



ELECTRIC KART VEHICLE CHAMPIONSHIP

Thrive For Eco Racing

RULEBOOK

2024

Eco Rush Spurred

ELECTRIC KART VEHICLE CHAMPIONSHIP

“Thrive for Eco Racing”

Table of Contents:

ADMINISTRATIVE

1 Introduction	07
1.1 About SEVC	07
1.2 Objective	07
1.3 Event Summary	08
2 Rules and Organizing Authority	08
2.1 Rules Authority	08
2.2 Rules Validity	09
2.3 Rules Compliance	09
2.4 Understanding the Rules	09
2.5 Loopholes	09
2.6 Participating in the Competition	10
2.7 Violations on Intent & Misinterpretation	10
2.8 Official Communication	10
2.9 Right to Impound	11
2.10 General Authority	11
3 Team Participation requirements	11
3.1 Eligibility Limits	11
3.2 Student status	12
3.3 Team Size	12
3.4 Liability Waiver	12
3.5 Faculty Advisor	12

ELECTRIC KART VEHICLE CHAMPIONSHIP

“Thrive for Eco Racing”

4. Registration Procedure:	13
4.1 Team Registration	13
4.2 Form Filling	13
4.3 Change in Team Details & Vehicle Category	13
4.4 Entries per college/university	13

VEHICLE REQUIREMENTS

1. Vehicle Design Restrictions:	14
1.1 Vehicle Dimensions	14
1.2 Frame Restrictions	14
1.3 Ground Clearance	16
1.4 Jack Point	16
1.5 Hitch Point	16
1.6 Roll Hoop	17
1.7 Bumpers	18
2. Wheels and Tyres:	19
2.1 Wheels Alignment	19
2.2 Wheel size	19
3. Driver’s Compartment:	20
3.1 Driver’s Seat	20
3.2 Foot Guard	21
3.3 Driver’s Ergonomics	21

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

3.4 Driver's Visibility	22
3.5 Firewall	22
4. Driver's Compartment:	23
4.1 Steering Mechanism	23
4.2 Steering Wheel	23
4.3 Steering Stopper	23
4.4 Maximum Turning Radius	24
4.5 Steering stability	24
5. Braking:	24
5.1 Braking System	24
5.2 Braking Pedals	25
5.3 Brake over travel switch	25
5.4 Braking Liner	25
5.5 Brake Oil	26
5.6 Brake Light	26
6. Power Unit and Transmission:	27
6.1 Motor Specification	27
6.2 Battery Storage	27
6.2.1 Battery Type	27
6.2.2 Battery Pack and position	27
6.2.3 Charger & Charging Socket	28
6.3 Transmission:	28
6.3.1 Transmission Types	28
6.3.2 Throttle Pedal	29

ELECTRIC KART VEHICLE CHAMPIONSHIP

“Thrive for Eco Racing”

6.3.2 Scatter shield	29
6.4 Kill Switch	29
6.5 Fusing	31
6.6 Wiring and Connectors	31
6.7 Vehicle Lighting(optional)	32
6.8 Fire Extinguishers	33
6.9 Fasteners	33
6.10 Seat Belt	34
7. Body Works:	34
7.1 Body Works	34
7.1.1 Outer Body Works	34
7.1.2 Floor Closeout	35
8. Stickers:	36

DRIVER’S HANDBOOK

1. Driver’s Requirement:	37
1.1 Driver’s License	37
1.2 Driver’s Restrictions	37
1.3 Medical Insurance	37
1.4 Age	37

ELECTRIC KART VEHICLE CHAMPIONSHIP

“Thrive for Eco Racing”

2. Driver’s Requirement:	37
2.1 Drivers Safety Gear	37
2.2 Driver’s Suit	38
2.3 Underclothing	38
2.4 Helmet	39
2.5 Balaclava	39
2.6 Neck Support	39
2.7 Gloves	40
2.8 Shoes	40
2.9 Socks	40
3. Code of Conduct during the event:	41

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

ADMINISTRATIVE

1. Introduction:

1.1 About EKVC:

Electric Kart Vehicle Championship is an intercollegiate design competition aimed at inspiring engineering students to create environmentally responsible future mobility solutions for India. The participants are given the task of conceptualizing, designing and fabricating a single-seat vehicle. To give teams maximum design flexibility and the freedom to express their creativity and imaginations there are very few restrictions mentioned in the rulebook. Teams must use engineering principles to create vehicles that meet the needs of real-world users.

1.2 Objective:

The competition's goal is to promote "**Thrive for Eco Racing**". The vehicle must be aerodynamic, highly engineered, safe, and ergonomically suited for this purpose. The primary objective of this competition is to foster engineering applicants' excitement and passion for alternative energy sources. This event promotes the development of a clean and green society. Teams can consider themselves as employees of a fictitious company that aims at producing and selling Electric Vehicles. As a result, the design must be commercially viable as a market product and appealing to consumers in terms of aesthetic appearance, performance, reliability, and ease of use.

ELECTRIC KART VEHICLE CHAMPIONSHIP

“Thrive for Eco Racing”

1.3 Event Summary:

The event focuses on designing, building, and validating the vehicle created by student teams in accordance with the rulebook. The vehicle's design, performance, safety, durability and commercial viability will be evaluated. All of the participating teams compete against one another, with the teams' overall ranking determined by the total of their scores from all of the events. Also, the individual and best performances for each category are awarded.

In addition to vehicle manufacturing, the team will also work on many industry level reports. Participation in EKVC will enhance the technical skills of the student's paving the way for their professional success. Also, students will improve themselves in many areas like team coordination, managerial skills, business development, financial management and entrepreneurship.

2. Rules and Organizing Authority:

2.1 Rules Authority:

Teams competing in EKVC 2024 must follow the rules and regulations laid down by the organizing committee. EKVC reserves all the rights to change any rule of the event for the benefit of teams. Violating any of the mentioned rules by any of the participating team members may result in severe penalties, disqualification of the team from the competition at any stage or withdrawal of awards. Queries concerning the meaning or intent of these rules will be resolved by organizing committee during competition.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

2.2 Rules Validity:

The rules will be the same throughout the competition. However, any amendments made according to the circumstances will be updated to all the participating teams. No excuses will be accepted from the teams for breaking any of the rules.

2.3 Rules Compliance:

By participating in a EKVC 2024 competition, team members, faculty advisor, and other college/university personnel agree to abide and be bound by the rules, as well as any rule interpretations or regulations released or announced by the EKVC 2024 Organizing Committee. All team members, faculty advisors and other university/college representatives are required to cooperate with, and follow all instructions from, competition organizers, officials and judges.

2.4 Understanding the Rules:

The rules of the competition must be read, interpreted, and understood by the teams themselves. Teams should contact the organizing committee at EKVCevent@gmail.com for clarifications on the rules. Teams must keep records of all such email communications on hand for judges to refer during the event.

2.5 Loopholes:

A set of rules can't be so comprehensive that it covers all possible questions about the vehicle's design parameters or the conduct of the competition. Please keep in mind that safety remains paramount during EKVC 2024, so any perceived loopholes should be resolved in the direction of increased safety/concept of the competition.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

2.6 Participating in the Competition:

A set of rules can't be so comprehensive that it covers all possible questions about the vehicle's design parameters or the conduct of the competition. Please keep in mind that safety remains paramount during EKVC 2024, so any perceived loopholes should be resolved in the direction of increased safety/concept of the competition.

2.7 Violations on Intent & Misinterpretation:

The violations of the intent of a rule will be considered a violation of the rule itself. Questions about the intent or meaning of a rule may be addressed to the organizing Committee. If the team wants to use some particular parts/methods/procedures which are not included in the rulebook directly or indirectly, teams must get a clarification from organizing Committee. Special permissions (through email only) may be granted at the committee's discretion in some cases. Teams are not permitted to employ such parts/methods/procedures, etc., without the permission of the committee, and such use would be considered a rule violation.

2.8 Official Communication:

All teams must pay attention to the official announcements made by the EKVC Organizing committee. All official announcements will be posted on the website EKVC and/or at the official individual team WhatsApp Group. EKVC Organizing committee may directly communicate to teams/captains/faculty advisor to provide any additional information. Following are the official email IDs for the communication with competition organizers:

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

1. Teams are requested to contact the following official mail for technical queries, rules clarifications, event procedures, etc. as well as general queries regarding team registrations, fees submission, etc. ekvcevent@gmail.com

Communication with any individual event organizers through email, phone calls or social media will not be considered as official communication and will not hold any validity for competition purposes.

2.9 Right to Impound:

EKVC Organizing Committee reserves the right to impound any on-site registered vehicle at any time during the competition for inspection and examination by the organizers, officials and technical inspectors.

2.10 General Authority:

EKVC Organizing Committee reserves the right to revise the schedule of the competition and/or interpret or modify the competition rules at any time and in any manner that is in their sole judgment, required for the efficient and smooth operation of the event.

Also, if the organizers decide that it is necessary to re-conduct a specific round or event due to any disputes, confusion, failure to maintain strictness, or any other reason, the organizers have complete authority to do so at their sole discretion without being questioned.

3. Team Participation requirements:

3.1 Eligibility Limits:

Eligibility is limited to undergraduate engineering students.

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“Thrive for Eco Racing”

3.2 Student status:

Students pursuing an undergraduate program in any engineering discipline at any registered College/University can form a team to participate in EKVC.

3.3 Team Size:

A group of minimum of 5 to maximum 35 student members can register as a team in EKVC 2024. Teams can have maximum of 35 members and it is recommended to have at least 5 girl participants. The team may contain students from any engineering discipline. (Teams are recommended to choose members from various engineering disciplines like Mechanical, Electrical, Electronics, Instrumentation, etc., as building an electric vehicle requires the support of several departments.)

