebingroad.com.

RACE CAR

Obviously one of the top priorities is to have a car. Your car must conform to one of the SCCA race classes as outlined in the GCR. If you have any doubt as to your car meeting the regulation, contact your Region Chief of Technical Inspection. You will find a phone number listed in the club publication.

If you are renting a car for school, you should make arrangements as soon as possible. Be sure that you understand what the rental includes, i.e.; track support, fuel, tires, etc. BE SURE you are aware of the owner's position on damage to the car. There are a number of racers that are willing to rent their cars. Be sure that all conditions of rental are in writing.

PERSONAL SAFETY EQUIPMENT

The following is a list of the REQUIRED SAFETY EQUIPMENT. You will need to refer to the GCR, that you ordered, to get specific requirements for equipment.

1. SAFETY HELMET – Must have a SA 2000 or newer safety rating.
2. Fire Restraint Driving Suit – SFI/5 or better rating.
3. Nomex underwear with your Drivers Suit, optional if you have the correct rated suit. See your GCR.
4. Nomex gloves
5. Nomex socks
6. Nomex hood if you have facial hair.
7. All leather shoes or Nomex shoes – no vinyl or nylon.

CREW

You will need to line up one or two crew volunteers. You will be too busy to spend much time with your car without missing something. While you meet with your instructor, your crew should be checking tire pressure, torque the lug nuts; check the oil, coolant and other fluids. The crew should be aware of your needs. It is vitally important when you get out of your car to get cooled down and get fluid into your system. NO CARBONATED BEVERAGES; WATER OR VARIOUS SPORTS DRINKS ARE BEST.

SCHOOL PREP

It is a good idea to pack all your gear as early as possible to avoid the last minute forgetfulness that we all suffer on occasion. Be sure all your paper work is in order; you have your Novice Permit, GCR, and the car's logbook, if it has been raced before. All your DRIVER'S EQUIPMENT checked and the crew confirmed.

THURSDAY – ALL STUDENTS must have completed registration on Thursday morning as classroom starts at 2:00 PM.

FRIDAY - ALL DAY. On Track Sessions – now you will need your crew. There will be possible classroom session.

SATURDAY – ALL DAY. On Track Sessions – make sure your crew is still available. Review of the progress of your on track sessions with your instructor.

SUNDAY – FULL DAY on the track with practice starts and five lap races at the conclusion of the day.

If you complete the course, you will be ready for regional racing at the next event. Remember you instructor has given up a weekend to teach as much as possible. Listen to what he has to say. It will be important to you in the future. Remember all are instructors and workers are volunteers.

DRIVER'S SCHOOL SYLLABUS
BUCCANEER REGION
SCCA, INC

Welcome to the Buccaneer Region Driver's School. It is our objective to help you become the best-qualified driver possible. We will show you how to drive safely, how to be competitive, and how to finish the race with your car and your body in good condition. Competitive driving requires a delicate balance between your driving technique and the car's performance capability, which is only achieved through careful practice and concentration.

No person is born with knowledge of how to race. Some people have a better set of physical skills necessary to be successful at racing, but without acquiring the knowledge and practicing extensively, they will not do well. We offer opportunity, knowledge, and practice at our driver's school, three essentials necessary to sharpen the physical skills, and urge you to take advantage of them.

We are proud that our instructors are "teachers" and urge you to take advantage of their knowledge and experience for your benefit. They have many hours of racing-specific training and driving experience under racing conditions against the best competition the sport offers. To make effective use of the school you must ask questions of them, watch, listen, absorb, and practice/practice/practice? Instructor assignments are made without favoritism and are usually made based on similar car/class experience of the instructor/student.

I. ELIGIBILITY AND REQUIREMENTS

To attend a Sports Car Club of America (SCCA) Driver's school an individual must:

- Be 16 years of age or older. However, individuals under the age of 18 years must apply directly to SCCA National Office for a Novice Permit. 18 years of age and older may apply for a Novice Permit from his or her Region of Record. Novice Permits may be requested from the Buccaneer Region by contacting Faye Craft. (The National Office may also issue permits).
- Hold a valid operator's license in the state of his/her residence
- Be a current SCCA Member
- Hold a current SCCA Novice Permit and Log Book
- Own or have use of a car prepared to SCCA safety specifications
- Apply to the school.

You must apply for SCCA membership, if you do not hold a SCCA membership card. The card or a valid membership number must be presented when you appear for school registration. It usually takes three to four weeks to obtain a membership card, so apply early.

If you do not have a current SCCA Novice Permit, contact an official of your home region, or Faye Craft @ 904-771-4208. Again, allow plenty of time, since obtaining a Novice Permit involves having your doctor perform a physical examination using the prescribed form. Your Novice Permit must be turned in when you register at the beginning of the school.

II. CAR PREPARATION & SAFETY EQUIPMENT

Bring your car, PROPERLY EQUIPPED FOR RACING, to the course on the first day of school. This means that everything should be already installed and tested. Remember that safety items must meet the Safety Standards of SCCA or you will not be permitted to use the vehicles. Painting, artwork/color schemes, and other “dress up” work should be completed prior to coming to the school. If you are building the car, a suggestion is to use “mild” parts in the engine, etc., for longevity and reliability. Many students fail to obtain a satisfactory rating at schools mainly due to breakage or poor car preparation and therefore lose required track time. You will find that it takes longer than you think to get a car in racing trim and the school is not the place to debug or build it. If you need an annual tech inspection, please try to have this done prior to coming to the track.

