

Flagging and Corner Worker 101 – 13 Nov 2017

Flagging on Corner Worker Manual
For the Lone Star Region of
Sports Car Club of America (SCCA)
And for The Circuit of the Americas

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Last Updated – 13 Nov 2017

Flagging and Corner Worker 101 – 13 Nov 2017

Table of Contents

Page 2	Getting To the Track
Page 3	Clothing
	Shoes/Boots
	Pre-Register
Page 4	Corner Worker Kit
	Space for Notes
Page 5	Registration
	Flag Meeting
	Mini School
Page 6	The Corner (Turns) and their Personnel
Page 9	American Standard Flags (SCCA)
	Race Flag Review
Page 7	Yellow Flag(s)
Page 8	Blue Flag with Yellow Stripe
Page 10	White Flag
	Yellow Flag with Red Vertical Stripes – Surface Flag
Page 11	Black Flag
Page 12	Mechanical Black Flag – Meat Ball
	Red Flag
Page 13	Multiple Flags
	Green Flag
	Checkered Flag
	Flags used by other racing series at Circuit of the Americas
Page 14	Space for Notes
Page 15	Communications
	Communication Pointers
Page 16	Emergency Calls
Page 17	Black Flags and/or Meat Balls
	FM Radio vs Land Line Communications
	Disclaimer
Page 18	Incident
Page 19	Space for Notes
Page 20	Worker Licensing
Page 21	Vocabulary
Page 23	Space for Notes
Page 24	Hand Signals
Page 27	Other things you might need to know
Page 27	Electrical Cut Off Switches
Page 28	Fire Suppression Levers
Page 29	Fire Extinguishers for home and track
Page 32	Hydration
Page 33	Rain Gear
	Seat Belts
Page 34	Steering Wheels
TBD	Window Nets
	How to push a race car
	How to tow a race car

Flagging and Corner Worker 101 – 13 Nov 2017

Page XX

How to pick up a race car
Space for Notes

GETTING TO THE TRACK

You can start flagging by either joining Sports Car Club of America (SCCA) or by volunteering at The Circuit of the Americas. The starting yearly membership for

First trick...become a **SCCA** member. Next, contact your regions Flag Chief, tell them you have admitted to yourself the fact you are crazy and wish to come out of the closet thus announcing it to the world! This bold step will provide you with the best seat at every track, the opportunity to play a vital role in racing (from it's grass roots to it's pinnacles, everyone's idea of the pinnacle differs) and the chance to perform team operations with the best of the best - the **SCCA** Flagging and Communications Workers of the World!

Becoming a novice corner worker you will need only a few basic items of clothing, a little training and the desire to be necessary, without fanfare or reward. Actually the rewards are many, there is great racing to be witnessed, a party at each event, good friendships to be made and cherished over the years and maybe even the thanks of a driver (or two) whose life you may have saved during the day. Most of the rewards will come from within yourself, the pride of knowing you can do the job.

A flagger is responsible for providing their own uniform and personal equipment. Creativity abounds, but safety is the major consideration...first, last and always.

CLOTHING:

The uniform is referred to as "Whites". White is the requested color to be worn on station because it's easy to spot. All of your outerwear should be of 100% cotton. Cotton "breathes" allowing for good ventilation. More importantly, cotton when exposed to flame is slow to burn and will not melt against your skin, as a synthetic will. Stay away from the synthetic/cotton combinations, even 40% of a shirt melted to your skin would be painful. The colors red and yellow should be avoided at all cost in selecting cold weather and foul weather gear for use on station.

Don't quit now...the SCCA has many safety guidelines, this is just the first you will learn. A good source for 100% cotton pants is the famous "Painters Pants". White, 100% cotton shirts are a little harder to find, those old worn button down collared "Oxford Cloth" shirts are the ticket. Your shirts should be long sleeved, for protection from the cold or sunburn or insect bites.

Simple enough...until you get to a corner and witness the many "shades" of white being worn there. Once you are on a corner, you will find some of what you've been told "are strict rules", will be personally interpreted. You won't be kicked off a corner for wearing blue Levis, but the safer you play, the safer you will be. Remember, the rules and guidelines are created to insure the highest degree of safety for the workers.

SHOES/BOOTS:

Here is an area where you will see a number of different "rules" interpretations. The recommended footwear for the corner worker is boots with leather uppers and soles resistant to petroleum products which provide good gripping on paved surfaces. Arguments can be started at any gathering of workers by mentioning steel toe boots are or are not the correct footwear. High topped boots do provide extra

Flagging and Corner Worker 101 – 13 Nov 2017

protection from many hazards, such as hot pipes on the sides of Corvettes being pushed, or low lying briar bushes on the way to the johns. Let the wearer beware!

Some workers wear tennis shoes, especially at Circuit of the Americas where flaggers rarely leave the flag stand. Flaggers say the tennis shoes are more comfortable when standing long hours on the metal flag stands. This is not the recommended foot ware but a personal choice.

Prepare for working a corner station as you would prepare to attend a picnic. Sound strange?.Bear with me. When attending a picnic: you should tell someone you plan to attend (unless you "want to be alone"); you may have to park far from the picnic site, carry and be responsible for the many items (or remember at least half of them) required for a successful outing; be prepared for the elements; consider the needs your fellow workers that may be more unprepared. picnickers; bring snacks and drinks.

PRE-REGISTER!

If you have attended a "Crash and Burn School" (do it, if you haven't, or again if you haven't in a while), or your Regional Chief has noted your interest, you will probably be placed on "flagger mailing lists". If not, give your name and email address to anyone at the racetrack in "Whites".

Most Regional Flag Chiefs mail out news (in the form of "flyers"), from past and invitations to upcoming events thru out the racing season. Worker flyers contain vital items of interest, such as: upcoming events; event scheduling; worker meeting locations and times; party location; tidbits on the specialty; general gossip. It will be your most accurate schedule thru out the season. The flyer will also contain a return form for you to fill out and/or "other" ways to contact the organizing powers. Returning the information is VERY IMPORTANT to both you and the Flag Chief. Send the information back! This, at the very least, keeps your name on an "active" list, lets the Flag Chief know who to expect on a certain weekend, the experience levels available, gives insight into how to distribute the workers and most importantly, the number of "goodies" required. Second on any Flag Chief's wish list, after "having more than enough" workers, is having people who said they would be there...actually show up! This is why you SHOULD ALWAYS contact the Chief if your plans change after returning the flyer.

PREPARE A CORNER WORKER KIT/BAG!

The following items should at least be considered as a starting point:

Police/Referee Whistle - they don't make 'em too loud! Please don't blow it when on the radio.

Workers gloves – welder's gloves are good candidates, you may have to handle hot parts. Gloves in safety orange or safety yellow are also popular. Bar-b-que or welder's gloves may be picked up for as little as \$15 a pair.

Hat(s) - temperature, peripheral vision, shading of the eyes and climate are considerations

Rain gear - keep in mind what you may be required to do, under "liquid sunshine" conditions. Avoid red or yellow colors.

Knife and/or utility tool - "Be Prepared" A sharp blade, screwdriver and pliers come in handy.

Sunglasses - no matter what the weather (sand, dust, gravel, etc. may be blown around so a pair of safety type glasses are recommended even when there is no sun).

Racers tape - Rated for at least 50 M.P.H. Quick "duct tape" will do.

Suntan lotion - Needed we always hope! Sunblock lotions for hands, face and neck.

Lip Balm - to keep lips moist (you never know when the driver you helped may wish to personally thank you at the party).

Insect repellent - can be used as deodorant, if necessary (but then you'd smell funny to the other flaggers).

Aspirin or medications you may require (bee sting kit, "Haley's MO, T.P., etc...)

Flagging and Corner Worker 101 – 13 Nov 2017

Garbage bags - it's amazing the things you can do with them even to putting trash in them!

This is a basic suggested list, with experience you will learn too much gets heavy and you will always take out what you need...the night before you need it. At some of the smaller tracks a tow rope, tie wraps, wire snips, and other repair items might be handy.

Space for Notes

Flagging and Corner Worker 101 – 13 Nov 2017

REGISTRATION

Ask your Flag Chief for the Registration times for the event. Be early to register, seek out the "Worker line", be prepared to show your membership and workers license (a Regional Workers License can be obtained before, or at an event, from the Flag Chief).

FLAG MEETING

For all workers, getting to the worker meeting as early as possible is a very strong recommendation. Being early allows a novice the opportunity to "Stop, Look and Listen". This is an important and familiar phrase around a race track. If there is but one consistency from track to track, workers talking about what they do or the conditions they do it under, is it. Observe the other workers, their clothing and gear. Ask questions. A good first question for a novice to ask is, "Is there a mini school for novices this weekend?". Don't be discouraged if receive a "duh?" answer. Seek out the Flag Chief and introduce yourself as a novice (you WILL be welcomed), pose the question to the Flag Chief.

MINI SCHOOL

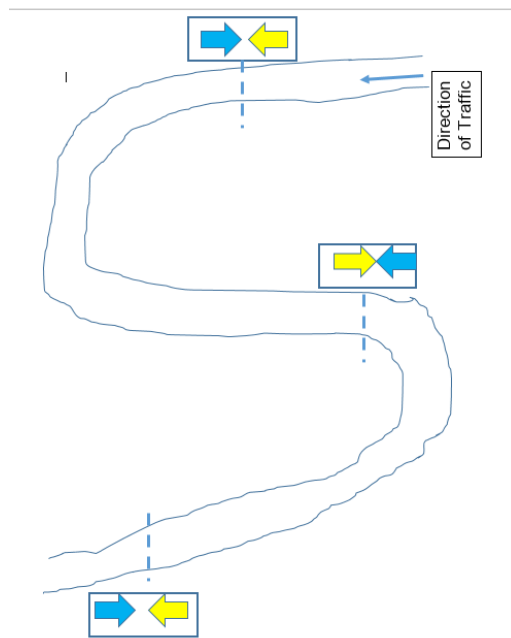
The Flag Chief is responsible for the worker's weekend safety, performance and good time. Mini schools given at the track during race weekends are great! They are usually conducted when there is a sufficient number of novices present to justify holding one (bring some friends). Even if you have been fortunate enough to attend a Certified "Crash and Burn School", a mini school provides specific training at the track you will be working THAT weekend, conducted by worker(s) experienced in the operations at THAT track and under the sanction of THAT region. A "mini school" should take only a couple of hours at most. Again, "Stop, Look and Listen", ask questions at appropriate times. This process gives the novice the opportunity to learn and the instructor the opportunity to evaluate your readiness to be "turned loose on a corner".