3.4 Liability Waiver:

All on-site participants, including students and faculty advisor, are required to sign a liability waiver upon registering on-site.

3.5 Faculty Advisor:

Each team is supposed to have a minimum of one “Faculty Advisor” appointed by the College/university. The team must be accompanied by the faculty advisor, who will be considered the Official College/University Representative.

Faculty Advisor may advise their teams on general engineering and engineering project management theory and act as guide of team. Faculty advisor is allowed to attend static and dynamic events at the event site with their team, but they are not permitted to answer or justify any questions on behalf of the team.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

Faculty advisor should not be involved in the design of any part of the vehicle or the development of any documentation or presentations. Furthermore, Faculty Advisor is not permitted to fabricate or assemble any components, nor to participate directly in the vehicle's preparation, maintenance, or operation. However, they can assist their team in maintaining the vehicle in the event in case of any breakdown.

4. Registration Procedure:

4.1 Team Registration:

Teams must do their initial registration on the official EKVC website. The procedure to do the registration will be shared by document.

4.2 Form Filling:

It is mandatory to have an official team mail id to register for the event. Personal student or faculty mail id will not be considered valid in web portal for Team Registration. After registration, teams will receive a confirmation mail from our registration committee.

4.3 Change in Team Details & Vehicle Category:

Changes in team details and vehicle category can be performed with the permission of the organizing committee. Any changes in the team details and vehicle category will be allowed till 30 days before the start of the final event.

4.4 Entries per college/university:

There is no limit on the number of teams that can participate from one college/University. But the team's name, logo, Captain, Vice-Captain and Faculty advisor should be exclusively separate for each team.

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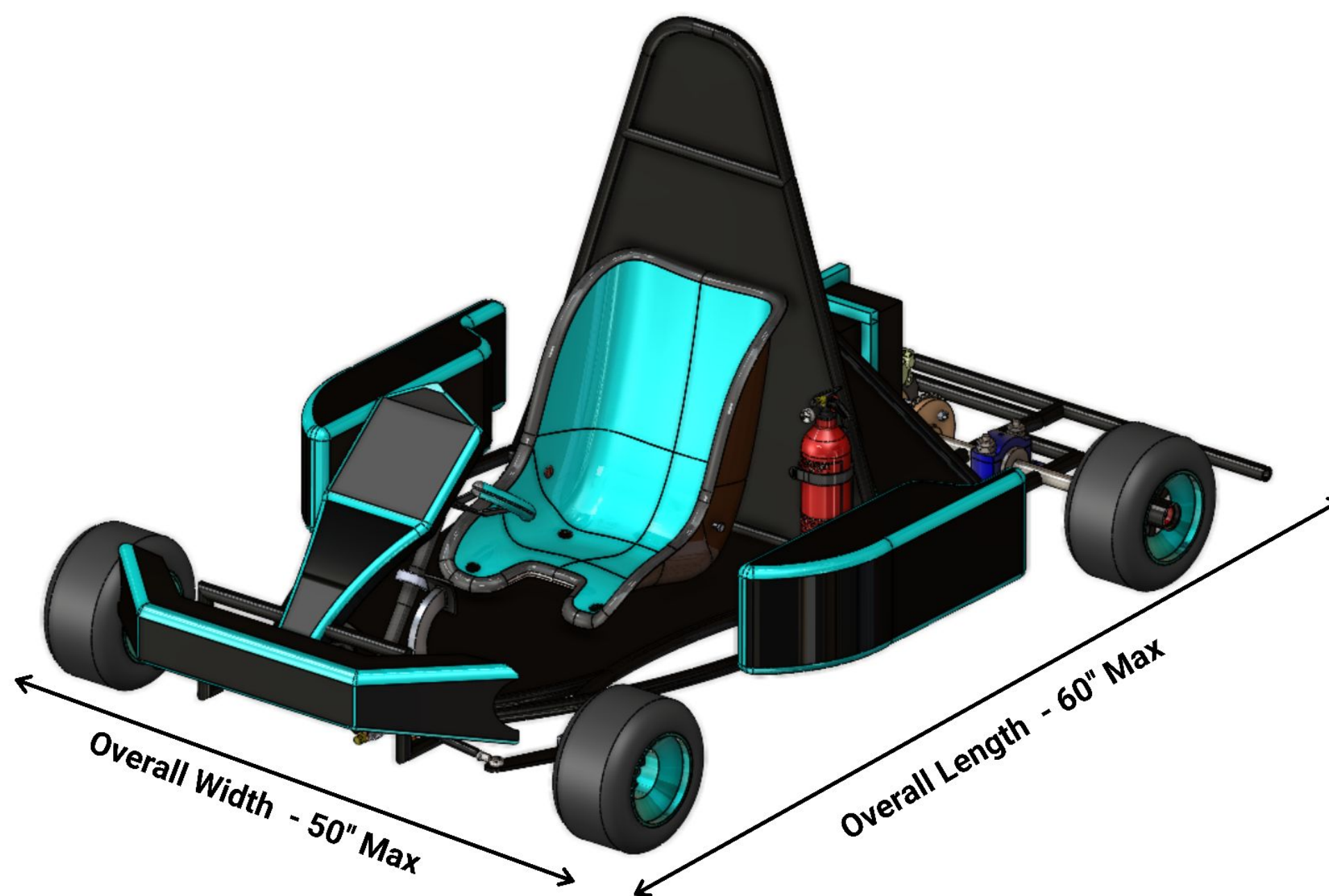
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VEHICLE REQUIREMENTS

1. Vehicle Design Restrictions:

1.1 Vehicle Dimensions:

- Wheelbase of the vehicle is restricted to 60 inches (1524mm).
- Wheels should not be in a straight line in the longitudinal direction.
- Larger track should not be more than 50 inches (1270mm)
- Smaller track width must be minimum 80% of the wheel base.



1.2 Frame Restrictions:

- Teams must use tubes falling under following criteria only:
 - **Tube type:** Seamless tubes.
 - **Outer Diameter:** 1 inch to 2 inch.
 - **Minimum Wall Thickness:** 1.2 mm
 - **Material for tube:** Steel/ Aluminium
 - **Cross section:** Circular.
- In case of steel minimum, carbon percentage should be 0.1%.
- Teams must be able to present the material certificate from certified labs, along with tube sizing.
- Leaf Springs, Solid Bars, I-Bar, Rectangular Bar, or any other shape will result in immediate disqualification.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

- Also, the team should have at least one open end tube in the frame (this end must be capped).
- The frame should be rigid, protective and ergonomically designed. Any type of holes, cracks dents, etc., in frame members are forbidden.

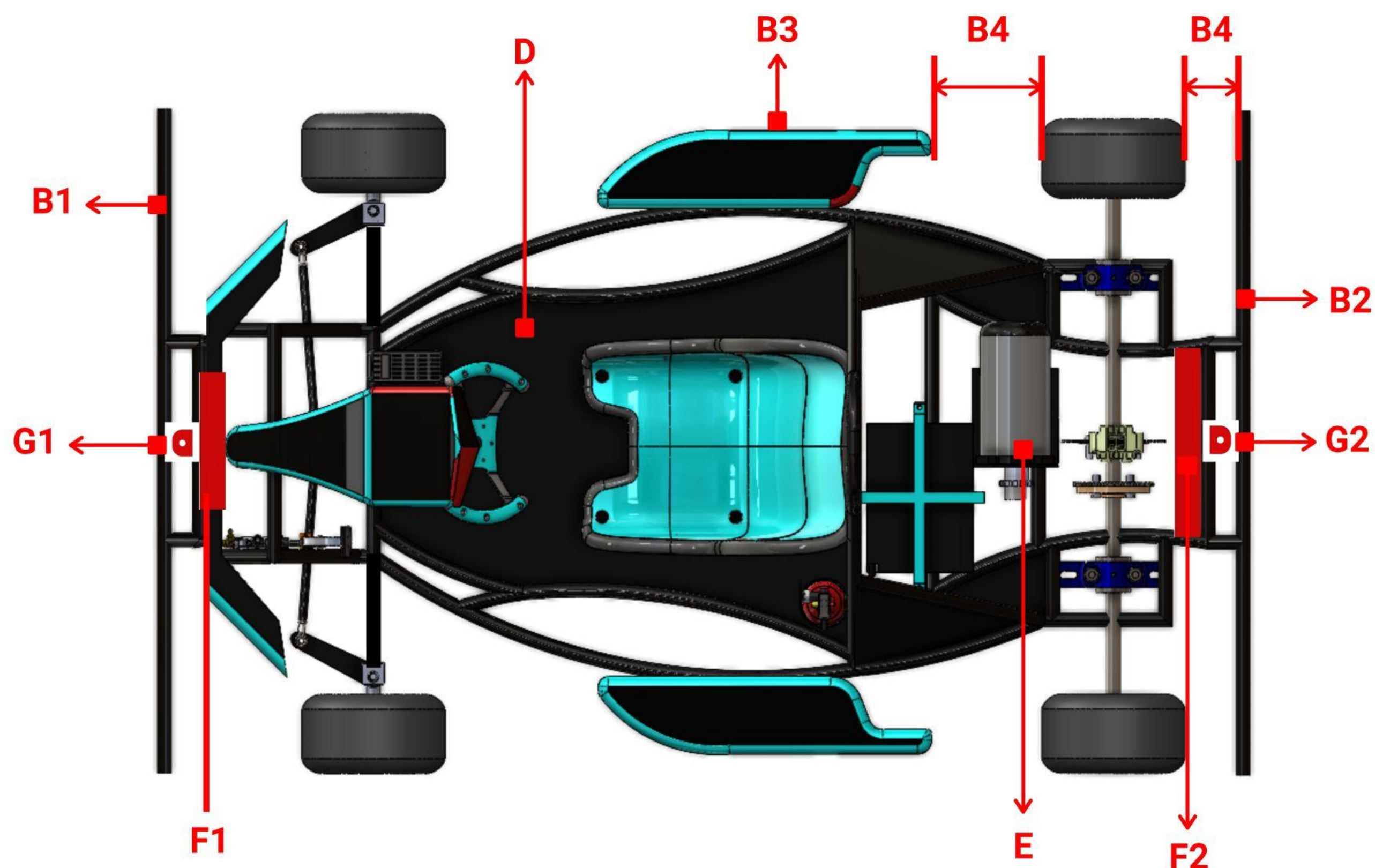


Fig: Demonstrated view of Kart

B1- Front bumper

B2- Rear bumper

B3- Side bumper

B4- Gap between tire and bumper must be at least 3 inches on either side

C- Leg compartment

F2- Rear jack point

G1- Front Hitch point

G2- Rear Hitch point

D- Seat compartment

E- Motor compartment

F1- Front jack point

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"Thrive for Eco Racing"

1.3 Ground Clearance:

- Minimum 1 inch and maximum 2 inches.
- Ground clearance is measured from the lowest point (except tires) of the vehicle.
- No compensation like – chain sprocket, brake disc, will be allowed while checking ground clearance.