Buccaneer Region has school classroom instruction beginning at 2:00 on Thursday. Your car must go through Tech on Thursday before Classroom Instruction.

A careful application of the Tech Inspection Check List is absolutely essential. The inspection for new cars and novice entries will be strict in every detail. Pay particular attention to the safety items, as the car will not be allowed on the track until it conforms to the rules. RACING IS INHERENTLY DANGEROUS, but we limit the danger as much as feasible by strictly enforcing the safety rules both in car preparation and on the track.

Your crew is an important part of any racing team. This is especially true for a school weekend. At the school you need to be able to concentrate on learning how to become a racer, or if you are an advanced student, to become a better racer. All of your efforts and attention should be geared towards instruction and practice. We consider it critical that you have a least one-crew member with you to MAINTAIN AND WORK ON THE CAR while you are with your instruction team. This is a good time to turn over responsibility of Crew Chief to those people that have helped you get this far. Let them be responsible for tech inspection, gas, air, water, lug nuts, adjustments, schedules, getting the car to the false grid, etc., etc., etc., while you concentrate on learning. Crews who are members of a team and share in the responsibility and control of the effort share part of the fun of SCCA Club Racing.

III. DRIVER PREPARATION

READ THE RULES. A copy of the GCR should be in your possession. These rules cover all aspects of racing as conducted by the SCCA and its Regions. Included is information on car preparation for competition and what is necessary to pass technical inspection. Of particular importance to you at this time is the section explaining the meaning of flags used to control traffic on the track or to inform the driver of conditions on track of which he needs to be aware and also describes certain on-course driver procedures. This Section MUST BE THOROUGHLY STUDIED prior to school. You need to completely understand and memorize this section. On-course decisions may have to be made in a split second that will impact directly on your safety and the safety of other competitors and course workers. Your study and

understanding of this Section will undoubtedly impact on the quality of any decisions (s) you may have to make under racing conditions.

During the school, instructors will grade you on the seven items discussed below. We offer these discussions as a guide to better study and understand, not as a definitive “last word” on each subject.

1. Discipline is required for safe and effective schooling and ultimately for top performance in competitive driving. During school you will be observed and graded as to your compliance with all rules, including flags, course control, punctuality, and your ability to absorb and apply instruction and suggestions provided you. Your instructors are unpaid volunteers that have spent their time and absorbed the costs of their participation in the school in order to help you to join SCCA Club Racing with the maximum safety and earliest competitiveness. Your self-discipline will make their job easier and will allow you to absorb the maximum from their instruction.

2. Judgment, good judgment, is the proper maintenance of control of yourself and your car under the stress of competition. It is governed by the human characteristics of personal maturity, knowledge, and experience. Drivers who demonstrate immaturity or personality defects that inhibit good judgment will not pass the school. Keep in mind that student errors of judgment occur naturally due to inexperience and lack of knowledge. However, the student must demonstrate improvement during their time at the school to be graded satisfactory. Continuous and/or flagrant misjudgment in situations and performance will be graded unsatisfactory and may be the cause of disapproval for a license.

3. Technique is concerned with cornering, braking, shifting and all the other facets of proper control of the racecar. You will be carefully observed on everything covered in Section V (Fundamentals of Car Operation) of this syllabus for evaluation of your development of “Technique.” The average student should show increased competence through the hours of the school. Consistency of performance is judged with due consideration for the car, its level of preparation, and your state of experience.

4. Attitude is comprised of three elements: cooperativeness, receptiveness, and competitiveness. Without the full cooperation of the student, even the very best instruction goes for nothing and the lack of cooperation may interfere with the learning process for other students. Receptiveness is a state that says, “Open your mind.” If in doubt about what is going on, ask. Don’t challenge, and then LISTEN! Competitiveness is a necessity for racing but the rules of fair play and courtesy still apply. In fact, those without a strong competitive motivation probably should not be racing. However, this is Club Racing among friends and fellow club members, and you can demonstrate a positive attitude and strong competitiveness without showing a careless disregard for other competitors.

5. Reactions are perhaps the most difficult of all student attributes to judge. The student should be perceptive of: 1) safety practices, 2) obedience to flags and signals, and 3) reactions to traffic situations. There is a significant difference between a driver performing within the level of his/her competence and one driving “over his head.” Invariably, the

driver's reaction to traffic and race situations is an interpretation of the developing situation augmented by planning.

6. Courtesy is the essence of course manners and good sportsmanship. None of us want to race with unsportsmanlike competitors. Courtesy demands that competing drivers give proper clearance to another who is first in the corner. At this stage of training, a student should not be practicing higher level "tricks of the trade." Moves such as bluffing, blocking, squeezing inside in a corner, "banzai" passing, and extremely late and trail braking should be left for later. At no time is bumping, reckless or dangerous driving permitted. We are stressing courtesy now because the student will be faced with the "gray area" of road racing manners later. "Good Guys" do and have been winning races for many years.