If there will not be a mini school, you will already have introduced yourself to the Flag Chief, making them aware you are present. Assignment to corner stations will follow an informal meeting. Generally, the worker's meeting schedule allows only 10 to 20 minutes to get to your turn and set up the station. A major reason to be prompt and ready!

At a mini school or in the "corner packet" there may be pertinent information that the region has prepared for its flaggers.

THE CORNERS (TURNS) and THEIR PERSONNEL

On the turn, you will be working under a Corner Captain. The Captain has all of the responsibilities of a Flag Chief, within the limits of their turn. Also on the turn will be a Communicator, responsible for the transmission of information between the Captain and Race Control. Two workers manning the yellow and blue/yellow flags will be positioned in a manner which affords them safety and the ability to communicate, via the flags, with the drivers. This is the normal four person corner crew. Members of the crew will rotate, working each position on the corner, with the exception of the Captain, who is "it" all day. You may be placed with a veteran to observe and to be observed for a period of time. "Stop, Look and Listen", ask questions, at appropriate times, be alert always.



The figure above shows three flag stations along a section of race track. Cars enter this section of track in the lower right corner and exit in the upper left corner. The dashed line shows the start/stop area of responsibility for each station. Note that in each station the yellow flagger is looking upstream and the blue flagger is watching downstream. These two flaggers look over each other's shoulders so they can watch their co-workers back. The yellow and blue flag are hidden from the view of the drivers until they are displayed to the track.

The more familiar you become with the track, the corner station(s) layout and the methods of operation of the region, the better prepared you will be. But that comes with time and experience, don't expect one without the other. The veteran corner workers will appreciate a quick, alert, safe learner much more than a hero.

A whistle is often used as a means of communication to get the attention of an outpost worker or the driver of a disabled car.

Flagging and Corner Worker 101 – 13 Nov 2017

F&C is all about safety; safety for you, safety for your co-workers and safety for the drivers. So many people think that working on a corner is dangerous, and while racing is inherently risky for all, following some simple rules with proper safety equipment minimizes those risks. You are probably safer at the track than crossing a busy intersection for two simple reasons: at the track all the traffic is going the same way and someone is always watching your back. Never turn your back to traffic unless someone is looking out for you. It goes without saying that things happen quickly on a racetrack.

When you first arrive on station your corner captain will ask you to perform some basic setup tasks. First, stow your gear in a spot where you can get at it but it is not obstructing either the view or the ground in the working part of the station. Please tell your captain if you have any serious medical conditions (Diabetes) or allergies (bee sting) or show him your MedAlert bracelet. Don't forget that your health is part of the safety equation. Dress appropriately for the conditions. Dress warmly if it is cold. Stay dry if it is raining. Cover up if it is hot and sunny and use sunscreen on exposed skin (don't forget your lips). Drink lots of fluid to maintain hydration. If you are not peeing regularly you are behind on fluids. It is amazing how each year we have someone succumb to hypothermia or heat exhaustion. Both are preventable with proper planning.

Usually, the captain will have picked up the radio and headphones and tested them before leaving the paddock. If, for some reason, you have the phones, do a radio check to be sure that Control can hear your station. Flags, a station log book and fire bottles will have been left trackside by your hardworking equipment guru. The flags go to the station where they are removed from the bag, unfurled and set up for use. Check immediately to be sure that you have the proper number of flags. If you are working the black flag station also check for a mechanical black flag ("meatball"), a checkered flag and the number board. Report any deficiencies immediately to control so you can get replacements before the first car is on track.

Your captain will tell you where to distribute the station's fire bottles. The idea is to put them where you think you will need them so you can run to that spot, pick up the bottle on the way to the incident, and avoid having to carry a bottle all the way from the station. At least one bottle will stay at the station. You will learn that there are typical locations for the remaining fire bottles. They will be distributed up-track, down-track and maybe even across-track. Place each bottle far enough from the track that it will not be hit by a spinning car, but will be visible from the station. The top of a berm is a good spot. As you set out each bottle invert it several times to agitate the powder that may have settled to the bottom. Also check the gauge to insure that each bottle has an adequate charge and the safety pin is in place. Again, report any deficiencies to Control before the start of the session.

Your corner captain will set up a rotation for the various positions depending on how many workers are on your corner. The basic positions include communicator (the one with the phones), blue flag, yellow flag, safety (the one who is going to run to the incident), observer (another set of eyes to help the communicator get cars numbers, etc.) and outpost (either up-track, down-track or often across-track).

Flagging and Corner Worker 101 – 13 Nov 2017

Having so many workers on station is usually a luxury seen only at Pro events or the Runoffs. In most cases, there are only two workers on a given station, in which case the worker with the yellow flag is looking down-track and has the phones, and the worker with the blue flag is looking up-track and will respond to any incidents. The blue flagger's main responsibility is the safety of the yellow flagger who has his/her back to traffic! Again, never turn your back to traffic unless someone is watching out for you. As we often say, your primary responsibility is for your own safety. Your secondary responsibility is for the safety of your co-workers. This way we are always ready to help the drivers when they need us.

IT IS YOUR RESPONSIBILITY TO TAKE SAFE ACTION AND AVOID BECOMING PART OF AN INCIDENT.

Important: Safety is our most important concern on the corners. So, in this order...

- #1 First and foremost, you are responsible for *your own safety*. Always keep an eye on oncoming traffic unless you are the yellow flagger.
- #2 Make sure your fellow workers are safe.
- #3 Look out for the safety of spectators, photographers and others in your coverage area.
- #4 Keep drivers safe.
- #5 Your last concern is for the cars. They can be repaired or replaced.
- #6 When automobiles are on the track, corner workers do not sit, they are always standing if for no other reason than to evade an out-of-control race car. MotoGP does allow flaggers to sit as long as they can display their flags quickly.
- #7 No drugs policy at the track. Also no beer or other alcoholic beverage until after the races.
- #8 During a race or practice, NO ONE crosses a track without permission of Race Control and only after being covered by the appropriate flag(s).

IF WE ARE NOT HAVING FUN, WE ARE NOT DOING IT RIGHT !!!!

Standard American Flags - SCCA

The Corner Flags



STEADY YELLOW - Indicates danger ahead - **NO PASSING - SLOW DOWN**
DOUBLE YELLOW - Indicates Full Course Yellow - **NO PASSING - SLOW DOWN**
WAVING YELLOW - Great Danger ahead - **NO PASSING - SLOW DOWN** - Be prepared to stop



BLACK FLAG - Proceed to the Pits - Displayed at both Start & Black Flag Station with number board
...ALL - Proceed to the Pits - Black flag at all stations with "ALL" sign at Start and Black Flag Station
MEATBALL - Proceed to the Pits - Displayed at both Start & Black Flag Station with number board
RED - Indicates session stoppage - **NO PASSING - PULL TO SIDE of TRACK - STOP**



DEBRIS FLAG - Liquid or parts on track - **WARNING**
BLUE FLAG - Over taking cars approaching - **WARNING**
WHITE FLAG - Emergency and/or slow cars ahead - **WARNING**

In the United States, corner workers are licensed by the [Sports Car Club of America](#). [SCCA](#) licensed workers are employed at almost every road, and many oval racing events in the United States including [CART](#), the [American LeMans](#) series, the [IRL](#), [vintage racing](#), [motorcycle](#) and [go kart](#) events, and the [United States Grand Prix](#). Training is provided by the individual regions, or by a flagging organization such as [Lake Erie Communications](#). In Europe, the "marshalls", are licensed by the [FIA](#). The SCCA and FIA recognize each other's licenses, and it is not unusual to see SCCA workers at [Formula 1](#) races and FIA workers over here. [Stories](#) and [beer](#) are only part of the cultural exchanges.

Yellow Flag

The yellow flag which has several meanings depending on how it is displayed. The yellow flagger is looking down track, with his/her back to traffic, and must be able to see the entire sector from his/her flag station to the next station. A standing or stationary yellow flag, held with both hands over one's head, means, "Caution, danger, slow down, NO PASSING from the flag to the site of the incident". The fact that it is standing also tells the driver that there is no obstruction on the racing surface, however

Flagging and Corner Worker 101 – 13 Nov 2017

there is a hazard in the area. It could be a car just off course or an emergency vehicle or corner worker attending to a disabled vehicle. The fact that there is no passing allows the drivers to slow down without fear of being overtaken and losing track position. Once the yellow goes out, all workers on station should be looking for passes under the yellow, which will be reported to control and the stewards. If the incident (for instance a disabled vehicle) is, at the discretion of the stewards not considered to be a hazard, and will be left in that location for the remainder of the session, the standing yellow flag will be held for two laps and then withdrawn. That vehicle has now become a part of the course.

A waved yellow flag means, “Great danger, slow down, be prepared to stop, NO PASSING from the flag to the incident.” The fact that the flag is waved also tells the driver that there is an obstruction on the racing surface and that evasive action will most likely be necessary. It could be a car or a large portion of a car such as a nose or rear cowling. There may also be stopped emergency vehicles on the track. The practice of “protecting” a corner worker responding to a vehicle that is off the course by upgrading from a standing yellow to a waving yellow is inappropriate, unless the worker is indeed on the track surface.

In either case, a mere flag can never protect a worker.

The new flagger reminder for when to wave, or not wave, the yellow flag is, “Waving on the paving; standing in the grass...do not pass”.

During a race, double standing yellow flags may be displayed at ALL stations only at the order of the operating steward via Control. This may also be referred to as a “full course yellow”. Two yellow flags are displayed side by side by holding the sticks together in one hand and the free edge of both flags in the other. The flags can be stabilized and made easier to hold by rolling the flags one turn onto the sticks. Double standing yellow at every station tells the driver that “the entire course is under a caution condition, SLOW DOWN, NO PASSING of other competitors”. A pace car may be deployed to control the speed of the field. Passing of the pace car may take place only by a wave-by from the passenger in the pace car. This will be done until the leader is behind the pace car. Cars may cautiously pass emergency vehicles and cars that are disabled and cannot maintain the pace, as indicated by a raised arm on the part of the slow driver. At the site of the incident, one flag may be held stationary and the other waved to indicate an obstruction on the track. Double standing yellow flag condition will also be used, with or without a pace car, during pace laps before the start of a race or a re-start.

