

F24MS, F24HS and OPEN CLASS RULES.

School Year 2023-2024

STOCK CLASS

THE CAR

KIT: F24 cars entered in the Stock Class must be built with all, and only, the parts provided in the kit provided to the school by greenspaceschattanooga with only exceptions listed below. They must be built as directed in the Manual furnished with the kit. The Manual furnished is part of the Rules, by reference.

EXCEPTIONS: The following changes may be made to the Stock Class car without it being moved to Modified Class: Adding cooling fins to the motor. If fins have forced air, it must be provided power by the main chassis batteries. Tires must be labeled as maximum pressure of 65 psi or less. Brake light type is free. Custom steering wheels are allowed. Wheel covers are allowed, inside and out, so long as they are securely attached. The Chain Guard from the latest kits may be deleted if the top of the motor compartment is fully covered.

MOTOR can be either Motion Tech Motor Type DCA5N242002DL000 or Type DC Motor 105ZDY08. Any substitution must be specifically approved by the Green Prix Chief Tech Inspector. Repairs are restricted to those approved by the Chief on a case-by-case basis.

BATTERIES: Batteries should be two Interstate #DCM0035 or Yuasu #REC36. Any exceptions must be specifically approved by the Green Prix Chief Tech Inspector. They must be securely attached to the chassis by the mechanical attachment as provided in the kit. No elastic material is allowed as an attachment. There shall be a quick disconnect in the battery wiring. Auxiliary batteries may be used for the horn, light, instruments, and radios but may not be connected to the main power battery system. Battery charging at an event is detailed in the Schedule and in the Supplemental Regulations.

BRAKES: When applied they must be capable of holding the car while it is being pulled at a force of 300 N.

STEERING: Must have minimal play and operate to full turn without the tire con contacting the bodywork. **A wider steering wheel may be substituted to aid in car control.**

BODYWORK: Bodywork is free from restrictions except it must cover the front and sides of the car. Sides of the car in the area behind the front roll bar and in front of the seat belt attachment points must be of rigid material at least one and one-half mm (.060") thick and firm. ~~4 mm corrugated plastic (Coroplast) may be used for the body as an alternate.~~ The sides of the cockpit area of the frame will be lined with foam at least 1 inch thick. Bodywork cannot have sharp protrusions. The car, including bodywork, shall not exceed 110 inches long and ~~should~~**must** not extend more than 31.5 inches behind the rear axle. Ground clearance should be adjusted to not less than 1.18 inches from the ground. Bodywork shall allow the driver visibility to the sides and front. The cockpit opening shall not be less than 23.5 inches front to rear and 14 inches side to side. The opening must be arranged to have the driver's helmet near the rear of this space. **Use of corrugated plastic (Coroplast) is not allowed for bodywork sides.**

MIRRORS: Two rear-view mirrors of at least 6 square inches each will be fitted, and properly adjusted.

NOSE: Forward of the front bulkhead, a closed-cell foam block of at least 8 inches front-to-rear shall be attached. The base of the block, where it contacts the bulkhead shall not be less than 5 inches square. Access for inspection shall be provided. Bodywork forward of the bulkhead shall be fully deformable in case of impact.

HORN: A electrically operated horn shall be installed and operated by a switch accessible to the driver.

BATTERY CUTOFF SWITCH: This switch shall be in reach of the driver and someone outside the car. It should have the OFF position marked.

WIRING: Wiring must be firmly attached and not able to contact moving parts. **Wire sizes must be the same as furnished in the kit.**

REPAIRS: Repairs to cars are allowed even if they increase durability of the car, so long as they don't increase performance in any way other than durability.

SERIAL NUMBER: A Serial Number shall be stamped on each car and that number registered with greenspaces of Chattanooga. The number will be assigned and stamped on the car in front of the roll bar on the Right side by the Tech Inspector at an event.

NUMBERS: Numbers will be on each side and one on the front of the car **and will include a class designation, Stock (S), Modified (M), Custom (C) or Open (O).** Numbers will be assigned by greenspaces. Teams may request a specific number if they choose. Sponsor stickers supplied by greenspaces will be applied to each side of the car. Other stickers are at the team's option.

DRIVERS AND SAFETY EQUIPMENT:

GRADE LEVEL: Drivers in F24MS Class must be in Grade 6-8. Drivers in F24HS must be in Grade 9-12. Drivers who are past High School age will compete in Open Class.

CONTROLS: Drivers must be familiar with all controls of the car, including the battery cutoff switch. They may be asked to demonstrate familiarity during Tech Inspection.

DRIVERS: Advisors shall insure that each driver to participate in a Green Prix race has driven the car enough to be fully familiar with controls and able to maintain control of the car.

SEAT: The seat and floor, where they contact the driver, must be padded. Any sharp edges around the driver should be protected with padding.

VISIBILITY: All drivers must have forward visibility allowing them to see the pavement no farther than 40 feet in front of the car. Booster cushion, if required, must be attached to prevent movement.