7. Comparative Lap Times are a function of performing within one's capabilities and understanding and using the capabilities and minimizing the limitations of the car during competition. By putting a clock on a group of cars on track you will almost always see that the leader (s) is running consistent lap times while the back markers are most likely to have erratic lap times. The leader didn't start out turning great times but worked up to them through practice and preparation. In this school we expect you to show progress toward approaching the capabilities of the car via decreasing lap times. This does not mean that each lap must be faster than the last one but, each session will do more for you in improving your times (and in winning races) than any one wild "hot lap." Check the results sheets of almost any race anywhere and you will often find that the winner may not have posted the fastest race lap but usually are more consistent in their times.

IV NOVICE INSTRUCTION AND COURSE PROCEDURES

The intention of this phase of your training is to take advantage of the experience of the instructor to whom you are assigned. Before you even get in your racecar, your instructor will have taken you for a familiarization ride around the track, probably in his/her street vehicle. This session is one of the few times that you can actually ride with an instructor who will be demonstrating proper lines, discussing braking points, pointing out turn-in areas, identifying flag stations, etc. in a non-threatening environment, i.e. low speeds. For first time students, it answers such basic questions as what the track layout is and what to expect when they first go out. More experienced students can use the time to ask questions and observe some of the nuances of the instructor's style. Each instructor has a slightly different technique, but they all have one thing in common; they can get around the track quickly.

Several things that you should pay attention to early on in your career so that they become second nature to you are as follows:

1. ENTERING AND EXITING THE TRACK

The only entrance to the track at Roebing Road is from Pit Lane Exit. At the beginning of practice all cars line up on the False Grid behind the pit wall and are moved onto the track by the Grid Marshals through the pit exit. During a practice session, entrance to the course from the paddock and/or pits is permitted only with direction of the Grid Marshal at Pit Out. All

actual races start at the Start-Finish Line across from the track from under the Starter's Stand. Timing and Scoring is located at the Tower at Start Finish Line.

There is only one exit from the track to the paddock during practice or race sessions and that is the Entrance to the Pits at the opposite end of Pit Lane (just before you come onto the front straight). As you exit Turn 6 and come into the short straight before the turn into the long front straight, you should hold one arm in the air to signal your intent to pit and give any cars following you a place to pass. When practical, move to the right side of the track, reduce speed and turn in at the Pit Road entrance. DO NOT slow down on the left and then cut across the track towards the pit lane at the last moment! It would be better to make another complete lap than cause an accident. THE PADDOCK ENTRANCE AT TURN FOUR (4) IS TO ONLY BE USED WHEN A SESSION IS OVER OR IN AN EMERGENCY. EVEN THEN, ONLY DO SO AT THE DIRECTION OF THE CORNER WORKERS.

2. OFF TRACK EXCURSIONS

When you have the misfortune or make a mistake and spin, slide or run off the track you come under the control of the corner flag persons in that area. If your car is still operable, take a moment to collect yourself, collect the car, and look for the flag person and OBEY THE CORNER WORKERS SIGNALS!! As stated in the GCR, you can only reenter the track upon their signal. If your car is disabled, exit the car in the safest way possible and obey the directions of the corner workers. Obviously, the reason for this rule is for safety reasons. The corner workers have the best view of the entire situation affecting you plus having a communications network that gives them a full perspective as to what else may be occurring out of your sight. They are also well trained in controlling and directing race traffic in just this type of situation. Your failure to respond properly to their direction may ruin your entire weekend.

3. FLAGMEN AND FLAG STATIONS

You must know where the flag stations and workers are located around the track. The Corner Workers are your additional eyes and ears on the track. Watch for the flags at the stations and understand what they are communicating to you. Some flags are informational (Blue, White, Yellow, Waving Yellow and Yellow with Red Stripes) while others are directive and used as a mean of control (Black, Meatball, Red) depending on the situation concerning you, your competitors, and course conditions. Know those flags and their meaning! Failure to do so may result in an accident, a chat with the Chief Steward, or other disciplinary action.

As noted in the preceding paragraph, if you stop on course or have an accident, you are under the control of the Corner Workers. They are trained for emergencies and know how to properly handle most situations. WATCH THEM, LISTEN TO THEM, AND DO WHAT YOU ARE TOLD BY THEM. The safety and well being of you, your fellow competitors, and the workers are dependent on their skill and experience. Trust their judgment. After all, they have been doing their job longer (and probably better) than you have been doing yours.

4. REAR VIEW MIRRORS

Rear view mirrors can be properly considered a “tool of the trade.” Make sure you have one or more good ones and learn how to use it/them. Make it a habit to check your mirrors at every reasonable opportunity to ensure that you are aware of what is going on behind you as well as in front of you. For example, after clearing a corner and having a reasonable straight in front of you without being in heavy traffic, make it a practice to ALWAYS check your mirrors to see the situation behind you. Usually overtaking cars will come up on you with a reasonable time to see them and allow for their pass. Racing in groups of classes as we do however, often means that we are on track with classes of cars with significant performance differential. Being passed by a car with a 20 to 30 mile an hour speed differential can be hazardous if you do not watch your mirrors!! Be aware that on a racetrack overtaking cars can and will pass on either side of you. If you have a preference, make a clear hand signal indicating the side on which you prefer to be passed. And please, once you have pointed the overtaking vehicle, don’t “shut the door” on them. Watch to see that they are successfully by you before making a significant track position move. SAFETY IN PASSING IS THE RESPONSIBILITY OF BOTH THE OVERTAKING AND THE OVERTAKEN DRIVER!