1. This flag is displayed for warm-up laps, last lap of practices, and for incidents off the racing line and out of an impact zone. An impact zone is where drivers end up when they crash at or near the apex of a turn.
2. This flag may also be shown in the turn that is ahead of the turn with a waving yellow. (E.g., if there is a waving yellow at 5, a standing yellow may be needed at turn 4 or at the exit of turn 3).
3. Display stationary flags at chest height or held over your head.
4. Display waving flags high (above your head or shoulders). Move them in a wide figure-eight motion holding the flag at the junction of the shaft and the flag material for better balance.
5. If needed, motion riders to the inside or outside of the track. Riders may not be able to see the incident.

Blue Flag with Yellow Stripe

Flagging and Corner Worker 101 – 13 Nov 2017

The blue flagger/safety's PRIMARY responsibility remains that of warning/protecting the yellow flagger. Next in the pecking order is the signaling of drivers and then the responding to cars/drivers who have found their way out of competition at the flagger's station. When the showing of "other" flags (debris, white, etc.) is called for it is the job of the blue flagger to display these, as the yellow flagger has only a singular purpose.

Usually during qualifying sessions the drivers want to warm their tires and engine before their assault on the lap record. Drivers may elect to "run in packs" or alone, some will use the entire allotted time at speed, others take their best shot and then cool the car down for a couple of laps before pitting. The same scenarios could happen just as in the practice session. Some drivers elect to pit to have their tire temperatures taken or to change to new tires and reenter the session, then suddenly appear to the blue flagger in a new group of cars!...it's always the same...nothing is ever the same...

The race...finally the blue flagger gets a break. A perk for the blue flagger is they, above everyone else on station, should know who is leading the race. Blue flagging the race is usually reserved for when the leaders overtake the backmarkers.

Liberal use of the blue flag is encouraged during practice and qualifying sessions because each driver's mission may be and probably is different.

The blue flag is a VERY valuable tool for the drivers and therefore all efforts should be made to properly apply the blue flag. However, mistakes will be made. It's the station where the blue flag is constantly displayed in error, that drivers will tend to "tune out".

As a blue flagger you should:

- Concentrate
- Protect the yellow flagger!
- Know/learn your area of responsibility. Assess the dynamics of the station you're working. Note the preceding turn, the line approaching your turn, the braking zone, how/where a driver's focus will travel, the "best" place to "hit" a car with the blue.
- Become familiar with the classes of cars that will appear in a common session...which classes are "suppose to be" faster than others and the sometimes subtle differences in appearances.
- Mentally note a few of the first/leading cars and a few of the last/trailing cars, by number, color, color order (red...red...yellow...blue), a distinguishing appearance, decals, etc. Be aware of the differences of the open wheel cars (big tires versus skinny tires, big wings versus little or no wings, etc.).
- **Concentrate**
- Watch for the "groupings" to re-appear each lap, noting any changes. Do not blue flag cars who have been dicing in a pack with one or more cars when the order of that pack changes (probably the single most blue flag error made).
- Review the grid sheets, if possible, if not, take note of the grid order on the pace lap. Ever wonder how some drivers afford their very fast cars?...they work Saturdays! Take note of fast cars that are starting in the last few rows, instead of in the front (where they're likely to finish).
- Anticipate the leaders overtaking the back of the pack. On turns where upstream visibility offers only a split second to decide and show the blue, you might want to time the leader's lap to get a ballpark feel for when he might appear. This "trick" can make you look like a psychic and in the case of some "blind" turns on street courses, the only way to know when to flag.
- **CONCENTRATE**

Flagging and Corner Worker 101 – 13 Nov 2017

The challenge to the blue flagger is to COMMUNICATE to the drivers:

- Show the blue in a deliberate, clear fashion, as opposed to a tentative, unsure manner. Bring the blue flag out smoothly and deliberately into the driver's view, leave it out until you are sure the message has gotten across, and THEN smoothly bring it back in. As with all standing flags, give the driver time to see and recognize the blue flag - do not display it so quickly that it startles the driver, or is not visible long enough to be accurately processed by his or her already busy mind. Rocking the flag will raise the possibility of a driver "seeing" it with their peripheral vision.
- A driver will be looking "thru" your turn to their next apex point. Try to get eye contact from the driver when showing the blue. When the blue flag is properly displayed, acknowledgment comes in the form of the driver checking his mirrors. This is a flaggers well earned paycheck. The enthusiastic wave or point during the cool down lap is a bonus.
- If you're displaying the flag to a car that is far away, raise the flag over your head and lower it to "normal" level as the object car approaches your position, as if you are "talking" ONLY to THAT car.
- Don't "harass" the slow driver who is pointing traffic by. Do flag the slow driver who may be surprised by a real fast car in the apex of your turn.
- Remember, the blue flag is an informational flag (GIGO).
- When you rotate to the yellow flag position, you are now watching downstream where the fruits of the blue flaggers efforts pay off...or not. The yellow flagger can give very helpful feedback in the form of a yes or no nod...did the overtaking driver complete his pass...or not. Sometimes the overtaking driver will think better of it and back off, but that's show biz, and his prerogative. This will help overcome the blue flagger's natural inclination to "sneak" a peek downstream to see if their blue worked (a period of time that leaves no one looking upstream).

This is not intended to be an all inclusive tutorial on blue flagging or being "Safety". Trackside time and experience are the best teachers. Blue flagging is the most difficult task that a flagger is asked to master, and one of the most satisfying, done correctly. It takes total concentration to do the job right and you have to be sensitive to changes with competitors as the session progresses. Learning when, where and how to best display it can only come with lots of practice. Your best efforts will be appreciated, mistakes will be made, but if you end your blue flag sessions knowing you've done the best you could, that's all anyone can ask of you.

1. Standing flag means a competitor is closing and is preparing to overtake the leading car.
2. Waved flag means the front car is being rapidly overtaken by the following car.
3. This flag is only used for lapped traffic, not cars racing for position unless cars of various classes are racing together.

At the end of practice laps wave at the drivers on the cool down lap and notice where they wave back. Where they wave is where they are seeing your flag during the race. Adjust your flag to driver communication zone to start slightly ahead of where the driver waves back.

White Flag

The first flag you will use on any given weekend is the white flag which is held by the blue flagger. It is displayed standing (that is, stationary or not waved) at each station for the first lap of the first practice or qualifying session for each race group to let the drivers know the location of the flag station.

Flagging and Corner Worker 101 – 13 Nov 2017

However, for the rest of the event, it means that a slow moving vehicle is on track. It may be a race car limping back to the pits with a mechanical problem or an emergency vehicle such as an ambulance, wrecker or fire/rescue vehicle. It could even be the worker transport vehicle doing a snack run during a victory lap. It is displayed standing, two stations prior to the slow moving vehicle. For this reason, it is important to indicate to Control that a white flag is displayed. The call should be very brief and recognition is not required from control, "Station 8 is white for wrecker on course". This tells Station 7 to put out their white flag too, a reaction that is assumed by Control and need not be reported on the radio. As the wrecker passes Station 9, their communicator will say, "Station 9 is white for wrecker". This tells Control that the wrecker has made it to Station 9 and also tells Station 7 that they can drop their white flag. The slow moving vehicle is then followed around the course with what is called "trailing white flags" at the two stations just prior to where the slow vehicle is at any given time. These white flags tell the driver, "Caution, you are approaching a slow moving vehicle (in this example a wrecker) and may need to adjust your speed and line accordingly". Drivers are allowed to pass such vehicle. However, when that slow moving vehicle comes to a stop the white flag is withdrawn and the vehicle is covered by the appropriate use of the yellow flag.

Yellow with Vertical Red Stripes -Surface Flag

The surface condition flag (yellow with vertical red stripes) is displayed standing (never waving) for a slippery surface condition on the track. Most commonly, it represents oil but could easily be water, fuel, dirt, gravel, sand, grass, mud or any other substance, including small car parts that can be driven over, or even a cone. Larger parts should be covered by the appropriate yellow flag. The surface flag, often called debris or oil flag, tells the driver, "Caution, there is something on the track that you can drive over but it will likely affect the adhesion of your tires and you may want to slow down a bit and/or look to avoid it".

The surface flag is displayed at the discretion of the workers on a given corner. Control is notified because the condition may exist at more than one station (eg. an oil stripe). Under racing conditions, the surface flag is withdrawn when there is an improvement in the condition or after two laps, whichever comes first. After two laps all drivers should be aware of the situation, and the surface flag may be needed again to indicate a new surface condition.

1. Debris, oil, slippery material or fluid is on course. There is something on the track that you don't want drivers to run over. This flag has the same authority as a solid yellow flag.
3. If the debris/fluid is small or not very obvious, point to the debris, oil or fluid if you are close; otherwise, motion (PUSH) the drivers to move one way or another to avoid it.
4. Drivers follow the same rules as for other yellow flags: Slow down, choose a line to avoid the debris/incident.
5. No flag is required for fluid or debris off line that is not in danger of being hit.

Black Flag

The black flag (solid black) may be displayed at all stations under a condition known as "black flag all", only when called for by the stewards via control. It will often be displayed with an "ALL" sign at Start/Finish and at the designated black flag station (Station 5 at NHIS and Station 10 at Lime Rock). A standing black flag at every station tells the drivers, "The session (practice/qualifying) has been stopped, proceed directly to the pits. Do not take another lap".

Flagging and Corner Worker 101 – 13 Nov 2017

The black flag may be displayed individually at Start or at the Black Flag Station, usually with a number board indicating the number of the car to which it is being given. Depending on how it is shown, it has different meanings. A furled (rolled-up) black flag pointed at the offending driver is a warning to that driver that he has done something wrong out on the track. The stewards are aware of it, and will be watching him for further indiscretions. If he does it again, an open black flag will be shown. The open black flag, displayed at Start and the Black Flag Station, again with a number board, indicate to that driver that he is to come to the pits, on that lap, and see the Pit Steward for a reprimand or penalty. The operating steward will have notified the pit steward about what that driver did wrong.