1.4 Jack Point:

- Teams must use two jack points. One at the front and other at the rear of the vehicle.
- The jack points must be painted orange in color.
- The jack point must be oriented horizontally and perpendicular to the centerline of the car.
- The jack point should be made of a flat steel plate attached to the bottom of chassis.
- Jack point must be – 6 inches (152.4 mm) long, 3 inches (76.2 mm) wide and 0.1181 inches (3mm) thick.

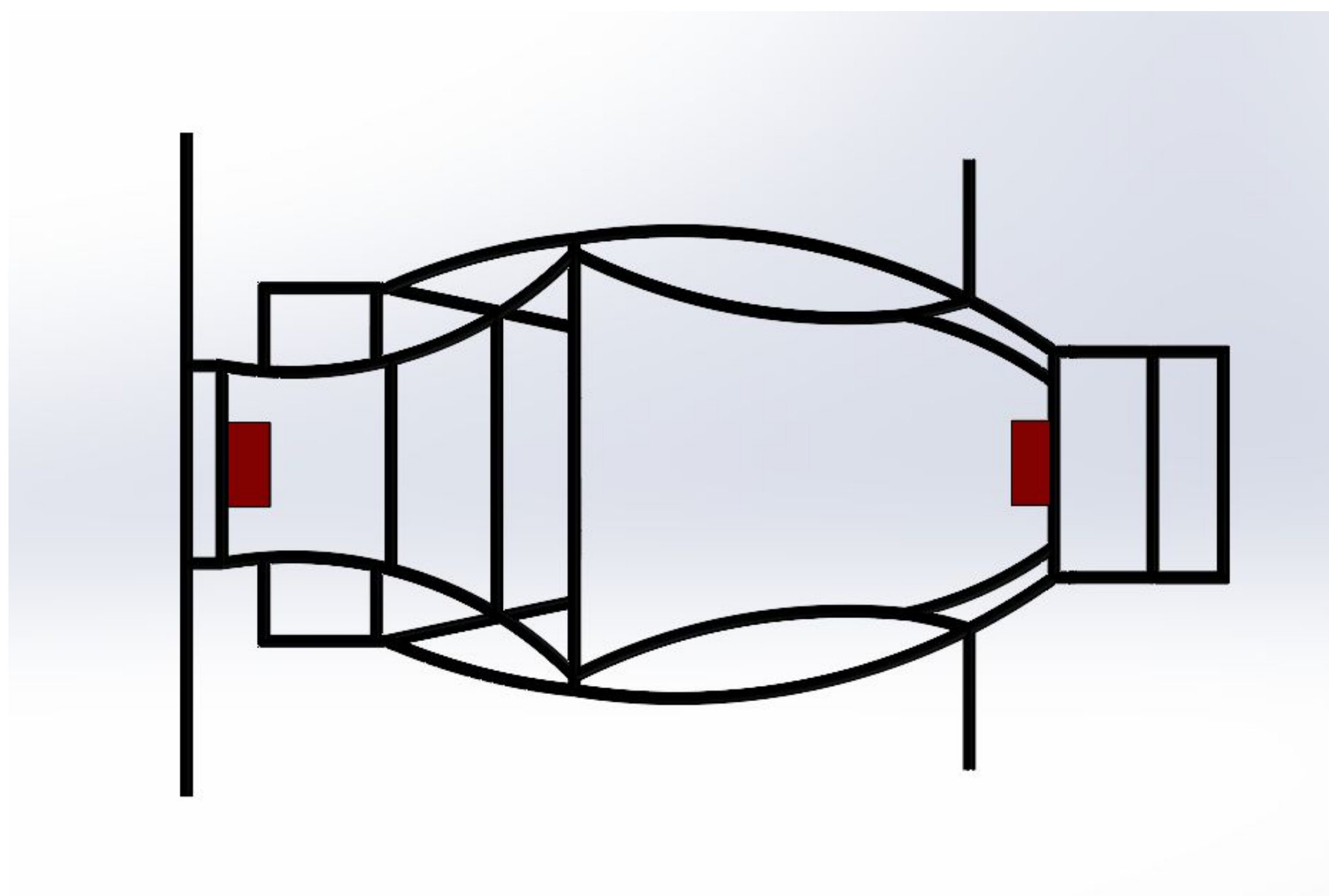


Fig: Jack Point

1.5 Hitch Point:

- Every vehicle must have two hitch point one at the rear end and other at the front end.

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"Thrive for Eco Racing"

- Hitch point will be used to attach push rod.
- Every team will have to fabricate detachable push rod that should have the capability to push and pull the vehicle.
- It should be painted in yellow.
- Hitch point should not be at the bumper. It should be mounted on the chassis only. Hitch point and jack points should be separate.

1.6 Roll Hoop:

- It is mandatory to have a roll hoop on driver's back.
- It should be made from one piece of pipe by using bends, the roll hoop should be made from metal pipe or tube only.
- It should be supported by trusses/bracers with the main frame at a height of at least 15 inches above the lower base of chassis on the hoop.
- Minimum height required for hoop is 3 inches above top most point of the helmet of the tallest driver seated on go-kart seat. Main Hoop braces must be constructed of closed section steel tubing.
- The Main Hoop must be supported by two braces extending in the forward or rearward direction on both the left and right sides of the Main Hoop.
- In the side view of the Frame, the Main Hoop and the Main Hoop braces must not lie on the same side of the vertical line through the top of the Main Hoop, i.e. if the Main Hoop leans forward, the braces must be forward of the Main Hoop, and if the Main Hoop leans rearward, the braces must be rearward of the Main Hoop. The Main Hoop braces must be straight, i.e. without any bends.

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"Thrive for Eco Racing"