5. COURTESY

The only time you have the “right of way” on track is when you are first into a corner. On the straight-aways, clear yourself and wave the faster cars ahead. Also, blocking is forbidden by the GCR and is a dangerous maneuver. In the stress of competition and close racing, metal-to-metal contact does occur. HOWEVER, YOU MAY BE PENALIZED SEVERELY IF THE CONTACT IS DUE TO UNSAFE PASSING OR DANGEROUS AND RECKLESS DRIVING. After you have raced for a while you will learn to appreciate those drivers who allow you “racing” room and who “point” or “wave” you by with courtesy. This is an amateur sport and track courtesy is a reasonable expectation of us all.

Basically, you should approach a corner at the fastest speed you can, and then apply the brakes hard enough and long enough so that you can release them fully as you complete your last downshift, turn the wheel and enter the turn. You should never (while the car is fully functional) coast into or through a corner. You should always (well, generally, usually, or at least by far most of the time) power through the turn with your throttle on. Your right foot is always on the throttle or the brake pedal, and periodically on both.

6. THE CUTOFF POINT

For each turn that requires you to brake, there is a point where you must get off the gas and on the brake pedal. Each car’s braking ability, the speed, track conditions, and driver’s technique determine the cut-off point that must be used for each corner. Exceeding any of these conditions will result in an of course excursion. When you drive a new track (and when you are in driver’s school), it is best to be extremely conservative in your raking until you feel confident that you can go “deeper” into the turn before braking. As your skill grows, so will your speed and ability to go deeper into a turn and brake, shift, and negotiate the corner at optimum speed. As this happens, you can judge your progress by how far you

are going beyond the cut-off point you picked earlier. You may even find that you can pick a new cut-off point. Keep in mind that under adverse conditions (rain, oil on the track, and mud or dust on the track, etc.) you will need to modify your cut-off point. Good Luck!

7. THE "LINE" THROUGH TURNS

Each corner on each track is unique. Compounding this problem is the fact that track conditions and car condition are almost infinitely variable (hot, cold, wet, dry, oil, dusty, sunny, cloudy, etc.). Given that drivers are also almost infinitely variable themselves, you can begin to appreciate that the driver who clips the apex of a turn at the same point lap after lap and consistently turns laps at times within tenths or even thousandths of a second is truly skilled. The great ones are virtually artists at work. UNFORTUNATELY, THIS MEANS THAT NEITHER YOUR INSTRUCTOR NOR ANY OTHER "GURU" CAN TELL YOU THAT "this is THE line" THROUGH THIS CORNER.

What your instructor can do is to point out "ball park" lines to follow that will work as a starting point for you to follow as you develop your own driving technique. There are some minor variations on this line depending on the set-up and driving characteristics of your car and your instructors will be happy to discuss this with you. Most experienced drivers agree that the classic line is usually the fastest way around a given corner and you should try to learn to drive this line until you can do so at the optimum. THEN and ONLY then should you experiment with variations that your experience will tell you might work better for you and your car. Following are some general "rules of thumb" for different types of turns.

Sharp, relatively slow turns. Go toward this type of corner as far to the outside and as deep as you can before braking. Brake firmly at the cut-off point, downshift and then set off the brakes and on the throttle as you turn in toward a "late" apex. Pass as close to the apex point as possible and use only as much of the road toward the outside of the corner as necessary while under full throttle.

Sharp, relatively fast turns. The main difference between this and the preceding type of corner is in selecting the cut-off point and the apex of the corner. Often you can select an earlier apex and carry more speed into the turn. Therefore the braking and downshift (if necessary) will be earlier and throttle application will come in sooner and possibly stronger. Exiting smoothly under full acceleration is again the objective.

Fast turns or bends. Here, the idea is to "straighten out" the curve as much as possible. Again, approach from the outside of the corner, slow if necessary and then turn across the apex while accelerating. Pass the apex and then use the entire track on the exit side of the turn while under full throttle. Some fast turns can be taken at full throttle if an experienced driver with a good car takes the right line.

A usual fault of both beginning and experienced drivers is to cut at the apex of a corner too early. This puts them into the corner too fast and finds them too far outside (or off the track) coming out of the turn. A general rule at any new course is to pick late apexes and take them

progressively earlier as you work on your exit speeds and track position. You should come out of any turn faster than you go into it, with the possible exception of decreasing radius.

8. HANDLING CHARACTERISTICS

Most drivers favor some particular steering and handling characteristics in a corner. Each may interpret what he considers “normal” in a slightly different fashion. Therefore, any definition is relative but, there is general agreement as to the meaning of under steer (or tight), over steer (or loose), and neutral.