PERSONAL SAFETY EQUIPMENT will consist of a DOT approved helmet, face shield or goggles, head sock, clothing with long sleeves covering the arms, closed toe shoes, full-coverage gloves, and long pants. The helmet straps must be firmly fastened.

SAFETY HARNESS: A four-point safety harness shall be installed per the Manual. In use, it should have the lap belt adjusted first, then the shoulder harness.

COMMUNICATION DEVICES: An electronic communication device may be used but Rules concerning use will be strictly enforced. It must be operable without the driver removing a hand from the steering wheel. It must be securely attached to the car **or to clothing** but can have no part attached to the Safety Harness.

ROLL BAR: Top of the driver's helmet shall not be above a line from the top of the main roll bar to the top of the front roll bar (forward of the steering wheel). Tallest and shortest driver must be available at Tech Inspection, with helmet.

INSTRUMENTS: Use of instruments in the car is open, but use of telemetry to the pits is not allowed.

CAMERA: A camera may be mounted on the car but it may not be mounted to the helmet. It must be firmly mounted, not using suction cups.

RACE PROCEDURES:

TECH STICKER: Cars will not be allowed on track without a Tech Sticker indicating that it has passed Tech Inspection. Where RFID timing is being used, presence of the tag will be checked.

DRIVERS MEETING: All team members and advisors should attend the Drivers Meeting. Driver **MUST** attend.

EXIT: Drivers must be able to exit the car within 20 seconds unaided. Exception is when special procedures, detailed in Appendix A are in place.

INSPECTION: Before entering the track, an inspection will be done in Pit Lane to assure that belts are adjusted properly, helmet strap tight, clothing per rules, hair not exposed, and operation of brakes. **The car will be held until in compliance with these requirements.**

FLAGS: Signaling from Flag Stations to Drivers will be by flags as listed at www.greenspaceschattanooga.org/gp-teacher-resources. Each driver should be very familiar with those flags and their meaning. Failure to obey flag instructions will result in a Black Flag to be further educated in flag meaning.

TRACK ETIQUETTE: Driver must not weave or block other cars. They must be aware of traffic in the rear-view mirrors.

PIT STOPS: **Teams are responsible for having a means to call their car in for a Pit Stop.** Battery power must be shut off at the designated point in Pit Entrance. The car must be pushed from this point. Pushing must be at walking speed and by no more than two team members. **Pit stops are as required in Supplemental Regulations.** Safety equipment will stay in place until stopped and the car will not leave the Driver Change area until all safety equipment is in place and adjusted. Adults will not be allowed to participate in Pit Stops except by verbal instructions unless approved by the Chief Tech Inspector or the Race Director, **with the exception of checking safety gear.** Battery Power will not be switched on until directed to do so in the Grid area.

INCIDENTS/VIOLATIONS: Any car involved in significant contact with another car or barriers, or who violated driving rules or flags, will be Black Flagged. This will result in the driver, and likely the Advisor, being given instructions to attempt to prevent recurrence of the offence. Other Team Drivers may be asked to attend this teaching session.

BATTERY USE: Only one pair of batteries may be used in each Qualifying session and one pair in a Race session. A battery change during a race session is allowed only with the prior approval of the Race Director or the Chief Tech Inspector. Any laps completed after the battery change will not be scored.

SUPPLEMENTAL REGULATIONS: Refer to the Supplemental Regulations and Schedule for each event for other requirements and information. Information there will generally not be repeated in the Rules. Team Members should review the Supplemental Regulations.

MODIFIED CLASS

MODIFIED CLASS is for cars built to the instructions in the Formula 24 Kit Car Manual with the kit provided by greenspaceschattanooga, but with modifications beyond what is allowed in Stock Class. The Formula 24 Kit Car Manual is part of the Rules, by reference. Generally, these cars will be raced by teams that have previous experience, but that is not required. All parts of the Stock Class Rules apply except as noted in this Modified Class section.

MOTOR; BATTERIES; BRAKES; STEERING; BODYWORK; MIRRORS; NOSE; HORN; BATTERY CUTOFF SWITCH; ~~WIRING~~; REPAIRS; SERIAL NUMBER; NUMBERS; DRIVERS AND SAFETY EQUIPMENT sections and **RACE PROCEDURES** section rules in the Stock Class apply to the Modified Class, **except as noted elsewhere in this section.**

ALLOWED MODIFICATIONS: Examples of modifications allowed are: electronic motor controller, gearing by change of sprockets, use of different chain sizes or other type of drive links, **wiring gauge**, tire size and allowed pressure (not exceeding 100 psi), aerodynamic changes but roll bar size and height may not be modified from Stock Class, aerodynamic changes must not be welded to the roll bar nor attached in any manner that lessens strength of the bar. The roll bar design must accommodate the mounting of a RFID tag for Timing and Scoring on the top six inches of the roll bar.

FRAME LIGHTENING: Frame lightening by drilling is allowed but not encouraged. Excessive lightening of the frame, as judged by consultation between the Chief Tech Inspector and the Race Director, will exclude the car from participation in Green Prix events.