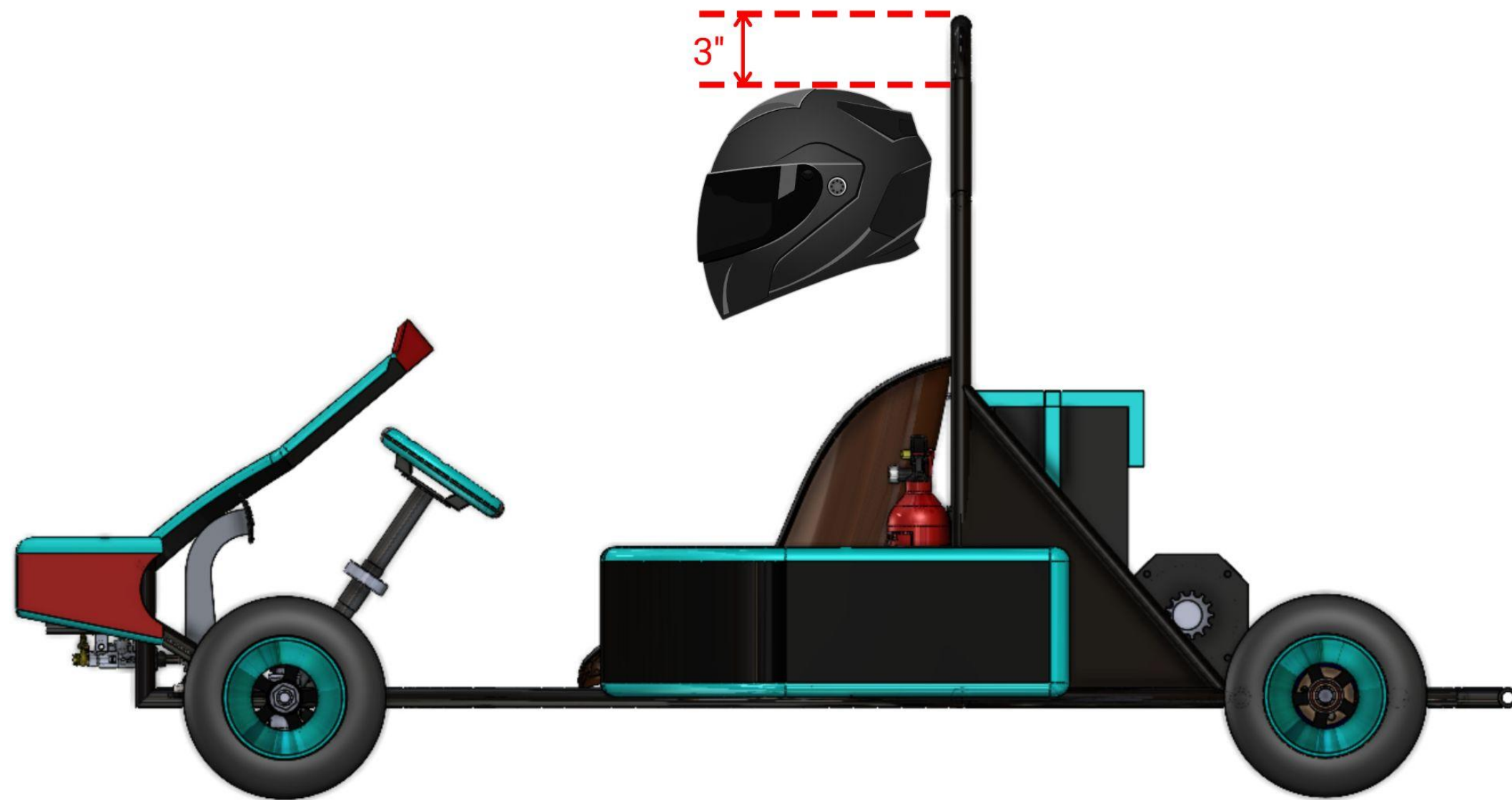


Fig: Minimum Height of Hoop

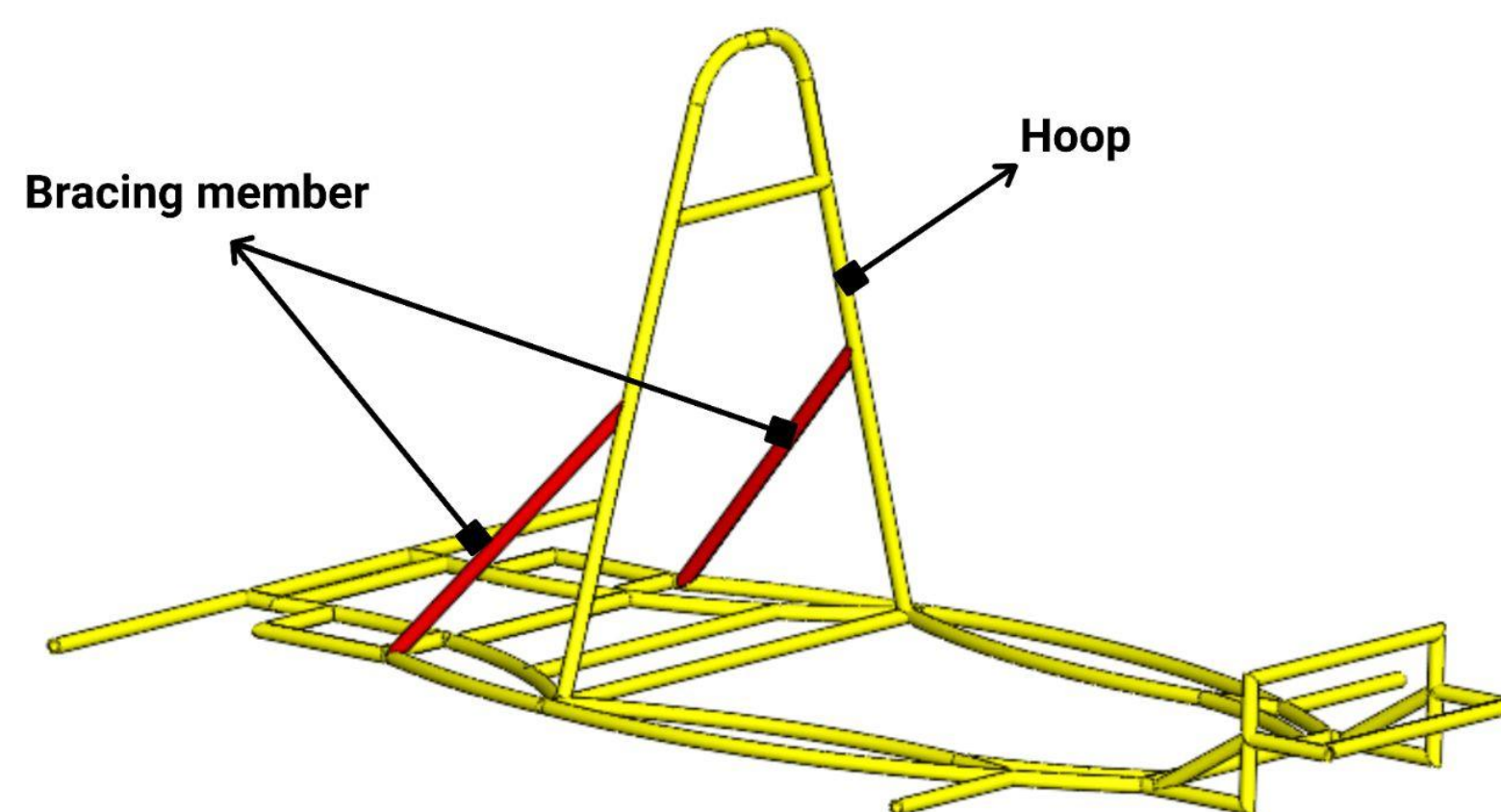


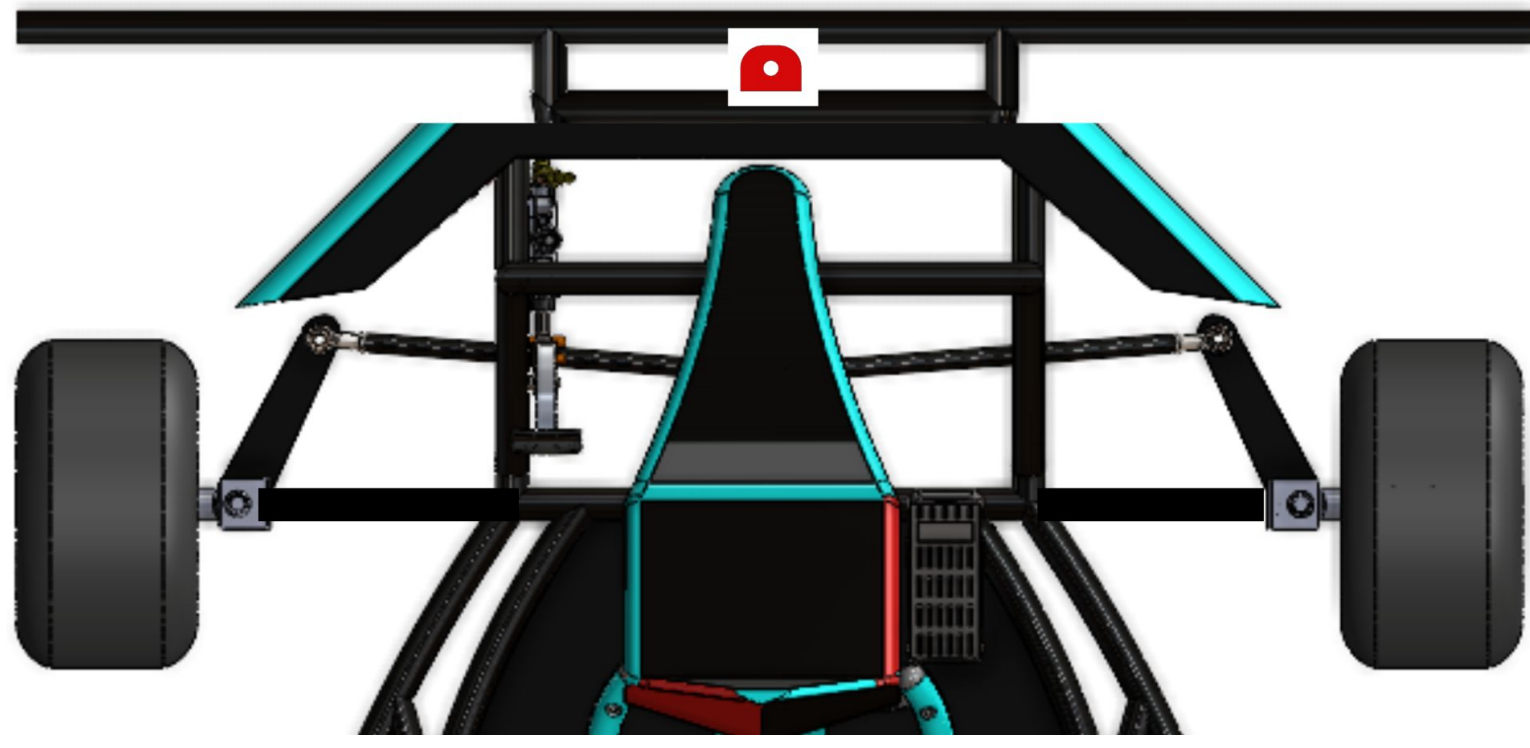
Fig: Roll Hoop Demonstration

1.7 Bumpers:

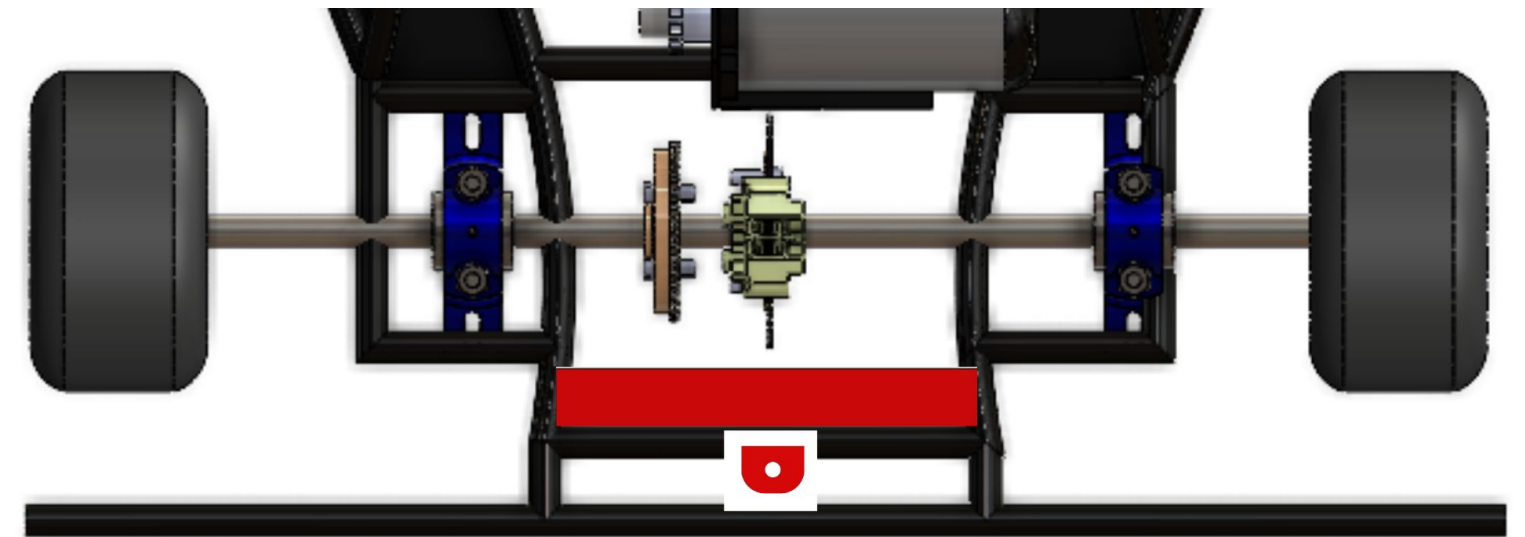
- Bumpers must be installed in the front and rear of the vehicle such that they cover the tires and protect them from front/rear collision, which may occur during the dynamic events. Bumper should be made up of a single tube (seamless).
- Tubes having joints will be discarded and the vehicle will not be given a VAP OK.
- The bumpers must be covered with foam pipe insulation (if they are not surrounded by body works) so as to avoid injuries.

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"Thrive for Eco Racing"



FRONT BUMPER

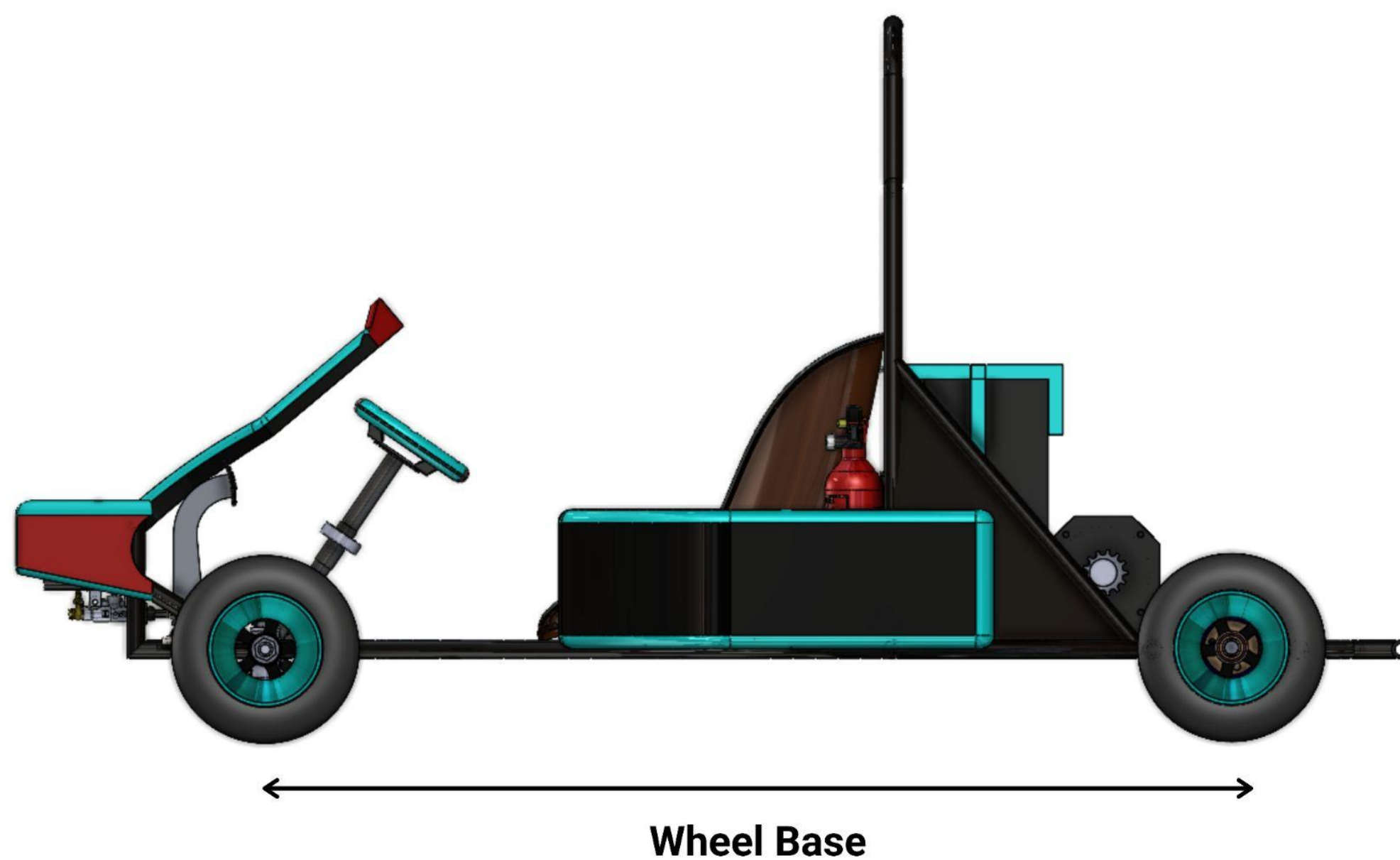


REAR BUMPER

2. Wheels and Tyres:

2.1 Wheels Alignment:

- Number of wheels: 04
- The wheelbase is measured from the center of ground contact of the front and rear tyres with the wheels pointed straight ahead.



2.2 Wheel size:

- Teams must use tires as per the Table 1 given below.
- Teams are not allowed to form any type of grooving or cut in the tires.

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"Thrive for Eco Racing"

	Type	Category	Dimension
Dry(slick) tires	Front	D1	4.5×10.0-5
Wet tires	Front	W1 or W2	4.5×10.0-5
Dry(slick) tires	Rear	D1	7.1×11.0-5
Wet tires	Rear	W1 or W2	6.0×11.0-5

3. Driver's Compartment:

3.1 Driver's Seat:

- Every team must use proper kart seat as shown in the figure below.
- Minimum 4 mounting should be given for the seat.
- Seat Mounting Must be directly welded on the Primary member.
- Seat must be mounted rigidly and fastening should be attained by locknuts.
- The longitudinal axis of the driver seat must be nearly same as that of the kart.
- Driver's seat will be placed in this area which should be well protected having enough space for the driver to come out easily.



Fig: Seat

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"Thrive for Eco Racing"

3.2 Foot Guard:

- There must be a member for protecting foot of driver in form of plates, plane, pipes (as shown in figure with orange arrows) etc.
- The drivers topmost point of the toe is secured and protected easily, the protection should be stable and stiff and should not be made by panel materials like pp sheet.