Over steering appears to be a condition in which the front tires take an abnormally strong “bite” when turning. As a result, the rear of the car will seem to want to come around toward the outside of the turn. To compensate, the driver must turn the steering wheel in the direction of the rear drift of the car, to the outside of the corner. With a combination of the steering into the drift and throttle application an experienced driver can achieve some degree of control of this condition. A car that easily over steers has a high tendency to spin and is a bit more difficult to control well. However, properly controlled by an experienced driver, this handling condition may be the fast way around most tracks.

Under steer is a condition in which the rear wheels have more “bite” than the front wheels when entering a corner. Depending on the degree of under steer, and on the amount of speed carried into the corner, an under steering car will seem to “push” to the outside of a corner. At the extremes of under steer and speed a car will simply “push” through to the outside of the corner and off the track. Application of more throttle causes the condition to worsen while letting off the gas transfers more weight to the front wheels, adds “bite” there, and again at the extremes will cause over steer to occur. Generally, under steer is a slow way through the corners. While desirable on street cars (most manufacturers set up under steering cars to slide through corners rather than spinning or sliding into or through oncoming traffic). On the racetrack, since the control mode for under steer is to slow down, this is usually an undesirable condition.

A neutral condition is one in which the front wheel steering is controlled with the steering wheel and the rear wheel steering is controlled by use of the throttle is generally thought of as being the best for racing. Again, you must allow for different drivers interpretations of the “feel” of the car (under steer to one driver may seem to be over steer to another). Some drivers are more comfortable and effective with one condition and others with the other handling state. BUT, a neutral to slight over steering car, driven by a competent driver, is most often the fastest on a given track.

Given that there are no broken or malfunctioning items of equipment causing a particular handling characteristic to occur, there are many, many changes an experienced driver and crew can make to adjust the handling of a racecar. Among the more common are: Changing tire compounds, sizes, pressures, adjusting wheel offset, etc.; changing or adjusting springs and shock absorbers; changing or adjusting wings, ride height, wheel camber, caster, anti-saw bar settings or sizes; changes in the differential, corner weights, wing settings; etc.

At times, arriving at the optimal settings for the handling you want appears to be a “black art.” When setting up a suspension for the first time, a general rule of thumb is to detail and record each element of the chassis/suspension set up as a base line and then as you test the car change ONE item at a time until you have achieved the handling you want.

For the purpose of Driver’s School, unless you are already experienced in adjusting racing chassis/suspensions, we recommend you “run what you bring.” As you gain driving experience you will develop the “feel” for the handling that will allow you to cope with the adjustments noted above. Incidentally, this is another place where a crew is extremely useful. He/she/they can make changes while you continue to learn in the school. **IF YOUR CAR IS “DANGEROUSLY” ILL HANDLING, YOU MAY REQUEST YOUR INSTRUCTOR TO DRIVE YOUR CAR FOR SEVERAL LAPS IN ORDER TO RECOMMEND CHANGES/ADJUSTMENTS. THIS IS NOT AN OPEN OFFER TO HELP IN PROPERLY SETTING UP CARS!** Your instructor must gain permission to do this driving for you. This is a student driver course and the track time is reserved for the students not for instructors!!

9. SLIP STREAMING/DRAFTING

This is a driving tactic used by different drivers for different reasons. Basically, a following car on track moves into the air zone at the rear of a leading car, usually quite closely. When the second car makes this move, the air turbulence core of the leading car is extended and a “pocket” is created in which the two cars move. With the turbulence moved back, the lead car loses drag and can go faster while the rear car virtually picks up a tow. This tactic can be used to make two (or more) cars go faster than one alone, to conserve fuel for the second car, or as a passing tactic. Due to the length of the races and the type of track, NASCAR drivers often use drafting for all three purposes. In SCCA racing, fuel is not usually a problem so drafting is most often used for top speed and for passing.

Slipstreaming or drafting poses some risk to each vehicle in the draft and is therefore not REPEAT not recommended for beginning drivers. As you put in more and more track time you will develop the skills and driving judgment to draft/slipstream successfully.

VI. SAFETY

This section will deal in general with those aspects of racing where safety and/or medical concerns are pertinent. For specific equipment requirements you must consult the SCCA’s GCR.

1. CLOTHING

It is mandatory that your driver’s suit, underwear, and socks be of a flame retardant material such as Nomex or an equivalent fabric. Gloves and shoes must be of leather and/or other nonflammable material. Recent advances in material and fabrication can provide up to five layers (at least two layers are mandatory) of protection. This is required to keep heat/flam

away from the body for some period of time by their inherent insulating qualities. This generally allows time for emergency actions necessary to exit an accident/flame scene or to allow time for help to arrive. Unfortunately, these materials keep heat in the body by those same insulating qualities. Warm/hot days, high cockpit temperatures, and the insulating qualities of the clothing make it difficult to keep the body cool. You may perspire freely but the perspiration is not free to evaporate and cool your body. Your performance and endurance will suffer more or less dependent on the specific conditions of your race day and your body fitness.