1. It is never waved.
2. This tells the driver that the session is over, racing is discontinued.
3. Everyone will proceed back to the pits immediately.

Mechanical Black Flag – Meat Ball

The mechanical black flag (black with orange ball), or “meatball” as it is often referred to, is shown to a specific car, with a number board at the black flag station. It indicates to the driver that there is something mechanically wrong with his racecar and that he is to return to the pits immediately to correct the problem. It is given, most commonly, for a car that is dropping oil but could also be given for any mechanical problem identified by the corner workers or the driver’s crew. Common reasons for a mechanical black flag include no window net, a loose hood pin, a dragging exhaust or loose wheel.

Rarely, a car could be on fire and the driver does not know it. In such a case, the corner worker will shake a fire extinguisher at the driver. It is not a flag, but the message is communicated to the driver, loud and clear, when every station on the track is waving a fire bottle at him!

In order to facilitate the accurate display of the open black flag or mechanical black flag to the correct driver, the black flag station and Start will ask for a “point”. This means that the stations preceding the black flag station will announce, over the net, that “car # 55 yellow” is at their station and that the black flag station or start can expect him next. During a “black flag procedure” all other stations should maintain radio silence except for an emergency.

Red Flag

The red flag (solid red) is displayed standing at all stations simultaneously, only at the command of the operating steward via Control. It means “extreme danger, the session is stopped. Come to an immediate, controlled stop at the side of the track and await further instructions”. The red flag is usually displayed when an incident has created a full course blockage to the flow of cars on the race track.

Drivers should pull to the edge of the race track to allow for passage of emergency vehicles. Only after all competition vehicles have come to a stop, will drivers be released from a red flag condition by the

Flagging and Corner Worker 101 – 13 Nov 2017

display of a black flag at all stations, indicating that they should proceed cautiously to the pits. The red flag is not displayed often, but when it is, it must be heeded immediately to prevent further incident.

Although it is displayed open and standing, it can be rocked side-to-side to catch the driver's attention. In FIA and North American Unified Flag rules (at Pro events) the red flag is displayed waving, and has the same meaning as the "black flag all" flag condition in SCCA club rules. Thus at a Pro event, there is no way to stop all race traffic on the track.

1. The red flag means the same whether stationary or waving: The race/practice is over. Safe continuation of the race is not possible.
2. This flag will be shown at all flag stations.
3. Drivers will come to an immediate controlled stop at the edge of the track.

Multiple Flags

Multiple flags can be displayed at the same station to convey complex course conditions and situations to the drivers. It is not unusual to see a waved yellow and a stationary surface flag at the same corner.

There could also be a white flag shown at the same station. However, since a yellow flag implies "no passing" a yellow and blue flag will NEVER be shown at the same station.

In closing, a few comments on the mechanics of holding and displaying a flag. First of all, when the flag is not being displayed it is kept tucked under the corner worker's arm to "hide" it from the view of the drivers. The drivers should only see a flag that is meant to be shown. To display a "standing" flag it is important to show as much of the colored surface of the flag to the oncoming drivers. For this reason the staff (stick) of the flag is usually held in the dominant hand and the free edge of the cloth of the flag in the non-dominant hand. With tension on the flag in this manner, the full surface of the flag can be displayed at right angles to the oncoming race traffic. This technique also prevents the wind from waving the flag or changing the angle of presentation to the drivers. A waved flag is best held with one hand at the junction of the cloth and shaft. This gives a better balance to the flag and makes it easier to wave for long periods. Remember to wave the flag BIG! Big motion catches the driver's eye and leaves no doubt that you are displaying a waved flag. Drivers also see how much vigor you are putting into waving a flag and sense the urgency of the situation based on your body language. With the yellow flagger waving the flag vigorously and the other workers on the station motioning the drivers to slow down or keep to one side of the track, the message gets across. Remember at the beginning of this article I said that the flags are the only way we have of communicating with the drivers. While true, we can also shout with a flag or a fire bottle, depending on how we show it.

Green Flag – Only at Start/Finish Line

In SCCA club rules, the green flag is used to indicate that the race is underway and it is displayed only by the starter. It indicates that the course is clear. In certain Pro events, where FIA and Unified North American Flagging rules are employed, green flags are also displayed at all stations for the first lap after the start (or re-start) of a race. Likewise, a green flag is displayed at a station immediately after a station that is displaying a yellow flag to indicate that the course is clear. In such cases, it also delineates the end of the no-passing zone in distinction to the site of the incident as used in SCCA club rules.

Flagging and Corner Worker 101 – 13 Nov 2017

1. A waving green flag after a yellow flag incident tells drivers to resume normal racing.
2. A waving green flag may be used for the first lap and any restarts thereafter.

Checkered Flag – Only at Start/Finish Line

The checkered flag (black and white checks) tells the driver, “You have finished the race or practice/qualifying session, continue cautiously to the pits”. The checkered flag is usually shown only at Start, but may be shown at other stations during practice sessions to shorten turn around time between group.

Space for Notes

Communications

A lot of folk new to flagging are intimidated when it is their turn to be the Communicator. This is NORMAL, most people have not had the opportunity to use a "two-way" system. Get over it! If you feel uncomfortable when on the radio, let your Captain know!!! They won't let you out of doing it, but will work closely with you until your fears are gone, "leading" you through the calls. As a novice, the first call to Control your Captain should have you make is "Control...novice on the phones". This alerts Control to EXPECT calls from your station to not be perfect at first and that they have to be gentle with you. This "novice call" should not be in any way taken as being demeaning, it is just good for Control to know that they will be communicating with an inexperienced communicator at this particular Station. As the day goes on, and you rotate in/out of the Communicator's position, your Captain will decide whether or not you have to continue with the "novice on the phones" call.

The responsibility of the Corner Station Communicator is twofold:

1. Transmit information from the corner station to Control
2. Receive information from Control and advise Captain.

Who the heck is "Control", anyway? "Control" is located in Race Control. At a minimum, Race Control consists of Stewards, a Control communicator, and Recorder. An Operating Steward will be "in the chair" (in charge of), each session. They will have a backup Steward with them and together monitor the station calls and decide on how to handle situations on/off the track. The voice of Control (the Control communicator), receives calls from the various stations, EV (Emergency Vehicles), and other folk on the race radio network and insures that the Operating Steward understands the calls/situations. The Operating Steward will advise the Control communicator of what is to be communicated back to the Station(s), how they wish "things" to be done, when "things" are to be done, etc. All of the communications back and forth between Control and the Stations are recorded. The Recorder has the awesome responsibility of recording each communication in black and white in the "log" (a written history). The "log" is used to indicate incidents, track conditions, where pickups and their types are needed, etc. as communicated over the race network. The Recorder REALLY appreciates SIMPLE, CONSISE and ACCURATE calls from the stations.

To transmit to Control, first let them know YOU have something to say to them..."Control, this is Station 3", is a good beginning. By using this format, you inform Control that you wish to speak with them and who you are. Actually you are asking permission of Control to be acknowledged by Control. Control will reply with something like "Go ahead Station 3". You would then reply "Control, this is Station 3, we had car number four six spin off driver's left, just upstream of Station 4 and he has continued". Control will thank you and/or ask for additional information. Simple...huh, well it should be.

Simple. Calls SHOULD be KEPT simple to AND from Control. SPEAK SLOWLY. Gather the facts of what you wish to say in your head BEFORE you make the call. Make written notes to yourself (each Corner station should have a notepad).

COMMUNICATIONS POINTERS:

ALWAYS describe car numbers in words ("...car number four six not 46"), not in numeric format.

ALWAYS describe Station numbers in numeric format ("...Station 11 not one0one"), not in words.

Avoid "run-on" or "blow by blow" communications, make the fewest number of calls to describe an incident.

Flagging and Corner Worker 101 – 13 Nov 2017

DO:

- "Control, this is Station 3, we had car number four six, black and gold, spin off driver's left, just upstream of Station 4, he has continued and we are clear"

DON'T:

- "Control, this is Station 3, we have car number four six spinning"
- "Control, this is Station 3, he is going off"
- "Control, this is Station 3, he is on driver's left"
- "Control, this is Station 3 he is just upstream of Station 4"
- "Control, this is Station 3, car number four six has continued".
- "Control, that car color was black and gold"
- "Control, this is Station 3, we are clear".

Be brief but descriptive, using "standard" descriptions (slid off, drove off, spun off, etc...), advise if car has proceeded or what it will require at sessions end. "Standard" phrases aid Recorders in their note taking.

In the case of an incident where a car will not continue, advise Control of the driver's condition and location (OK, still in the car, out and over the wall, on Station, etc.).

Unless it is an EMERGENCY...refrain from radio usage on Pace and First race lap. Take notes on mundane incidents and call in after first lap is completed.

Radio SILENCE during Black Flag Procedures (Control should announce when Driver has acknowledged, pitted or Black Flag Procedure is over)

If a backup flag is needed from an upstream station, request the flag from the station directly, not thru Control ("Backup waving yellow at four, please"). Don't waste time trying to see if upstream station has put out a flag, ASK FOR IT. Communicator on the station being asked to display a backup flag should, first, insure flag is displayed, then, confirm to Control that the flag is displayed ("four confirms waving yellow"). Once the need for an upstream back-up flag has past, advise the upstream Station that they may drop their flag.

If you have multiple calls...(numerous, unrelated spins), advise Control you have multiple calls, wait for Control to ask you to continue, or "Hold". When cleared to make call, pause between each individual call for Control to ask you to continue (this temporarily opens the net for any urgent call to be made). Advise Control you are making the last call of any multiple call.

If the CAPTAIN determines an incident may require race stoppage, the Station Communicator should advise Control of the situation, giving details (circumstances, track blockage, etc...), and state "The Captain advises, the race be stopped". This gives the Operating Steward the information necessary to decide on the course of action to take.

EMERGENCY CALLS:

If your CAPTAIN indicates an Emergency call is required, the Station Communicator should key in saying "EMERGENCY, EMERGENCY This is Station X, we have an EMERGENCY!". Control will respond by

Flagging and Corner Worker 101 – 13 Nov 2017

asking all other Stations for radio silence, explaining there is an emergency at Station X. Control will then ask Station X what their situation is and if there are any emergency vehicles required immediately.