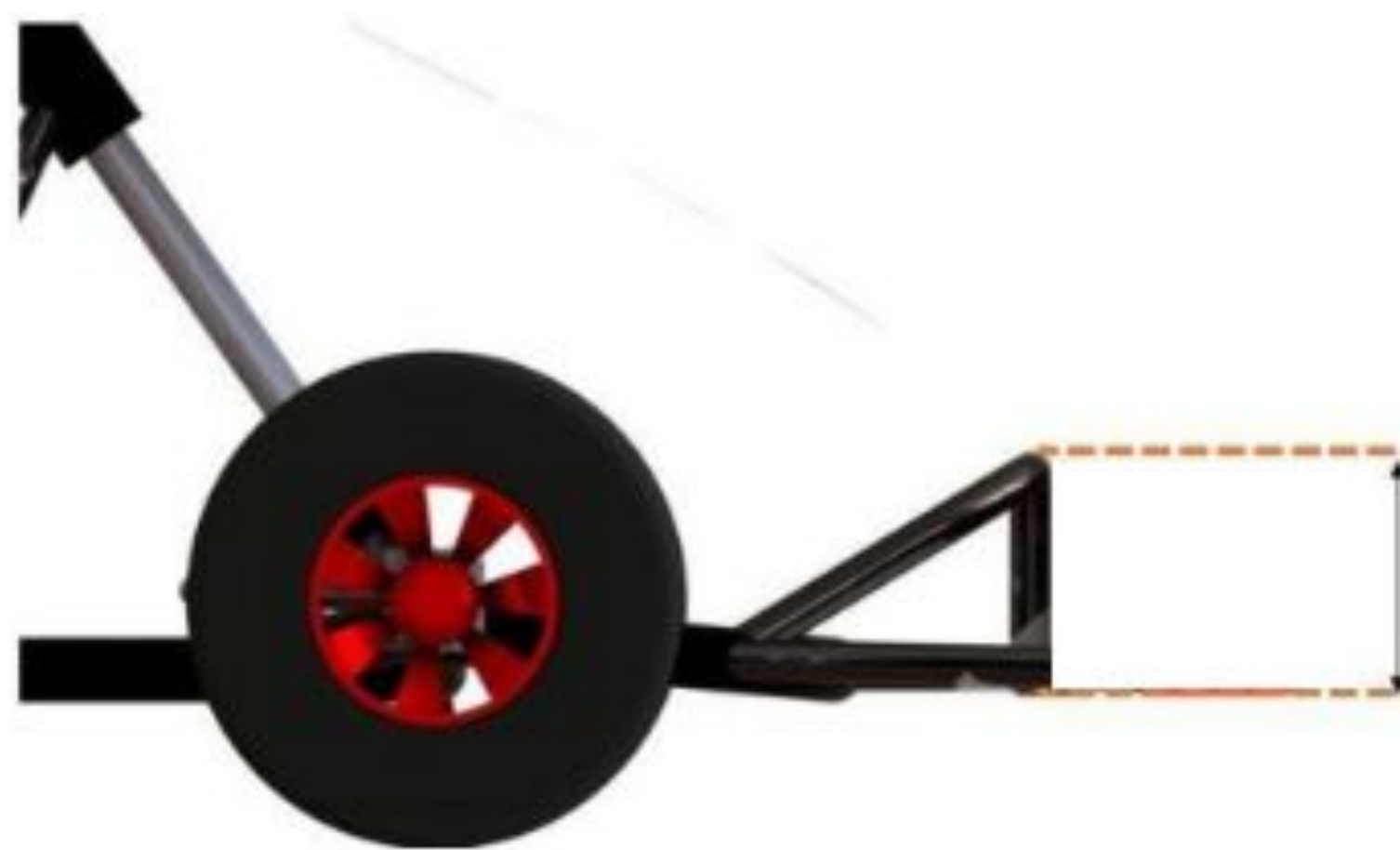


Fig: Foot Guard

3.3 Driver's Ergonomics:

- Ergonomics should also be considered in the design. The teams are to provide Ergonomics report, in design report, mentioning occupant packaging.
- The teams are to provide ergonomics as per SAE 95th percentile Male and 5th percentile Female rule.
- The angles must be maintained as per the figure below. The values provided are optimum values as per the ergonomics rule. The foot point of the occupant must be below H-point.
- There must be a proper and sufficient gap between the steering wheel and the driver's body parts.
- Maximum back angle: 30 degrees from the vertical.

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"Thrive for Eco Racing"

- A well-defined driver's compartment should be provided. Separating him/her from rest of the components. Steering wheel, foot pedals, seat, and headrest are the only allowable components inside the compartment. These should be designed and positioned such as to minimize the risk of injury of the driver, during impact.

3.4 Driver's Visibility:

- The driver must have adequate visibility to the front and sides of the kart.
- With the driver seated in a normal driving position, he/she must have a minimum two hundred degrees (200°) field of vision

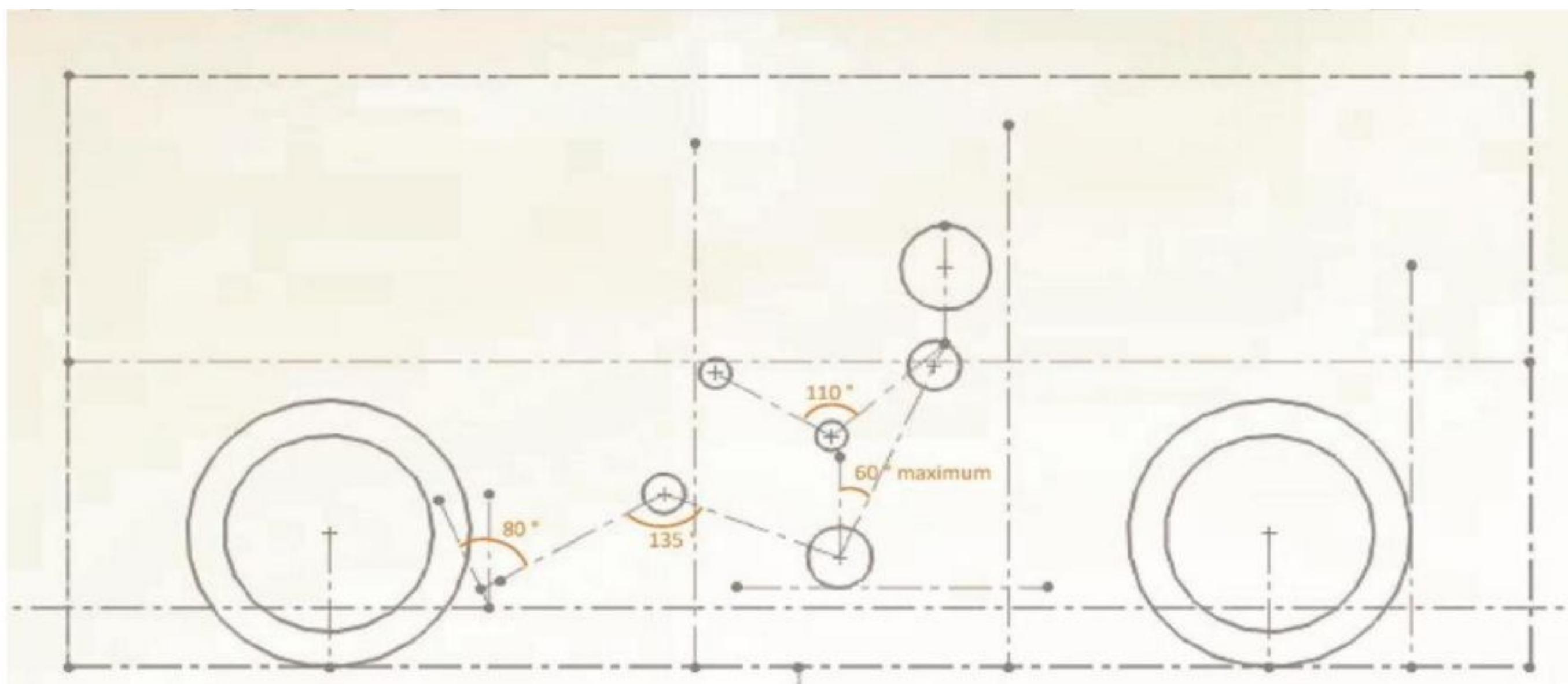


Fig: Ergonomics

3.5 Firewall:

- The firewall should separate Motor, Battery and all powertrain connections from the driver.
- The firewall should be free from holes, drills, open patches etc. it should be a complete Separable sheet which divides driver and Motor compartment separately.
- The firewall must be a rigid, non-permeable surface made from minimum 1.5 mm or thicker aluminium or proven equivalent.

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“Thrive for Eco Racing”

- The firewall must seal completely against the passage of fluids and hot gasses, including driver's back, left-right sides and the floor of the cockpit.
- Direct mounting of any components on the firewall is strictly prohibited as it violates the safety of the occupant.
- For the slots or visible gaps provided for the seat belt shoulder harness, the protective cover must be made of sheet metal and must be mounted to the rear side of the fire wall provided such that it covers the slot or visible gaps.
- Use of glass wool, any other non-standard none approved material should not be used.
- Making any type of mounting for a kill switch, brake light, fire extinguisher, seat etc. and any unwanted cut on fire wall is strictly prohibited

4. Driver's Compartment:

4.1 Steering Mechanism:

- Teams can use any type of mechanical steering mechanism. (Rack and Pinion/ Steer by wire is excluded).
- The steering wheel must be mechanically connected to the wheels, i.e. “steer-by-wire” or electrically actuated steering is prohibited.
- All parts of steering system (steering column, track rod, tie rod, etc.) must be of metal except Steering wheel.
- Carbon fiber, nylon, plastic etc. are not allowed.

4.2 Steering Wheel:

- The steering wheel must have a continuous perimeter that is near circular or near oval, i.e. the outer perimeter profile can have some straight sections, but no concave sections. “H” or cut-out wheels are not allowed.

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"Thrive for Eco Racing"

- Allowable steering system free play is limited to Seven degrees (7°) total measured at the Steering wheel.
- Minimum dimension of steering wheel.
 - **Full circle:** outer diameter (O.D) of 10 inches
 - **Elliptical:** Major axis diameter of 10 inches and minor axis diameter of 8 inches.

4.3 Steering Stopper:

- Steering system must have Positive steering stops.
- Steering stoppers must be mounted on the chassis or the rack to avoid Steer-Lock.
- Steering stopper mounted on the uprights or load bearing points is strictly prohibited.
- Position of steering stopper have to be mounted such that it will not affect the steerability of the vehicle.

4.4 Maximum Turning Radius:

- Maximum turning radius allowed for all the teams is 3 m.

4.5 Steering stability:

- Any vehicle exhibiting handling or other vehicle dynamics that are deemed unstable by the technical inspectors will not be permitted to participate in the dynamic events.
- The decision of the Head of the Technical Committee of EKVC in this regard will be final and binding to all.

5. Braking:

5.1 Braking System:

- Teams must use the hydraulic braking system.
- "Brake-by-wire" systems are prohibited.
- The brakes must be able to act on both the rear wheels.
- The hydraulic circuit must have its own fluid reservoir, either by use of separate reservoirs or by the use of a dammed, OEM-style reservoir.

5.2 Braking Pedals:

- The brake pedal must be fabricated from steel or aluminum or machined from steel, Aluminium or Titanium.
- Pedal should only be operated from driver's foot and use of hand operated levers for braking mechanism is not allowed.
- The pedal travel should be restricted to some distance by some kind of locking mechanisms

5.3 Brake over travel switch:

- A brake over-travel switch must be installed on the car as part of the shutdown system and wired in series with the shutdown buttons.
- This switch must be installed so that in the event of brake system failure such that the brake pedals over travels, it will result in the shutdown of the system, which will eventually help controlling the system.



Fig: Brake Over Travel

5.4 Braking Liner:

- All brake lines must be firmly attached to the vehicle.
- All brake lines shall be routed and oriented such that they are not pinched or engaged with sharp edges by steering parts.
- The brake lines must never be loaded or become engaged with the vehicle's tires and wheels.