You should make every effort to keep cool without compromising the fire protection provided by your clothing. Some tips that can help are: a. Stay in the shade as much as possible before getting in the car (an umbrella on the grid is helpful). b. Avoid carbonated soft drinks containing caffeine, Tea, and alcoholic beverages. c. Wear 100% cotton underwear under the fire protective clothing. d. Use “Kool Vests”, cold compresses, and make sure you have air ducted to yourself in the cockpit. e. Some drivers have purchases the so-called “cool suits & helmets” that use various methods of cooling the body for extended periods of time.

Driver’s suits usually come in either one or two-piece styles. Generally, we prefer the one-piece style since it affords less opportunity for flame or flaming liquids to get to the body at the waist. Although most suits contain pockets (usually zippered), we recommend that you keep the pockets empty except for a cloth while you are in the car. Ballpoint pens, lighters, knives, etc. can make nice holes in you in the event of an accident.

2. SEAT BELTS, SHOULDER HARNESS, ANTI-SUBMARINE STRAP AND ARM RESTRAINTS

The use of seat belts, shoulder harness, and an anti-submarine strap (s) is mandatory in SCCA Sanctioned racing. Also, in all open cockpit cars the use of arm restraint is now mandatory. These all serve two purposes, to help to keep you in the proper driving position during the maneuvering G Forces inherent to road racing and to keep your body within the safety envelope provided by the chassis and the roll cage structure in the event of an accident. **THERE IS NO ROOM FOR ‘ECONOMY’ IN THIS AREA. GET THE BEST EQUIPMENT THAT MEETS THE MANDATORY REQUIREMENTS THAT YOU CAN AFFORD, INSTALL IT PROPERLY, AND USE THESE PIECES OF EQUIPMENT WITHOUT FAIL!!!**

For example, 2” shoulder harness straps are the prescribed minimum. However, virtually all experienced drivers now use Nomex padded 3” shoulder harness. The purpose, of course, is to keep the upper body in the proper position both while in the proper position both while driving and in the event of an accident to keep the upper body from striking the steering wheel or other parts of the interior of the car.

The aircraft latch type seat belt is still just fine, but make sure that the pad under the latch is wide enough and stiff enough to pad your pelvis in a high-speed impact. The seat belt must be located across the pelvic area of your body and not up on the lower portion of the

abdomen. The so-called “Anti-Submarine” strap will assist in keeping you within your belts in the event of a crash but, more importantly, that strap (s) should be position to help retain the lap belt in the proper location across your body. In the event of an accident, if the lap belt is located above the pelvis region, injury of some severity can result due to the high pressures on the soft tissue or organs located in the abdomen and lower chest area.

All three of these belts work as part of a system to absorb the deceleration loads that you encounter in an accident. Obviously, they should be properly secured to the car. The GCR provides technical requirement minimums for that installation. They should also be as wide as possible to spread the load over a greater portion of the body. Finally, they should be TIGHT!! Just as parachutists appear to be uncomfortable in their harness before a jump, you should probably feel highly constrained by your belts before you go out on the track. You will be amazed by how much they loosen up after a few corners. Given the opportunity while on track, retighten them! Loose belts do not perform to their design parameters as well as tight belts.

3. WINDOW NET AND ARM RESTRAINTS

Window nets are mandatory on all cars with roofs. Their purpose is to prevent the head or arm from hanging out of the car and being crushed between the car and ground during a rollover.

Arm restraints are devices that attach above the driver’s elbows and to the seat belt latching mechanism. They are mandatory for open cockpit cars, both open production and formula. Their purpose is to prevent roll bar amputations of the forearms/hands in the event of a rollover. Worn properly, they don’t interfere with the driver’s reach within the horizontal plan (cockpit area) but keep him from raising his hands much above the height of his helmet. They stop the driver from “automatically” trying to reach “up” and catch the car as it is rolling upside down and also restrain an unconscious driver’s flailing arms. **THEY ARE A GOOD IDEA FOR CLOSED CARS ALSO.**

4. VISORS AND GOGGLES

The use of visors or goggles is mandatory in open cars. Along with an approved helmet they provide protection for both the head and eyes. There is a lot of junk (rocks, sand, oil, etc) thrown up by leading cars, not to mention flying insects that are potential hazards without some form of eye protection. Incidentally, if you wear glasses it is a good idea to have the lens formed of some impact and shatter resistant material. And some drivers have decided to wear glasses rather than contact lens while on track due to the extreme eye reaction to a foreign body getting under the lens. Keep your goggles/visors CLEAN. If they become scratched, strained, dirty, or distorted, they reduce visual acuity and can affect your performance and lap times. Also remember that if you are using a colored visor for sun or glare protection that you should not wear sunglasses underneath. This combination may prevent you from recognizing some colored flags or lights used for race communication.