BLACK FLAGS and/or MEATBALLS:

Black Flags or Meatballs, to be shown at Start/Finish and the "Black Flag" Station, will have the cars "called by" by upstream Stations. Control will announce which Stations are to call the car by.

Black Flags or Meatballs, MAY be shown at Start/Finish ONLY. Cars will be "called by" by Stations upstream of Start/Finish only.

When "calling a certain car by", give the car's number, color and it's position in the pack. "Green car number one two by Station 11 now, third in a pack of 5".

FM RADIO versus LAND LINE COMMUNICATIONS:

Tracks that use FM Radios for communications are more the norm than those that use a Land Line system. FM Radios are battery powered radios that operate on a set frequency and allow only ONE COMMUNICATION AT A TIME. This means that when the microphone button is pushed, the button pusher has the ENTIRE frequency "tied up", and ONLY THEY can communicate. For this reason, calls MUST BE KEPT SHORT and the NUMBER OF CALLS KEPT TO A MINIMUM. When you need to make a call, insure that no one else is talking or that you would be interrupting a "back and forth" conversation between another Station and Control. The exception to this is if the need to call an Emergency from your Station arises, while someone else is transmitting. In this case (unless the call in progress is also an Emergency call), key the mike and make your Emergency call..."EMERGENCY, EMERGENCY this is Station X, we have an emergency!", un-keying the mike after the call. Do this until Control has confirmed hearing your Emergency call. The stations nearest you will be able to hear your Emergency call over a Station transmitting further from them. Be courteous on an FM radio net, all calls will probably be monitored by people other than "Race Officials". Do not speculate or judge on air. Provide Control with the information they ask of you, in a factual, objective manner.

Land Lines are found at permanent racing facilities. The Station Communicator is tethered to a junction box where the headset is plugged into. Generally follow the same procedures you would, as if you were using FM radios. The big difference is that more than one person can talk, and be heard, at the same on a Land Line. While this means you don't have to wait until someone else quits talking to talk yourself, you should wait until the net is clear to make your communication. Being able to "talk over" (or yell over), someone else is advantageous when you have an Emergency call to make...just do it!

DISCLAIMER:

There are procedures specific to sanctioning bodies, race Regions, race tracks, Divisions, Stewards, Flag Chiefs, etc. For example, you may be required to give a car's color and/or your Station's flag condition with every call you make...you may be allowed to say certain words on the net...not be able to say certain colors...you may even be required to identify an emergency vehicle with "Tiltbed" on it's door as a rollback! As a novice or someone new to the track you're working, don't forget to ask your Captain if there are any "local" communications rules.

Incident Handling

The corner crew implements emergency Operating Procedures during any incident that might cause injury to a driver(s), marshal(s) or spectator(s). A well-trained and well-oriented crew will not need to wait for instructions from the Corner Captain, but will perform their duties quickly and correctly. The Corner Captain will modify or direct the crew's response as the situation changes.

The Captain responds during an emergency by assessing the incident. He or she watches for signals from the safety/response marshals for information about driver condition and the need for emergency vehicles to assist with driver extrication, treatment, or transportation, and to fight fire. The Captain confirms that the communicator is requesting the necessary equipment or additional personnel to assist with managing the incident or securing a perimeter around the incident, if needed. The Captain may ask the communicator to request back-up flags at preceding stations. When circumstances dictate, the Captain should establish a runner to the incident to return with details for Race Control or to give instructions from Race Control or the Captain.

The Captain always controls the number of marshals at the incident. The area should be kept clear of those who are not helping with the incident or securing the area. If the session or race has not been stopped, marshals should return to their assigned stations as quickly as possible in order to be prepared for subsequent incidents.

Here are some additional techniques and guidelines to follow in the event of an incident.

1. Get marshal to incident safely (give a point from the station), and ensure that the marshal has a fire extinguisher and a rope. **Do not** send a marshal until they are needed (i.e. for a spin and continue). Wait until the dust settles after an incident to determine if a response is required. Response to an incident should be in the following order:
 - Safety or point person to respond first
 - Blue flagger responds next
 - Yellow flagger passes off the yellow flag to the communicator and responds next
 - Captain responds last to maintain communication with control.
2. If the vehicle is on fire, handle the fire first! Call for fire and rescue if needed. When a vehicle is on fire, two marshals should respond in order to back each other up on the fire bottles. Teamwork is extremely important when it comes to fire safety. One marshal should sweep with the extinguisher while the other holds their extinguisher at the ready for back up purposes. There are more detailed notes on fighting fires in the Fire Extinguisher section.
3. Determine the condition of the driver and call for an ambulance if necessary. If

Flagging and Corner Worker 101 – 13 Nov 2017

driver appears to be all right but the impact was severe, request a medical at the end of session for the driver. If the steering wheel is bent or the driver's helmet is cracked or appears to have sustained damage, call for an ambulance NOW! It is always better to be safe than sorry when dealing with possible medical complications. Do not allow the driver to exit the vehicle until the ambulance arrives. If the driver has sustained any neck or back injuries due to an impact, allowing the driver to move may cause further damage.

4. Attempt to clear the track and go green. Call for a wrecker if the car is immovable. If the car is in a safe location (away from track, not in direct line of impact, et c.), it can be left where it is until the end of the session. If the car is in a doubtful location but cannot be retrieved without blocking traffic, or there are only a few minutes left in the session, it may be best to leave the car there until the end of the session. You may request a wrecker or flat tow now from Control, but be aware that these requests are not always granted. Cover any vehicles with the appropriate yellow flag (stationary for off-track, waved for on-track).
5. Call a "Priority" if equipment is needed now. Call an "Alert" for a rollover or severe impact. The following information is critical in case of a "Priority/Alert":
 - Station number and flag condition
 - Car number & color (for medical information)
 - Incident location (helps to determine if a shutdown will be needed)
 - What equipment is needed (wrecker now, ambulance now, etc.)The correct way to handle a "Priority/Alert" call is as follows:
Call to Control: "Alert, alert. Turn 7 waving yellow." Or "Priority, Turn 7, waving yellow. "

Space for Notes

Flagging and Corner Worker 101 – 13 Nov 2017

Worker Licensing

Workers at SCCA races should be SCCA members. It is often possible to join the SCCA at the registration booth for an SCCA race, although it is probably preferable to join before that and have your membership card with you when you go to your first event, as this will speed up the worker registration process. Note that some specialties have clothing requirements; these are mentioned in their descriptions above.

The grades of licenses are as follows:

Regional Licenses

The Regional license is the "Trainee" license for new workers in a speciality. Any SCCA member can obtain a regional license simply by filling out the proper form, which is readily available at any SCCA regional race. Regional license may also be obtained by calling Central Licensing at the National Office. Regional Licenses may be renewed indefinitely, without any requirement that the member work a minimum number of events during the year.

Divisional Licenses

The Divisional license is typically held by an experienced worker in a particular speciality; the holder of a Divisional License is permitted to work in any position in that speciality except for Chief at a National race or Chief at a School. Other restrictions may apply in specific specialties (for example, Race Vehicle logbooks may only be issued by the holder of a National Scrutineering License.)

To upgrade to a Divisional license, a Regional license holder should have at least two years of regular participation in their speciality, typically 8 days (4 races or other events) or more for each year. To renew a Divisional license, the holder should expect to work 8 days per year in their speciality.

National Licenses

National licenses are held by the top people in their specialties; Chiefs of Specialties and the Regional Administrators for specialties usually hold National Licenses.

Vocabulary

APEX - The point in a corner where a car is closest to the inside edge of the track. Drivers try to "hit" the apex to take the straightest line and maintain maximum speed. See also early apex and late apex.

ARMCO - Steel material forming barriers designed to prevent vehicles from leaving race tracks similar to highway applications.

BACK OUT - When a driver takes his foot off the gas pedal (all the way or part way), he "backs out" or "lifts off."

BALACLAVA - Fire resistant headgear worn under helmets.

BITE - The amount of traction that a race car has at the rear wheels. Adjustments can be made to the car that puts more "bite" into the rear tires by adding weight or wedge to the car.

BLOCKING - Racing term for changing position on the track to prevent drivers behind from passing. Blocking is accepted if a car is defending position in the running order but considered unsportsmanlike if lapped cars hold up more competitive teams.

BLOW UP - Irreparable engine failure which ends a racer's day.

CHASSIS - The basic structure of a race car to which all other components are attached. Indy cars have carbon-fiber monocoque "tubs" while a NASCAR stock car has a steel tube frame chassis.

CIRCULATING - Driving around a track with a damaged and/or slow car to accumulate laps and, more importantly, points and prize money.

CLEAN AIR - Air without turbulence created in the wake of other race cars. Clean air is found at the very front of the field.

CLIPPING - Minor contact between race cars. Also often refers to hitting precisely, or "clipping," the apex of a turn.

CLOSED-WHEEL CARS - The suspension, wheels and tires are mostly covered by the body. Production-based race vehicles such as NASCAR stock cars are examples of closed-wheel cars as opposed to open-wheel "formula" cars.

COCKPIT - The area where the driver sits in a race car.

DIRTY AIR - The turbulence created in the wake of other race cars.

EARLY APEX - A driver turns into a corner early.

ECONOMY RUN - Driving slower to conserve fuel. Some series cars can actually manipulate air/fuel levels (less fuel, more air) to run "lean" and conserve fuel.

FLAT SPOT - When drivers lock up brakes, they expose one area of their tires to excessive wear causing flat spots to develop. Flat spots lead to vibrations which may require a tire stop.

FLAT-OUT - Refers to using 100% of the race car and not holding back on the ability of the car in a race (i.e. as in running flat-out).

GOT UNDER - A driver out brakes an opponent on the inside of a turn and makes a pass.

GREEN TRACK - A track that has little or no rubber on it from previous races. A green track is a bad condition that allows little or no traction for a race car.

HAIRPIN - A slow, 180-turn which exits in the opposite direction a driver enters.

HAMMER DOWN - The driver has the pedal to the metal or has "dropped the hammer" full throttle.

HEADSOCK - A fire resistant head mask or balaclava.