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"Thrive for Eco Racing"

- All brake lines shall be designed for the pressures expected in the braking system, and be chemically compatible with the brake fluid in use.

5.5 Brake Oil:

- Teams are advised to use DOT3, DOT4 and DOT5 as brake fluid. Leakage of Brake oil at any point in the brake system is strictly prohibited.
- No Teflon tape is used to tighten the screw of the brake liner to the master cylinder or caliper.
- Use metal tags for tying flexible liners.

5.6 Brake Light:

- The kart must be equipped with a red color brake light. The brake light itself must be near round shape.
- Each brake light must be clearly visible from the rear in very bright sunlight. It must be on the top-center of Roll hoop as shown in the figure below.

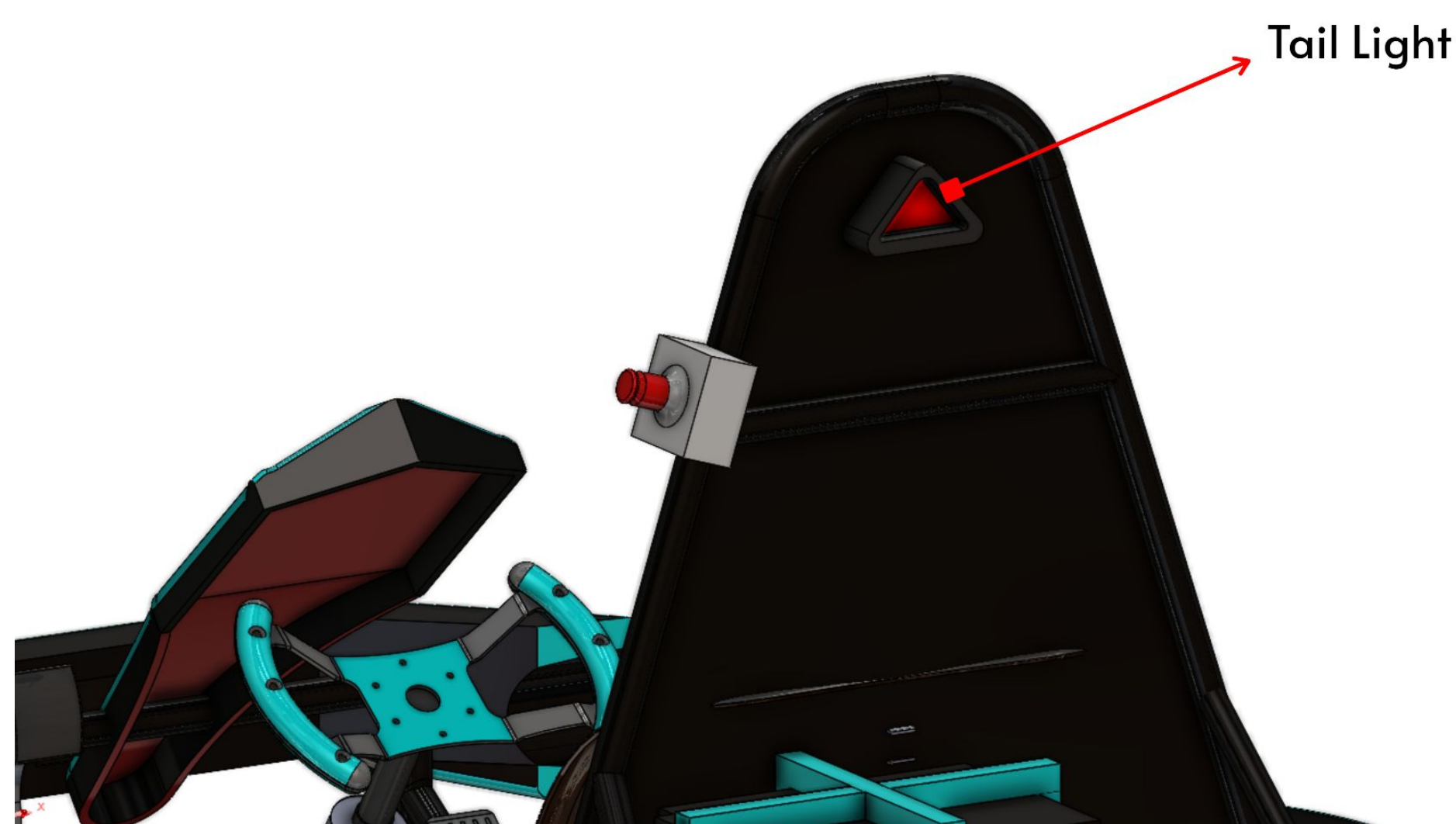


Fig: Brake Light

ELECTRIC KART VEHICLE CHAMPIONSHIP

“Thrive for Eco Racing”

6. Power Unit and Transmission:

6.1 Motor Specification:

- They must use the motor of the following specification:
 - **Rated Power:** 5KW Maximum
 - **Rated Voltage:** 60V Maximum
- The Peak power delivered by the motor must not be more than 9KW at any time during the event.
- Teams are free to use any type of motors and controllers compatible with them without compromising these boundary conditions.

6.2 Battery Storage:

- Teams must use a battery of the following configuration:
 - **Maximum voltage:** 60V
 - **Maximum Capacity:** 5.4KWH

6.2.1 Battery Type:

- Teams can use any type of battery except Hydrogen cells.

6.2.2 Battery Pack and position:

- The firewall must separate all the HV electrical components from the driver.
- Battery cover must be used.
- The covering material must be fire and electric proof and properly insulated.
- Flexible rubber or plastic sheets are not allowed to be used as covers.
- Also, the battery cover should be made up of rigid plastic/glass fiber/ sheet metal, with an insulating coating.
- It should be mounted rigidly during the event, nylon ties, strings or wire of any kind is not allowed for mounting.
- The casing of the battery should be fixed/ welded/ fastened (using lock nuts) with the chassis such that the battery pack stays rigid under any dynamic conditions.

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“Thrive for Eco Racing”

- The cover should be of de-attachable type, so that the battery can be removed easily if required.

6.2.3 Charger & Charging Socket:

- Teams are insisted to use suitable chargers to charge both their tractive and SLI batteries.
- The charger ratings should be 220V 50 Hz as the input and the output should be greater than 60V and 12 V for tractive and SLI chargers respectively.
- Moreover, the output current of the chargers is not limited as it is up to the team's choice.
- Self-designed chargers are allowed in the event which will be inspected by the technical personnel and then allowed for usage.
- Separate charging sockets must be used in the vehicle for both tractive as well as SLI batteries to connect these chargers. The current ratings of the sockets should be chosen based on the current involved in the circuit.
- Only cap-type charging connectors of suitable IP ratings must be used as mentioned in the figure.

6.3 Transmission:

6.3.1 Transmission Types:

- The transmission to be used in the E-Karts must be of rear wheel drive only.
- Team should use only Chain drive mechanism. CVT and Belt Drive system are prohibited.
- The teams are free to use any sort of designs i.e. the use of differential, through the axle, the wheel mounting hub or by any other means.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

6.3.2 Throttle Pedal:

- Only foot operated pedal is allowed (Hand operated lever will not allow).
- There should be a positive lock provided with the throttle paddle.
- This throttle stopper should be placed such that the throttle wire is not over stressed and before the max motion of the throttle the stopper should restrict the paddle

6.3.3 Scatter shield:

- The team must use scatter shield for covering chain, sprocket etc.
- It must be rigidly mounted to chassis but not with any moving part of the kart.
- It can be of the metal net but capable to prevent scattering of small parts of the transmission system.



Fig: Scatter shield

6.4 Kill Switch:

- Kill switch or emergency stop switch must be used in the tractive line and should stop the flow of current from the battery to the motor when activated.
- There should be three kill switches

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

- They should be placed in such a way that one can be easily accessed by the driver and other two should be mounted on either side of roll hoop.
- Kill switch must be of bright red color so that it can be clearly visible from a long distance.
- It should be a push to off type, it should not be a simple push button which retraces after the button is pressed.
- Kill switch must be rigidly mounted only on the mounting hinge welded on the chassis.
- Negative Wire Should not be connected. only positive (Live) wires must be connected.

