Electric Vehicle Grand Prix

Official Drivers Manual



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About the event

The Electric Vehicle Grand Prix (EVGP) is an efficiency challenge in which teams attempt to travel the longest distance over the course of a total of one hour of racing. The vehicles may be split into two running groups, Group 1 and Group 2. Each group will race two half-hour races with a driver change in the middle of each half-hour race. Group 1 will race for a half an hour, followed by group 2 racing for half an hour. Then group 1 will go back on track for their second half hour, then group 2 will finish the race day with their second half hour. The breaks between races will last about ten minutes, allowing for about a 45 minute break between each team's two races during which time teams can analyze their early performance and make any necessary changes in setup or strategy. The laps from both half hour sessions will be added for a final score.

Spirit of the event

The EVGP is an endurance race. It is definitely NOT a sprint, or a race where relative position amongst the field is important until the checkered flag. If raced at full throttle, the batteries in the cars will not last the entire hour. However, going so slow that a car still has 40% of the battery remaining at the end will likely not win the race either. Successful teams not only have a well-built car, but also know what pace their car is capable of, and will run that pace.

Because of this, trying to stay in the lead while ignoring the toll on the batteries will only result in being able to say that at ONE point your team was in the lead. It will be a hollow victory since in reality all that is required to stay in the lead is to stay at full throttle for the first few laps. But that is foolish since it will essentially guarantee a dead battery before the end of the race.

Thus, there is no need to race aggressively in the EVGP. There is no need to risk spinning out at the entrance of a turn because you just barely beat your opponent to the next corner but didn't have enough room to slow for that corner. There is no need to cut off an opponent trying to pass you. These are risky maneuvers that are not required for success. Intentionally blocking your opponent is also against the spirit of the event, and will not be tolerated. Driving in an unsportsmanlike manner can lead to penalties for your team including disqualification.

Flags

During the qualifying and racing sessions, it may be necessary to communicate with drivers to alert you of a dangerous situation, or to prevent one. The race officials do this with flags. There will be several Marshals (flag workers) located around the track. Most of the time, they will not be flying any flag at all. You must still be aware as you pass by their stations along the track to see if they are flying a flag. It is very important to understand what you are to do upon seeing each flag, and that you do it regardless of what others may be doing. The following flags will be used during the race:

Green flag



The green flag will only be flown in one of two scenarios: at the beginning of the race, and to restart the race after a red flag. The green flag will be raised slowly, then quickly dropped. Drivers must watch for the green flag to DROP as a signal to move their vehicles.

Yellow flag



This is the flag you are most likely to see. The yellow flag means that there is danger on the track somewhere after that flag, but before the next flag. It may be that a car has spun on the track, multiple cars have collided, or perhaps simply that multiple slow-moving cars are spread out across the track in a manner that leaves room for only one car to pass at a time. You should keep an eye out for the situation you are being warned of, and not overdrive your vision. If you are coming around a corner that you can't see past, you should go slow enough that you could stop if you were to come upon a stopped car. Once you have passed the flag worker holding the yellow flag, you are now considered to be driving under yellow and are in a NO PASSING ZONE.

Driving in a no passing zone means you cannot pass normal traffic. You may pass the stopped or obviously ailing car that caused the yellow flag, but not normally flowing traffic regardless of how much they may have slowed down in order to move through the dangerous situation safely. There is no set speed in a yellow zone. If driver A is leading, and they believe that walking speed is a safe speed to pass by an incident, and driver B is following yet believes that jogging speed is a safe speed, driver B is obligated to slow to walking speed once they catch up to driver A and not pass until the drivers are no longer under yellow. This prevents the situation where driver A believes that walking speed is safe, but despite that, they do several dangerous things to prevent being passed like speeding up, or concentrating on watching their mirrors instead of where they are going while maneuvering through a hazardous situation. That would be unsafe.

It is okay to pass again once one of the following happens:

- You pass by the incident and the track is clear after that.
- You reach the next flag worker, and they are not flying a yellow flag.
- The normal traffic you were following comes to a complete stop due to difficulties with their car. Be careful with this; if they have come to a complete stop because they believe the situation is too dangerous to pass, they are still considered normal traffic, and you should also wait.

Red Flag



The red flag is more serious than the yellow flag. The red flag means that there is an incident on the track that is unsafe to pass at all. It may be that several cars have collided, or there is an emergency. If you see a red flag, come to a safe controlled stop as soon as possible. There is no need to stop abruptly and get hit from behind, but stop soon. Obviously, there is no passing under red.

Black Flag



While the yellow and red flags are to communicate to the entire field, the black flag is for one driver in particular. It is to communicate to that driver that the officials are not happy with that driver's behavior. There are two types of black flags-the furled, and the unfurled. Both will be displayed to drivers by pointing the flag at them and making eye contact.

The furled black flag is held so that the fabric flag is held against the pole holding the flag so the flag appears bunched up. This is shown as a warning. The driver should wave or nod their head to acknowledge that they have seen the warning and then should contemplate what past behavior may have been deemed inappropriate. They are NOT required to come to stop or come to the pit lane, or do anything other than signal to the flag worker to acknowledge that they have seen the warning.

An unfurled black flag is held with two hands pulling the flag tight to fully display the black flag. The flag worker will make an effort to make eye contact with the offending driver and move the flag around vigorously while holding it open. Drivers receiving an unfurled black flag should enter the pit lane the very next time they come to the pit entrance. Drivers may receive a black flag for some egregious violation, dangerous driving, or simply because the officials have observed something is unsafe with the car such as a seatbelt strap hanging out enough to get caught in the rear wheel, parts of the car have fallen off or are threatening to, or simply because a team wants their driver to come in for any of a variety of reasons.