HELICOPTER TAPE - Used to cover and protect exposed areas from flying debris as helicopter technicians developed it to protect rotors.

HOLDING UP TRAFFIC - When a slower race car causes cars running faster on the track to slow and does not heed the "move over flag" of the race officials.

HOOKE UP - A car that is performing great because all parts are "hooked up" or working well together.

INFIELD - The enclosed portion of a track which includes team garages on most oval tracks. During race weekends, this area is usually filled with large transporters, merchandise trailers, and driver and fan motorhomes.

Flagging and Corner Worker 101 – 13 Nov 2017

INSIDE GROOVE OR LINE - On an oval track, this is the innermost racing line which is usually separated from the infield by a distinctly flat surface called an apron. On road courses, the inside groove refers to the line closest to the curbs or walls forming the inner portion of turns.

IN THE FENCE - A phrase used to describe the wreck of a race car involving several cars or only one car.

LAP CAR - Any race car that is running one or more laps down to the leader of the race.

LAP(S) DOWN - The number of laps a car is running behind the leader of the race. It can range from only one lap to several hundred.

LAUNCH - A car can be propelled or launched into the air (all four wheels are off the ground) by hitting a severe bump or another car.

LATE APEX - Turning into a corner late and missing the optimum apex point.

LEAD LAP - The race leader's lap. If the leader laps you for the first time, you are no longer on the lead lap.

LOCK UP - Just like production cars, racers can lock up the brakes and even "flat spot" their tires at race speeds.

LOOKS TO PASS - A driver ponders a pass. The driver will actually move over, look at the possible passing area and make a decision to go or not.

LOOSE - A car has more grip in the front than the rear end and tends to "fish tail." Drivers often report whether the car is "loose" or "tight" so the crew can make Pit Pass adjustments. Please see oversteer.

LOOSE STUFF - Area above the racing line that contains chunks of rubber, stones and other materials that can harm the car or tires and cause a driver to lose control.

MARBLES - Rocks and debris that collect off the racing line. If a driver enters the marbles at an excessive speed, his car will lose grip and drive perilously into awaiting hazards as if a person walked across a bed of marbles.

MOTORING - When a driver is using the race car in a prudent and wise fashion and not demanding more of the car than it can perform.

OFF LINE - Driving off the best racing line. Drivers will go off line to attempt a pass or to move out of the way of faster cars.

ON THE THROTTLE - A driver has the pedal to the metal.

OPEN WHEEL - Formula One and Indy car style race cars which are designed to have the suspension, wheels and tires exposed, no fenders.

OUT BRAKE - A driver gains time and position on an opponent by applying the brakes later and deeper into a corner.

OUTSIDE GROOVE - The outside racing line. Sometimes a car will handle and perform better on the outside/inside line and a driver opts not to use the optimum groove.

OVERSTEER - A condition when the front of a car has more grip than the rear. This is the same as a car being "loose."

OVERTAKE - A term commonly used by announcers meaning a pass.

PACE CAR - The car which leads the field to set the pace before starts and restarts after cautions.

PADDOCK AREA - The enclosed portion (or infield) of a race track.

PARADE LAP(S) - The warm-up lap before a race. Drivers use this lap to warm up their engines and often zig-zag to warm up tires.

PARKING LOT - After a big crash which takes out a lot of cars, the track looks like a parking lot.

PHYSICAL CIRCUIT - Usually refers to road courses which require a lot of turning and hence, great physical strength.

PIT ROW - The area designated for teams to set up temporary garages during races accessible to ("pit out") and from ("pit in") the track. Each team is allotted one pit area (or space) per car. Drivers pit so crews can refuel, change tires and make any other repairs or adjustments. Simply called the pits most often.

PIT BOARD - A board used by crews inform drivers of lap times, lap until pit and other various information. The board is used along with team radios to keep in constant communication.

PITS - Short for pit row or a dejected driver. Also see hot pits for cold pits.

Flagging and Corner Worker 101 – 13 Nov 2017

POLE POSITION - The driver qualifying fastest is awarded the first starting position. This means the driver will start on the inside (relative to the first turn) of the first row.

PUSHING AND SHOVING - Race cars making contact.

RACE RUBBER - Race tires as opposed to qualifying tires.

RACER'S TAPE - Heavy duty duct tape used to temporarily repair hanging body parts which might hinder aerodynamic features and decrease performance. Most commonly used on stock cars (e.g. NASCAR Winston Cup) which use more paneling than Indy-style cars and are accustomed to more contact.

RAIN TIRES - Softer compound with better tread for wet-weather conditions. In dry conditions, these softer tires wear faster than harder compound tires with less tread.

ROAD COURSE - A race track with multiple left and right hand turns. Generally refers to permanent, purpose-built racing facilities. Can also refer to temporary street courses built on big city streets which were popularized in the 1980's.

ROOSTER TAIL - The spray trailing cars in wet conditions similar to the effect boats create across water.

RUBBING - Racing announcers use this describe cars that make contact but don't crash. Also called "pushing and shoving."

SCUFFS - Tires that have been run a few laps in practice to heat them up. This make them adhere better under race conditions. Term used in NASCAR racing.

SCRUBBED TIRES - The best kind of racing tire because they've had a few laps of wear to normalize the surface. Term used in CART, IRL and F1.

SETUP SHEETS - Documents with recorded setups from different tracks under varying weather conditions. Teams use this baseline to adjust setups when they arrive at a track.

SHAKEDOWN - First test with a brand-new car or engine.

SHIFT POINTS - The best engine r.p.m. at which to shift gears. Some production and race cars have lights to indicate when a driver should shift gears.

SLICKS - Tires with no tread designed for dry weather conditions.

SLICK TRACK - Usually an oval track with an unusual amount of oil and other fluids on it making it difficult to drive.

STICKERS - Brand-new tires with the manufacturer's label (or sticker) still on the surface. Teams generally use sticker tires during qualifying, then use scrubbed tires in a race. See scuffs or scrubbed tires.

TECH - Short for tech (or technical) inspection. Each car is submitted to tech inspection so sanctioning body officials can confirm all chassis and engine parts meet series' guidelines. A "teched" car has passed inspections.

TELEMETRY - Highly sophisticated electronics which transmit performance data back to a team's pit.

TUCK UNDER - A driver follows an opponent close enough to move into (or tuck under) their draft.

UNDERSTEER - When a car has more traction (or grip) in the rear than in the front.

VORTEX - In wet conditions, race cars can produce vortexes off their rear ends or wings. These vapor trails are similar to those produced by the engines of jet planes.

WARM-UP LAP - The lap before a race starts. Drivers use this parade lap to warm up their engines and tires.

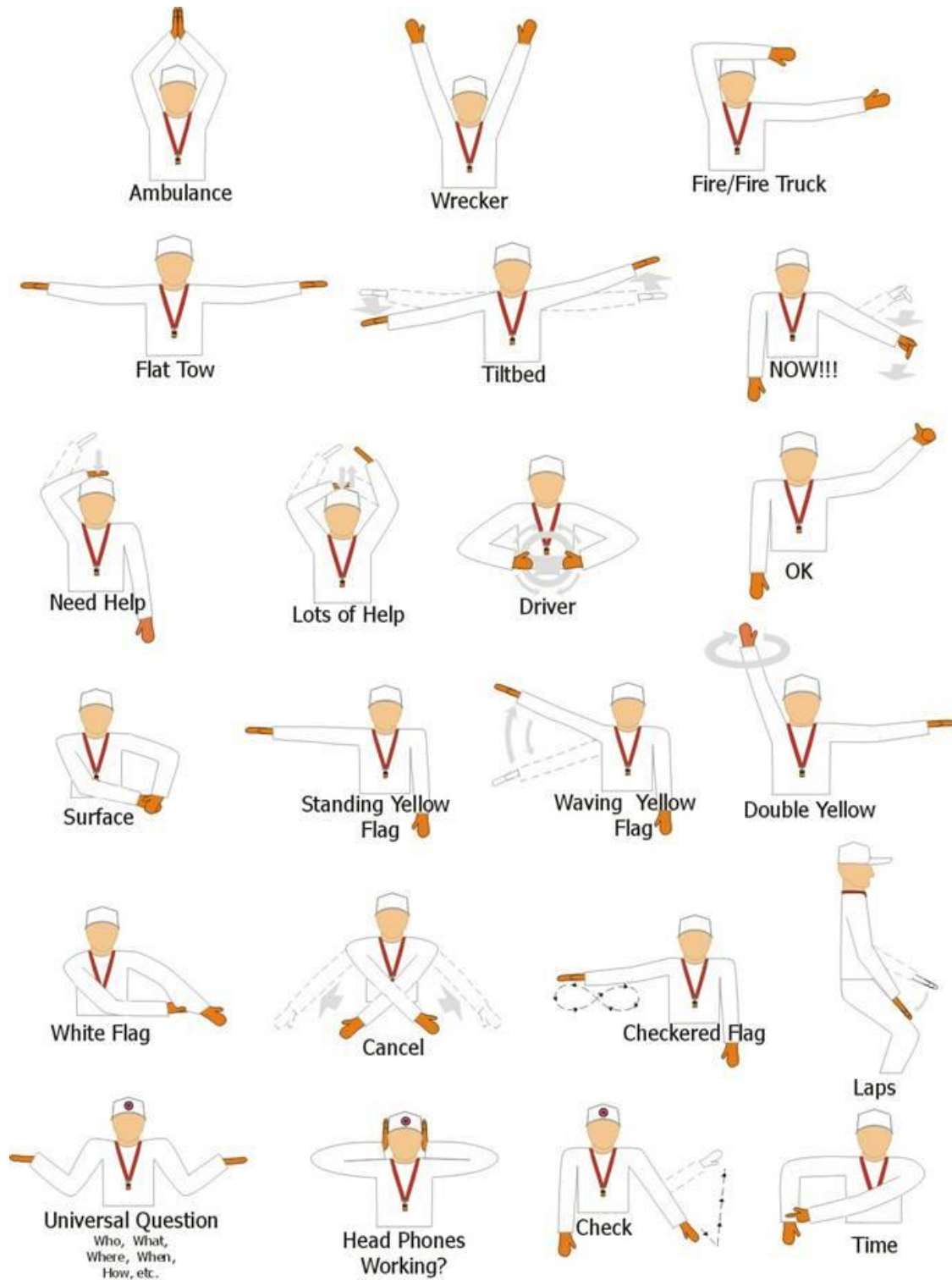
WEAVING - Zig zagging across the track to warm up and clean off tires, or to confuse an opponent while attempting a pass.