TIRES, WHEELS: Tire and wheel changes are allowed within these parameters: Tires must be 20 inches. Wheels may be wire spoked or metal disc type, not plastic. Tires are free except the maximum labeled pressure may not exceed 100 psi and they must be pneumatic type. Right and left wheels must be approximately the same distance from the centerline of the chassis.

TRACK: The distance between the right and left tires, measured where the center of the tires contacts the ground, shall not be less than 19.7 inches.

CUSTOM CLASS

MOTOR; BRAKES; STEERING; MIRRORS; NOSE; HORN; BATTERY CUTOFF SWITCH; ~~WIRING~~; NUMBERS; DRIVERS SAFETY EQUIPMENT section and **RACE PROCEDURES** section in the Stock Class Rules apply to the Custom Class. **BATTERY** Rules apply except for type and changes during a race.

CHASSIS: Chassis can be custom built and may be in the form of a tube frame, a monocoque chassis, or other forms so long as it provides adequate protection for the driver. The bottom of the driver's seat, as well as the

bottom of the batteries, may not be higher than 3.9 inches from the ground. The vehicle cannot be longer than 110 inches or 47 inches in width. Total height must not exceed total width. The driver's cell must provide side protection for the driver at a minimum height of 10 inches. Forward of the driver's cell may be lower. Chassis must include a forward bulkhead like the Stock Class but may be smaller.

BATTERIES: To allow team members to learn more about newer developments in batteries, Custom Class and Open Class cars will be allowed to use LithiumFerroPhosphate (LFP or LiFePo4) batteries. ~~Total Watt Hour rating of the battery set will be restricted to a maximum of 465 Watt-Hours.~~ **The battery set must have a nominal voltage rating of 24 volts. Any number of batteries may be used to make up the battery set, but the sum of Watt hours rating must not exceed 921.6 (at the 0.2C rating).** This is an Experimental Rule therefore is subject to change as we learn more. Also, as this Rule is experimental, teams will be allowed to change to batteries as listed in the Stock Class during a race if problems are experienced with the LFP batteries. This change will not require approval of race official. **Batteries must be firmly attached to the chassis, no elastic material, and be protected from the driver area.**

WHEELS, TIRES: Tires must be 12", 16" or 20". **Wheels must be metallic, not plastic.** Tires are free except the maximum labeled pressure may not exceed 115 psi and they must be pneumatic type. Right and left wheels must be approximately the same distance from the centerline of the chassis.

SEAT: One forward facing seat must be secured to the chassis. It may allow the driver to be in the reclined position so long as they have visibility to the sides and front. If support of the driver's back is less than 30 degrees from horizontal, a five-point harness must be fitted.

BODYWORK: Must provide for protection for the driver as specified in the Stock Class Rules. It may take the open wheel design of a formula car, or a fully enclosed body. It must provide for the driver's elbows to remain within the bodywork.

OPEN CLASS

An OPEN CLASS will be open to entries from Colleges and organizations other than schools. Cars in this class may be prepared to Stock, Modified or Custom Class rules as above, but all preparation levels will race as one OPEN CLASS, generally running in the same events as the High School Classes, but scored separately. Drivers must be at least High School age, but college students and adults may also drive.

SUPPLEMENTAL REGULATIONS: Refer to the Supplemental Regulations for each event for other requirements and information. Also see the SCHEDULE for critical information.

NOTE: If a team is going to participate in an event with GreenPowerUSA they will need to refer to their Rules and Regulations.

APPENDIX A

CHATTANOOGA GREEN PRIX – HANDICAPPED DRIVERS

Chattanooga Green Prix events special arrangements for handicapped drivers:

These special arrangements must be put in place before the days of the event.

1. Handicapped driver must have had some practice driving the car prior to the event.
2. Before the track goes Active, the Flag Chief or Safety Steward will discuss with the Team Advisor how the driver should be lifted from a disabled car. Example: Lift under both arms, and any special requirement due to their condition. It is suggested that the first name of the handicapped driver be known to corner crews so they can address the driver by name – for the driver's comfort. The Flag Chief will make this information known to the Corner Crews.
3. The Flag Chief will discuss this procedure at the Flaggers meeting. The Safety Steward will make Grid and Control aware of these procedures.
4. When the car with the handicapped driver prepares to enter the track, Grid will announce this to all radio holders. Control will respond by repeating this information.
5. In the event the car becomes non-operable on track, the car will be loaded onto the Recovery Vehicle with the driver still in the car, strapped in and helmet on. If there is no Recovery Vehicle and the car can be rolled, the driver will remain in the car as it is rolled to Pit Entrance and turned over to the Team, with Flag condition as appropriate.
6. If the car cannot be rolled, the course will be put under a Red Flag condition. If the handicapped driver uses a wheelchair it will be brought to the car and the driver lifted into it. Go Green Flag only after the

driver has returned to the Pits.