Drivers receiving an unfurled black flag should NOT stop on track. They need to proceed to the pit lane and talk to the race Steward. The Steward will instruct the driver why they were called into the pit lane. If it is an infraction, the Steward will discuss the infraction and continue talking to the driver until the steward is satisfied that the driver is knowledgeable enough, and has the right philosophy, demeanor and attitude to race fairly and safely. Keep in mind that this discussion is happening while the clock is ticking down. Arguing is rarely beneficial.

Serving a black flag and conducting driver change cannot both happen in the same visit to the pit lane. If a driver is black flagged during the driver change window, the driver must come in and talk to the race steward, then go back on track to complete at least one more lap, then re-enter the pit lane to conduct driver change.

White flag



The white flag indicates that there are two minutes left in the half hour. The driver should continue racing and complete the lap to receive a checkered flag at the start/finish line. The white flag may also be flown at the pit entrance indicating that the driver change window is in effect.

Checkered Flag



The checkered flag indicates that regulation time has ended and is waived at the start/finish line as each car crosses during the 2 minutes following the heat end. Once you have driven past the checkered flag, reduce your speed gradually and move to a safe stop on the right side and wait for instructions from the Steward or a race Marshal.

Qualifying

Starting order of the first half hour race of each group will be determined by the lap time achieved in qualifying. During qualifying there will be only a few cars on track at a time. Each car will get three full laps. Cars will leave the pit lane, cross the start line, do one lap at a relaxed pace to get a feel for the car and learn the track, then the second and third laps can be taken at whatever speed the driver feels comfortable. After completing the third lap, which will be the fourth time passing the start/finish line, cars should enter the pit lane and start charging to prepare for the race.

Race Start

The race will begin with a staggered start. The first two cars will be released at the beginning of the thirty minutes. Successive cars will be released until every car is on the course. Wait for your green flag before you start moving.

Driver Change

In the middle of each half-hour session, each team is required to switch drivers. There is a six-minute window between minute 12 and minute 18 during which time the driver change area will be open for driver change. Cars must wait until after minute twelve to enter the driver change area in order to execute driver change, but must enter by minute 18. Cars do not have to complete the driver change by minute 18; they are only required to enter the area by minute 18. At minute 12 when the pit lane opens for driver change, the white (or blue) flag will be flown at the entrance signaling that the driver change window has begun. The flag will stop flying at minute 18 signaling the end of the driver change window.

When executing driver change, enter the driver change area and pull all the way up and to the side designated by the Marshal leaving enough room for cars to pass by. Leave only enough room in front of your vehicle to enable maneuvering around the one in front of you in the case that you have completed driver change quicker than that car. The clock does not stop for driver change. Observers will ensure that the appropriate ballast is in the car for the new driver, the driver is suited up properly including gloves, helmet, trousers and long sleeves, and that they are belted in properly. The Marshal will then release the car. Do not move the car until the Marshal has given permission.

Once you have been released by the Marshal, drive on the right side of the driver change area to the exit and await a signal from the Marshal at the exit to go. Only go upon their signal.

Keep in mind that if every team enters the driver change area at first opportunity, it may get crowded. If you see on your first lap that every car is there except you, it might be a good idea to wait another lap before coming in so you don't get stuck in traffic there. You have six minutes, which should be enough for multiple laps.

Teams that have passed the pit lane entrance while open for driver change, but failed to enter by minute 18 will be penalized. They must still come in and perform the driver change, and will receive a one lap deduction. For teams that have not entered the pit lane by minute 18, but had not passed the entrance after minute 12 due to car difficulties will not be penalized. However, they must still enter the pit lane and complete the driver change the very next time they approach the entrance.

The End of the Race

The white flag will come out at the end of the timed race (at the 30 minute point) and fly for two minutes, at which time the checkered flag will come out to indicate that time is up. The purpose of the white flag is to alert drivers that they have one more lap. Some drivers may be able to make it around twice while the white flag is flying, but only one lap will count. Keep driving until you pass the finish line with the checkered flag waving.

The checkered flag means that time is up, and once you pass under the checkered flag, you are done. Turn into the display area following the first heat, and the maintenance area following the second heat. It is important to be sure to pass under the checkered flag. Even though the timed session has ended, you will still receive credit for the last lap as long as you complete it within two minutes of the end of the race, (by the 32 minute point.) Team scores for each of the half hour sessions will be the total number of laps completed and their Extra Time, which is the amount of time between the end of the timed session and when the vehicle passed the finish line next.

As an example, a car may pass the finish line at 29:10 with 21 laps. At 30:00 regulation time ends, but the car is still permitted to complete the lap that they began before time ended. The car passes the finish line again at 31:40. Since they got to the finish line before 32:00, they will receive credit for that lap, and their final score will be 22 laps and an Extra Time of 100 seconds.

Scoring

The laps from the two half hour sessions are added to arrive at a lap total. The finishing order is determined solely by laps unless there is a tie. If, and only if, after the two sessions are added, there is a tie in total laps between cars, then the two Extra Time scores from each session are added, and the cars are ranked with the lower total time prevailing. In the occurrence that laps and time are tied, the car to have the lower time for the entire last lap of the second race prevails.