5. FIRE EXTINGUISHERS

On board fire bottles systems are now required for all but Showroom Stock and Improved Touring racecars. Either the 5-pound Halogen or one of the new gases may be used. These systems technical requirements are outlined in the GCR. SS and IT cars may have the fire bottle systems or the 2-pound extinguishers mounted in these cars. Their purpose is to suppress combustion and prevent additional damage to the car and driver. It is critical that you locate the actuating device for the fire bottle so that you can reach it while strapped in. If you are trying to extract yourself from a flaming car you will want all the protection and time possible. A good fire retardant suit and a LARGE fire bottle are suddenly much more important than meeting minimum requirements and saving a few bucks. Perhaps the larger bottle will stop the flames or at least suppress them enough to allow corner workers to reach you with added fire bottles and save the car from total destruction. It is a good idea to practice the motions you would have to go through if you had a fire and used the system. This keeps you from having to try to remember what to do in a panic situation!

6. FLUID I/O

From a safety aspect, if you were to have a high-speed impact (accident), it's better to have minimum contents in your stomach and an empty bladder. This way you can decrease the possibility of internal contamination or a ruptured bladder from high deceleration pressures via the lap belt. From a competitive aspect, you won't be able to fully concentrate if the "genteel" pressures build during the race. Since racing is a hot, sweaty business (especially here in the Southeast), you will probably have been increasing your fluid intake during the day. This combined with some nervousness will combine to require a high fluid output. Take heed and visit the restrooms before you go out on the track.

7. THE PRE-RACE PARTY

Most of us are social animals and probably joined SCCA partially for the social activities. A race weekend is an opportunity to mix with others with your same racing bent and possibly hoist a few while "bench racing." Unfortunately, lack of sleep and alcohol don't improve one's performance or reaction times in the car. Pulling an all night rebuild session or "hanging one on" or both is often extremely detrimental to driver performance the next day. This is an area where it is often wise to practice good judgment.

8. MEDICAL HAZARDS

All of the preceding subjects have related to areas where some preparation on the part of the driver can alleviate or markedly reduce a problem. However, there are some medical hazards that are very difficult to predict and you only become aware of them at the onset of symptoms.

The first of these conditions is often referred to as HEAT STROKE or SUN STROKE. This is an upset of the heat regulating mechanism of the body due to prolonged exposure to high temperatures and lack of air circulation (remember that driver's suit) that can occur with either high or low humidity. These factors are often found in a racecar on a hot summer's

day and the onset of symptoms may be both sudden and acute. A feeling of rapid weakness, muscle cramps, headaches or dizziness, and sometimes nausea progressing to vomiting are among common symptoms that a person may experience.

These symptoms may occur while you are actually on track and may be preceded by a noticeable inability to concentrate, difficulty in reading the instruments or an unaccustomed anxiety. Should you notice any of these things happening to you, slow down, pull off the track in a safe place (try to get close to a corner station, if possible) switch off the engine, get out of the car and move to a safe place and lie down. It is most important that you do not continue driving your car while these symptoms persists.

The second condition that is a significant hazard to drivers (especially those who race in closed cars) is carbon monoxide poisoning or exhaust fume sickness. Carbon monoxide is a colorless, odorless gas and therefore is usually recognized by its symptoms that are very similar to heat stroke. However, a persistent headache is often more common than with heat stroke. In all other areas the effect on the driver are very similar. Once again, if you feel any of these effects, don't try to be a "hero." Pull off the track and seek aid. You would not consider continuing to race with no oil pressure; don't wind up with any blood pressure!

VII. SUMMARY

We offer this syllabus as a primer for what you can expect to encounter when you are introduced to SCCA racing. It has been put together with the writing, advice and experience of many people over the years. If you have any comments, please make them of a constructive nature and give them to the Chief Instructor or the Chief Steward of the Driver's School.

The greater the amount of information you have about what racing is about, the better prepared you can be. The more attention you spend on details in advance will pay off both in a better learning experience and in better performance. This applies both to yourself and your car. As the BSA motto says, BE PREPARED!!!

We hope you will approach racing with a mature attitude and appreciation for all the efforts of those people that give their time to put on a SCCA Club Racing event. No one is there to "serve" you, but rather to help you and to share in the fun and enjoyment of one of the most exciting forms of competition.

Here's wishing you the best of success and good luck!

SOME COMMON EXPRESSIONS USED IN MOTORSPORTS

Under steer – A condition during cornering when the car wants to go straight and it takes additional steering effort to make the car negotiate the corner.

Over steer – A condition during cornering when the car wants to turn into the corner sharply and the back end tries to break loose. An over-reactive car.

Neutral Steering – When the car neither over steers nor under steers so that all four wheels begin to and maintains the same sliding characteristics.

Drift – Driving in a state of controlled skid, while the car is gaining speed.

Skid – To make the tires slide rather than roll when braking or to skid sideways.

Powerslide – Driving with over steer induced by applying the gas.

Spin – An uncontrolled slide or skid.

Plowing or Pushing – A slang expression for excessive under steer in the turns.

Throttle Steer – Applying the gas to introduce a steering action, usually whilst exiting a turn, also known as power over steer.

Feathering – To apply accelerator pedal pressure gently.

RPM – Revolutions per minute, or how fast the engine is going.

Revs – Slang expression for the above.

Over Rev – To run the engine up more revolutions per minute than is desirable or good for the engine.

Torque – The ability of the engine to produce twisting force.

Shift Point – The RPM which one shifts to another gear, either as an upshift or a downshift.

Upshift – To go from a lower to a higher gear as from first to second or second to third.