WETS - Tires designed to perform better in the rain.

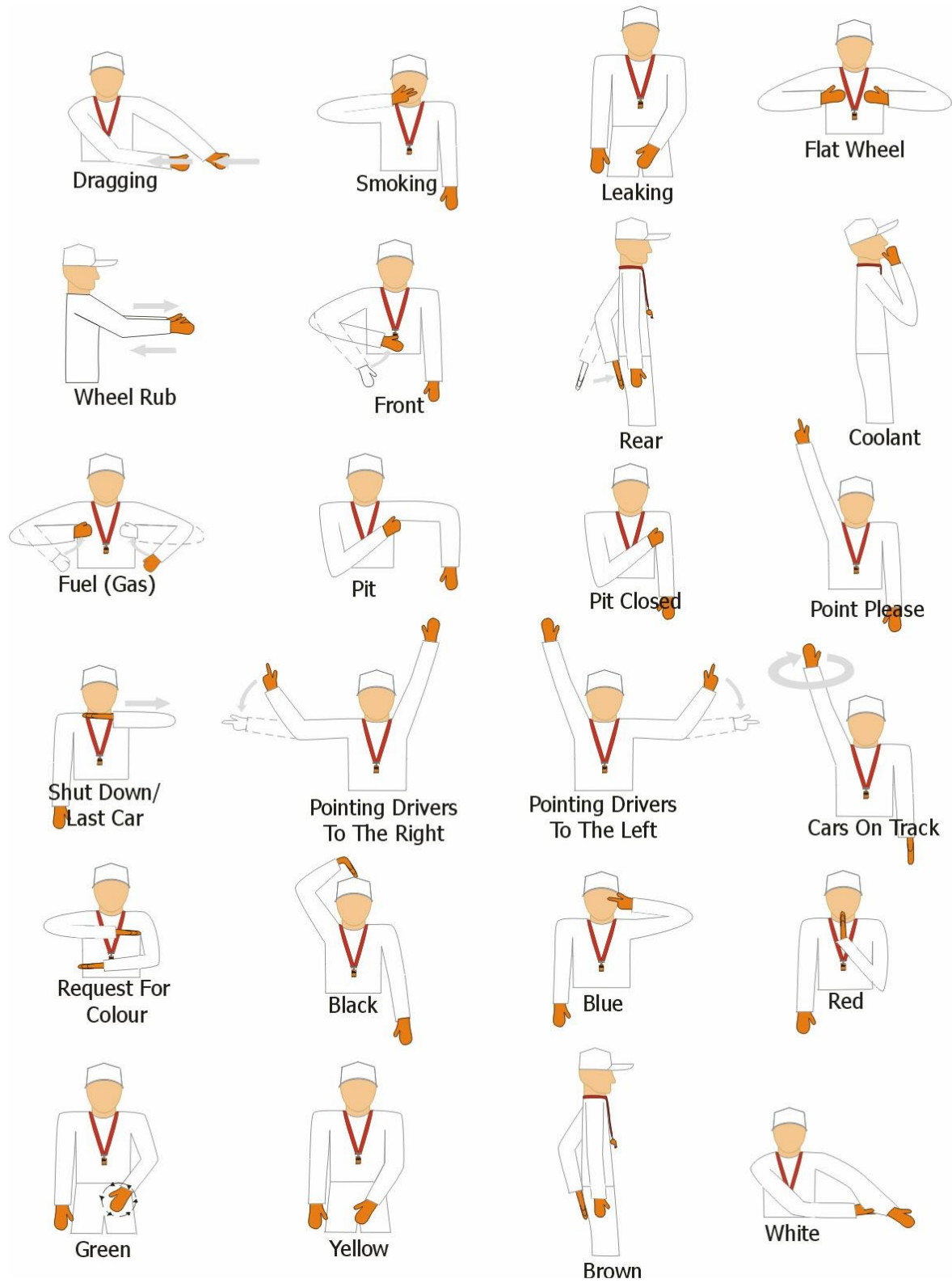
ZIG ZAG - To sharply move back-and-forth on the track. Drivers often zig zag on warm-up laps to heat up their tires.

Space for Notes

Flagging and Corner Worker 101 – 13 Nov 2017



Flagging and Corner Worker 101 – 13 Nov 2017



F&C Number Signaling Method

When signaling numbers place your body square to the "receiver". Pat out the numbers SLOWLY. When the number to be signaled contains more than one digit (ex. #83), signal the second digit on the opposite side with a short pause between.

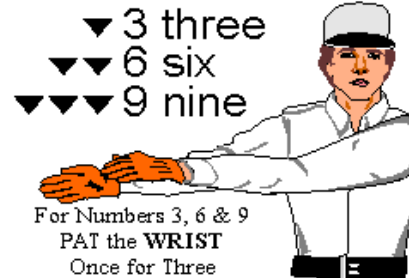
For Numbers 1, 4 & 7
PAT the **SHOULDER**
Once for One
Twice for Four
Three times for Seven



For Numbers 2, 5 & 8
PAT the **ELBOW**
Once for Two
Twice for Five
Three times for Eight

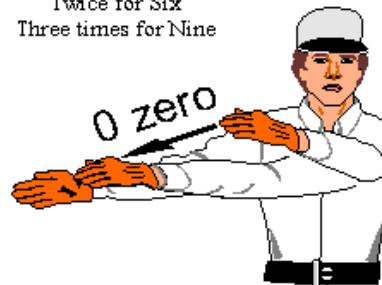


NUMBER SIGNAL
Indicates you are going to signal a number



For Numbers 3, 6 & 9
PAT the **WRIST**
Once for Three
Twice for Six
Three times for Nine

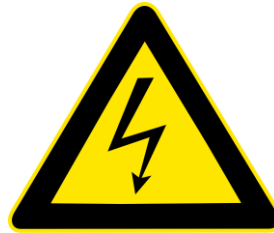
For the Number 0
Start at the **SHOULDER**
Slide the Upper
Hand Down the
Extended Arm



Other things you might need to know

Electrical Cut-off Switch

Race cars are required to have Electrical Cut-off Switches for killing electrical systems in times of extreme panics. Each switch should be identified by a lightning bolt in the near vicinity but necessarily by the switch. The lightning bolt will alert rescue workers where to look for the Electrical Cut-Off Switch but finding the switch in an emergency may still be a challenge. The following pictures will give some idea where the labels and switches are found.



Racing Electrical Cut-off Switch symbols are usually blue with a red thunderbolt.

Sometimes you might see the international symbols which are similar to these decals

If there is a fire, effort should be made to turn off the electrical switch which will kill any electrical fuel pumps.



The switch should be close to Lightning Bolt Decal but in this case it is inside the vehicle.



This decal and switch are in front of the windshield, easy to see and easy access.



This switch has easy access but has no decal. Be prepared for this situation.



Note in these two pictures that the switch is next to the decal but the switches do not look alike. The switch itself does not seem to have a standard type.



A good example of a easy to find decal with an accessible switch.

Flagging and Corner Worker 101 – 13 Nov 2017



This switch is further from the decal but should still be easy to find.



This vehicle has a decal on the outside and then one by the switch itself.



The decal on the frame is easy to see but the switch is not close and might be missed in a panic.



This switch is right by the decal but note that this decal looks different although it is a lightning bolt.



The switch and decal by the driver's window is easy to find and easily accessible.

Fire Control Lever – On Board Fire Control Systems

Many classes of cars have onboard fire control systems. These systems are designed to be triggered by the driver but in some instances the driver might not be able to initiate the fire extinguishers so corner workers should be familiar with the location of these systems.

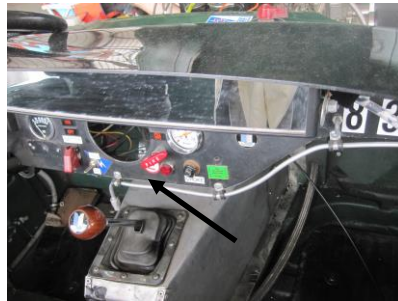


The SCCA symbol for the on board fire control system is the Red "E" for extinguisher.

Flagging and Corner Worker 101 – 13 Nov 2017



Symbol on door with fire Extinguisher on console



Symbol and pull lever above shift level.



They may be a symbol on the body but it would help to have one by the lever.



Symbol and lever easily visible.



Symbol on the body is adjacent to the lever just inside the cockpit.



Symbol and lever by shift lever.



Symbol on dashboard with lever On the side of the console.



Fire control and electrical cut-off Positioned in center of dashboard.



Little decal may cause confusion as fire handle is between electrical cut off symbol and electrical cut off switch.



Symbol on body is adjacent to the switch just inside the window.



Symbol on body is adjacent to the switch on the dashboard.

Flagging and Corner Worker 101 – 13 Nov 2017

Fire Extinguishers

Common Fire Extinguisher Information as general background						
Class	A	B (Liquid)	B (Vapor)	C	D	K
Nickname	Ash	Bottle	Boil	Current	Metal	Kitchen
Typical Propellant	Wood, Trash, Paper, Textiles, Plastics, Etc	Gasoline, Oils, Greases, Paints, Solvents, Etc	Methane, Propane, Etc	Circuits, Wiring, Etc	Magnesium, Titanium, Potassium, Aluminum, Etc	Food Fats or Oils (Commercial Kitchens)
What to look for	White, Grey, or Black Smoke	Oil burns bright yellow, Gasoline burns heavy and thick black smoke	Methane has a sweet odor but a fire may not be visible in bright light	Grey or white smoke but insulation burns black	Little smoke but a bright light	
European Class	A	B	C	E	D	B
Common Chemicals	Monoammonium phosphate, (dry Chemical), Water, Cold Fire	Monoammonium phosphate, (dry Chemical), Sodium Bicarbonate, Carbon Dioxide	Monoammonium phosphate, (dry Chemical), copious amounts of water, Sodium Bicarbonate, Carbon Dioxide	Monoammonium phosphate, (dry Chemical), Sodium Bicarbonate, Carbon Dioxide	Cold Fire, Special Dry Powders	Cold Fire, Potassium Acetate Based Wet Chemical
Notes	Carbon Dioxide not recommended for Class A fires	Water or Cold Fire not recommended for Calls B or C fires	Water or Cold Fire not recommended for Calls B or C fires	Water or Cold Fire not recommended for Calls B or C fires		Dry Chemicals should not be used on Vegetable oil fires
More Notes	Monoammonium phosphate is highly corrosive if moisture is present	Monoammonium phosphate is highly corrosive if moisture is present	Monoammonium phosphate is highly corrosive if moisture is present	Monoammonium phosphate is highly corrosive if moisture is present		
	ABC is recommended for home and car uses	ABC is recommended for home and car uses	ABC is recommended for home and car uses	ABC is recommended for home and car uses		

Always check all bottles each morning to make sure the pressure gauge needle is in the “green” zone.