Downshift – To go from a higher to a lower gear as from fourth to third, etc.

Riding the Clutch – Driving with the clutch partially disengaged or with excessive clutch slip in making shifts.

Traction – The ability of the tire to adhere to the road surface. It is a function of weight and tire contact area.

Traction Limit – The maximum forward, rearward or sideward force at the tires whilst accelerating, braking or cornering.

Wheel Spin – To actually spin the wheels when accelerating.

Braking Point – A designated point at which you begin to apply the brakes, usually a fixed distance from a turn or other location that requires lower speed.

Theoretical Apex – A point along a curve where the largest possible radius touches the inside edge of the turn.

Practical Apex – A point along a curve where part of the car **SHOULD** touch the inside edge of the turn.

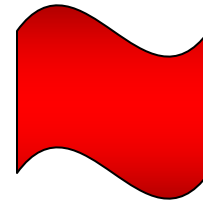
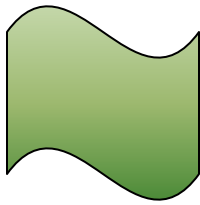
Early Apex – When the practical apex occurs before the theoretical one.

Late Apex – The counterpart of the above, when the practical apex occurs after the theoretical one.

Clipping Point – A point along a curve where a car actually touches the inside edge of the road.

Ideal Line – The best possible path through a turn considering all factors.

Entry Point – The point at which one begins the turning maneuver.

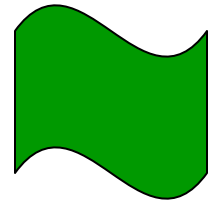


FLAGS AND THEIR MEANINGS

Flags are used to provide information for the drivers regarding the course conditions in a particular sector or to summon them into the pits because of potential mechanical problems or rule infractions.

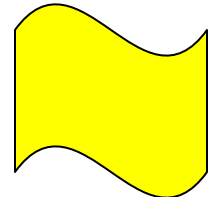
GREEN FLAG (Solid Green)

- A race is under way. This flag shall normally be in the possession of the Starter only.
- When displayed, the green flag indicates that the course is clear.



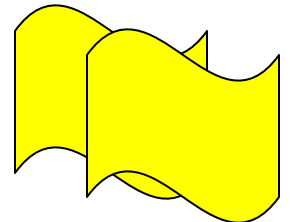
YELLOW FLAG (Solid Yellow)

- Take care, Danger, Slow Down.
- NO PASSING FROM THE FLAG until past emergency area.



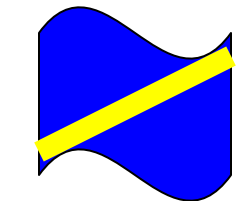
YELLOW FLAG (Waving Solid Yellow)

- Great Danger, Slow Down, be prepared to stop
- NO PASSING FROM THE FLAG until past emergency area.



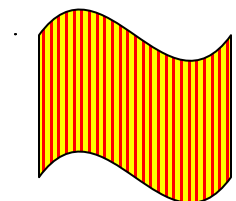
DOUBLE YELLOW (Double Yellow, Displayed at All Stations)

- Entire course is under full course yellow. All stations will display Double yellow flags for all pace and safety car laps.
- SLOW DOWN, NO PASSING. However, cars may carefully pass emergency vehicles and other cars that are disabled or off pace.



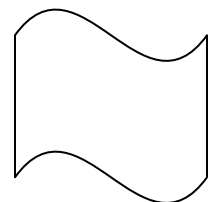
BLUE FLAG (Blue with Diagonal Yellow Stripe)

- Passing Flag – Another competitor is following you very closely or is trying to overtake you.
- Flag may be displayed standing or waving, depending upon the speed with which you are being overtaken.



YELLOW FLAG (Yellow with vertical red strips)

- Take Care.
- Oil or debris on track creating a slippery condition.
- Slow car down.

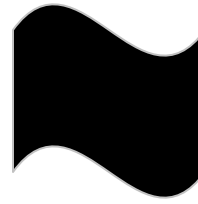


WHITE FLAG (Solid White)

- Slow moving or emergency vehicle in your immediate area
- Take Care
- Flag will be shown standing for two stations prior to the vehicle.

BLACK FLAG (Solid Black)

- Finish your lap and then pull safety into the pits.
- Will be pointed at your car

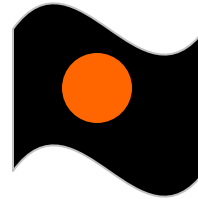


BLACK FLAG with the word "ALL"

- All cars proceed directly to the pits.

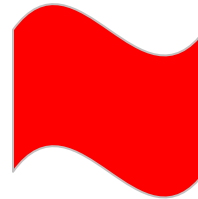
BLACK FLAG with ORANGE BALL

- Mechanical problems with your car
- Proceed to your pit at reduced speed



RED FLAG (Solid Red)

- Come to an immediate, controlled stop, but . don't endanger yourself or another car by the abruptness of your stop.
- Pull the car to the edge of the track
- **THE RACE HAS BEEN STOPPED.**



CHECKERED FLAG (black and white checks)

- You have finished the race or practice session.
- Continue cautiously to the pits.