Always take your own bottle and your leather gloves

If two people respond,

one should carry the bottle

the other responder should be fresher and should fight the fire once on site.

YOUR SAFETY IS ALWAYS FIRST –

- 1) Don't respond if the scene is unsafe
- 2) Don't respond unless Race Control has been notified and approved the response
- 3) Look out for other corner workers
- 4) Beware of oncoming traffic – keep the disabled vehicle between you and oncoming traffic if possible
- 5) Safety of the driver
- 6) Race equipment including race cars

As you approach a car, perform a reconnaissance

Note the direction of traffic

Note where the fire is located

Note what type of fire is it – do you have the correct fire extinguisher?

Auto Racing Generally uses these types of Fire Extinguishers

Flagging and Corner Worker 101 – 13 Nov 2017

		Water or Cold Fire	Dry Cem	Other Information
Fiberglass and Carbon Fiber	Grey to Black smoke with red flame	Yes	No	Dry Chem chemicals are highly corrosive if moisture is present
Alcohol or Methanol	Methane has a sweet odor but a fire may not be visible in bright light	Yes	No	
Magnesium (sparking)	Little smoke but a bright light	NO	No	Wait for Fire Truck
Fuel Fires (gasoline)	Oil burns bright yellow, Gasoline burns heavy and thick black smoke	NO	Yes	Shut off car's electrical system
Driver on Fire		No	Yes	Have driver hold his breath, hold yours also, Apply from upwind if possible

Shut off the Electricals

YOU CAN NOT PUT OUT A FUEL FIRE IF THE PUMP IS TILL RUNNING

Shut-off Choices

- Use the shut-off switch
- Remove the keys
- Disconnect the battery
- Whatever it takes

Fight fire as a last resort

- Pull the pin but save it for future use
- Aim the nozzle
- Sweep Side to Side at the base of the flame
- Cold Fire extinguishers are best with 2-3 second bursts
- You might as well use it all to be sure the fire is out
- Open Wheel Cars – Concentrate on Engine Cowlings
- Sedans – Concentrate under the hood
- Bikes – soak the ground around the bike
- Fuel spills – apply dry chem directly
- Smoke Under the Hood
 - Access sometimes possible through the wheel well
 - Access might be possible through the radiator opening
 - Access might be possible through gaps at the windshield
 - On production cars, use 2 people
 - First Person cracks open the hood carefully
 - Second person sticks the nozzle in the crack

Never turn you back on the fires as it might re-ignite

Wait for Rescue trucks

Advantages of Cold Fire

- Stream shoots 20-25 feet
- Removes heat
- Flame retardant
- Penetrates better
- May be squirted in 2-3 second spurts
- Once used it can be set aside awaiting its next use

Advantages of Dry Cem

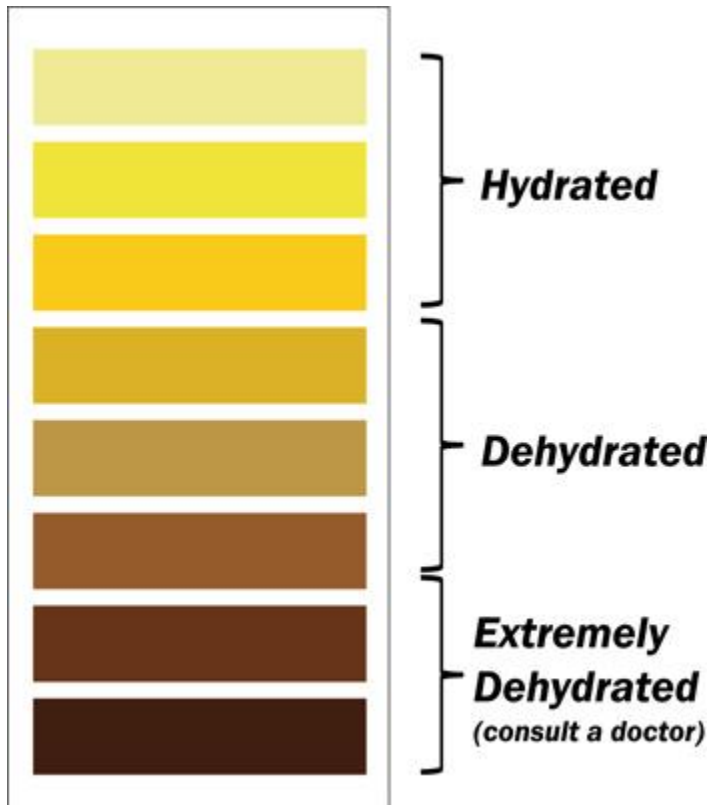
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- Removes oxygen from the fire
- Disadvantage of Cold Fire
 - It spreads fuel fires
- Advantages of Dry Cem
 - Removes oxygen from the fire
- Disadvantages of Dry Cem – it eats metal and electrical circuits
 - Turn off the engine as it will inhale the chemicals and will eat the engine from the inside
 - Spray only what is necessary, try to use sparingly but let it work
 - It removes oxygen so try not to use around unconscious driver
 - Once used it will leak down in time
- SCCA Onboard Fire Suppression is often described as junk – Let the driver use it
 - Not reliable Never Depend on it

Hydration

- Hydration starts the night before an event.
 - Try to get 8-10 8 oz glasses or more of a suitable liquid the day before an event.
 - Coffee is a diuretic so limit intake to less than three cups a day
 - Dehydration can happen year round
 - Instead of sports drink spice up water with fruit or powders
 - If you are dehydrated eat a lot more fruits and vegetables
 - Natural unrefined sea salt (often called finishing salt) is much better than table salt
- Signs of Dehydration
 - Increased thirst
 - Bad Breath
 - Dry Mouth and or swollen tongue
 - Weakness
 - Dry Skin
 - Muscle Cramps
 - Chills and/or Fever
 - Craving sweet foods
 - Inability to sweat
 - Headaches
- Suggestions based on the color of your urine
 - Hydrated – Keep up the good work
 - Dehydrated – Drink a bottle of water now each hour throughout the day
 - Extremely Dehydrated – Drink a bottle water NOW and each hour throughout the day

Flagging and Corner Worker 101 – 13 Nov 2017



Remember that up to 50% of your body's head is lost through the head so hats should be considered in hot and cold weather. Wide brim hats also help protect against sunburn.

Rain Ware

White Rain Suits are nice to have during those tropical downpours. These suits can also be insulated for northern events. Rain suits in yellow and camouflage are easy to find but are not acceptable for flagging. Sources for white raingear include Seattle Marine, Helly Hansen, or the SCCA (www.sccagear.com).

White Ponchos may also be used and are lighter to carry. These may be found at army surplus stores, Home Depot, or sporting goods stores. Team logos are acceptable as long as the poncho itself is white.

Clear Raincoats also work and might be easier to find. The cheaper types are usually only good for one time use but always keep one as a spare.

Seat Belts

All SCCA classes require that seatbelts be used when cars are on the track. Sometimes a driver will pull off the track and will need assistance securing their seatbelts. With modern head restraints, drivers can not look down into their laps and will need help making sure that their seatbelts are properly attached. Drivers can usually adjust tightness themselves.

Flagging and Corner Worker 101 – 13 Nov 2017



Modern five point harness. One belt through the Legs, two around the waist and two over the shoulders. This belt is locked with a rotary motion on the central cover knob. (Automobile picture courtesy of Winding Road Racing, Austin, Texas.)



A six point harness with two straps between the legs. This Safecraft harness also released with a rotary motion of the central cover. (Safecraft picture courtesy of Winding Road Racing, Austin, Texas.)



Over-center latch originated with the aircraft Industry but have been adapted for racing. This over-center may be five or six point Attachment.



This older style of over-center is usually found with Five point attachments. Note that belts are linked prior to being secured.

Steering Wheel Removal



Steering wheels are usually either splined or hexed. These pictures show a spline type connection. By compressing the flange on the hub towards the steering wheel ribs (note arrow in center picture), the splines are released and the steering wheel can be removed. The right most picture shows the pins that are retracted when the flanged in compressed. These pins fit into the grooves on the spline to secure the steering wheel.



The hex style of steering wheel



Window Nets

Flagging and Corner Worker 101 – 13 Nov 2017

Space for Notes

Lap Times vs Speeds for 3.427 COTA circuit				
MPH	Sec per mile	lap time	Lap Minutes	Lap Seconds
40	90.00	308.43	5	8.43
45	80.00	274.16	4	34.16
50	72.00	246.74	4	6.74
55	65.45	224.31	3	44.31
60	60.00	205.62	3	25.62
65	55.38	189.80	3	9.80
70	51.43	176.25	2	56.25
75	48.00	164.50	2	44.50
80	45.00	154.22	2	34.22
85	42.35	145.14	2	25.14
90	40.00	137.08	2	17.08
95	37.89	129.87	2	9.87
100	36.00	123.37	2	3.37
125	28.80	98.70	1	38.70
130	27.69	94.90	1	34.90
140	25.71	88.12	1	28.12
145	24.83	85.08	1	25.08
150	24.00	82.25	1	22.25
155	23.23	79.59	1	19.59
160	22.50	77.11	1	17.11
165	21.82	74.77	1	14.77
170	21.18	72.57	1	12.57

Flagging and Corner Worker 101 – 13 Nov 2017

Space for Notes