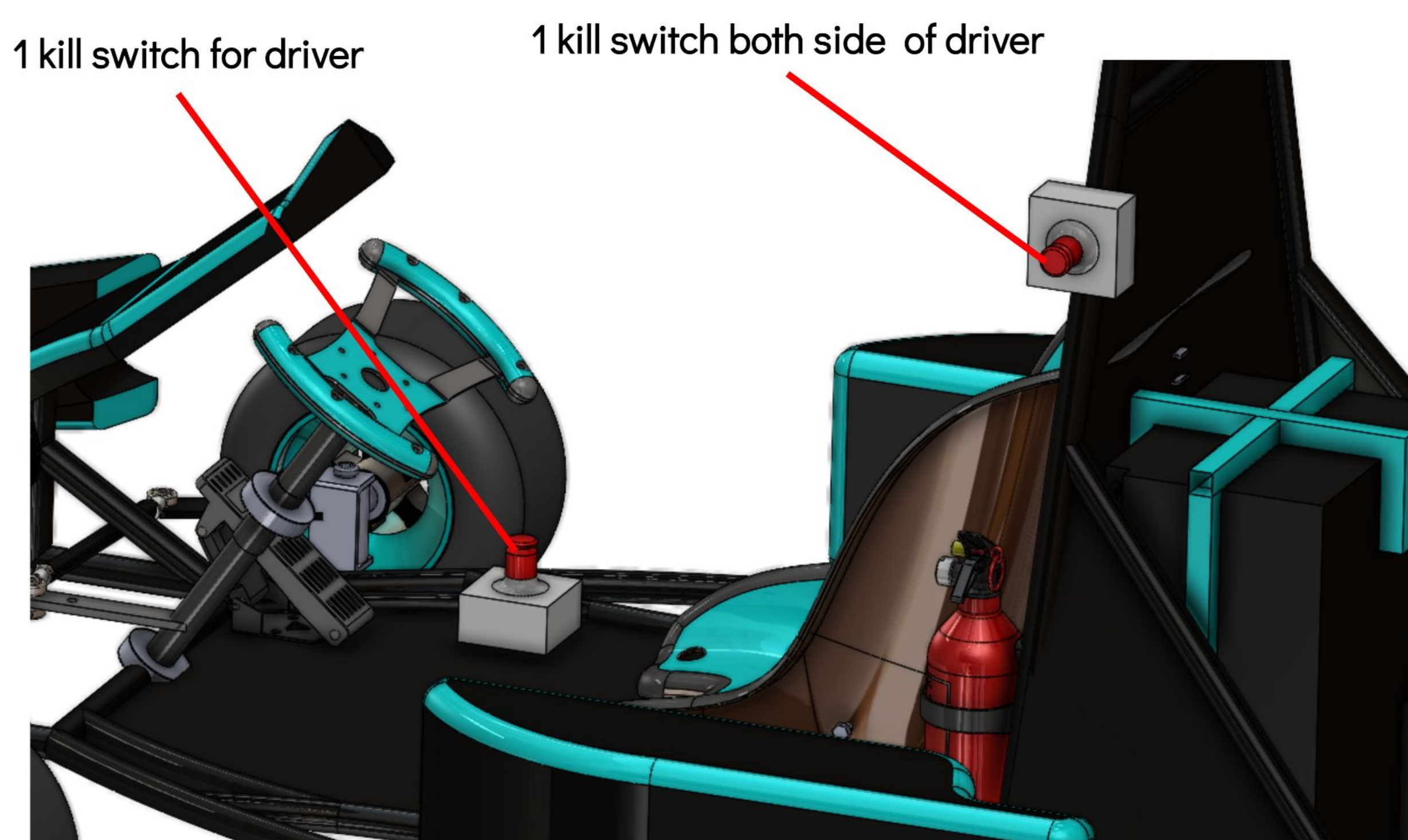


Fig: Kill Switch

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

6.5 Fusing:

- Use of appropriate fuse is mandatory for each electrical component in the vehicle.
- Fuse rating and specifications should be visible on the fuse boxes.
- Use of automotive blade-type fuses is mandatory for the low voltage circuit components.
- The power to the motor must be drawn from the battery through an isolated relay.
- Separate fuse of suitable rating must be used on the tractive live line for safety.
- Teams shall use DC MCB of suitable rating in the tractive system.



6.6 Wiring and Connectors:

- Wires used in the vehicle should be of suitable gauge resistance capable enough to withstand the voltage and current in the electrical system.
- Wiring done for tractive and SLI circuits should be separate. Proper gauge and color variation must be given to each of the wires.
- When joining two wires, twisted pair joints are strictly prohibited. Instead, connectors of suitable ratings must be used.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

- For connecting to terminals, wire lugs must be used. This connection should be done by using a proper crimping tool so that wires are held rigidly onto the lug.
- All wiring joints must be strong and rigid and the wiring conduit must be laid within the flexible hoses. Separate hoses shall be provided to envelope the tractive and SLI battery circuit wiring if necessary.
- Also, the flexible hoses should be tied to the body of the vehicle so that loose connections do not exist and no hanging of the wiring conduit takes place.
- Teams must perform proper calculations for the selection of wire gauge which will be cross-verified during the VAP.
- Teams are recommended to have the live wire in **red color**.
- Wiring should be given with separate colors for identification purpose. Also, teams are recommended to provide identification tags for each of the wiring lines so that trouble shooting of faults will be easy.



6.7 Vehicle Lighting(optional):

- Team can use Headlight to light the pathway of the vehicle and it should be placed in the front at a suitable height providing maximum illumination.
- Lights must be provided for reverse operation.
- Teams can also use lights to illuminate the driver's cockpit area if they desire.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"



6.8 Fire Extinguishers:

- The team must have 2 fire extinguishers each of 1 kg.
- At least one must be rigidly mounted in driver sitting compartment and other must be in hand of a team member in every static and dynamic test during the final round.
- The fire extinguisher should not be mounted on the firewall.
- It should be in seat compartment only in such a way that driver can easily access to it while seated in a kart.



6.9 Fasteners:

- It is mandatory to use only metal fasteners and bolts for body works etc.
- The team must use lock nut in the wheel assembly, steering mounting, suspension, Power unit and transmission mounting.
- Note: Use of any type of plastic or metal tie (such as zip tie, wrap tie, twist tie, wire etc.) for fixing body parts or any components of kart (except- insulating pipe and wires) are strictly not allowed.

ELECTRIC KART VEHICLE CHAMPIONSHIP

“Thrive for Eco Racing”

- All the mountings of the steering system, braking system (except brake light), engine & transmission system, body works (including firewall) must be of metal.

6.10 Seat Belt:

- Teams must use a minimum 3-point harness seat belt meeting the requirements of either SFI or FIA specification.
- All the 3-points of the seat belt must be mounted directly on the primary member and the mounting must be welded in the primary member.

7. Body Works:

7.1 Body Works:

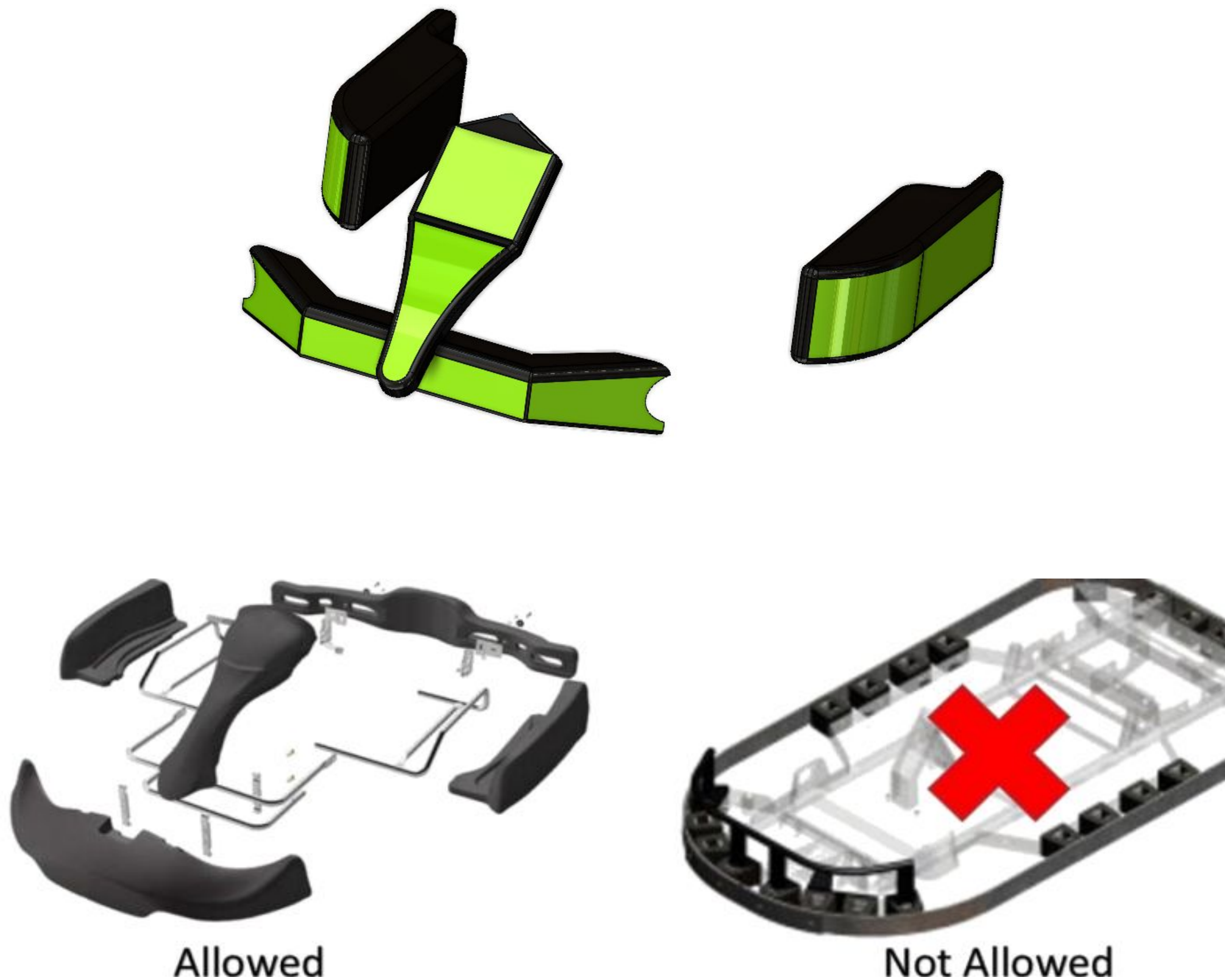
- Sharp edges on the body work other protruding components are prohibited. It must cover from front bumper to steering wheel so that any outer material or debris from the track (pebbles, small mechanical components etc.) cannot strike or reach seat Compartment.
- Teams are free to design their own body works, but it must fulfil the minimum criteria as per the figure is given below.

7.1.1 Outer Body Works:

- Every team must have a minimum amount of body work as shown in the figure below.
 - Front body work (Similar to that in front view).
 - Left and Right side body work (Similar to that shown in the left and rear front view).
 - Rear bodywork (Similar to that shown in rear view).
- Teams are not allowed to use full round type bumpers as shown in the figure below.
- The bumpers used should be at least 5 inches height from the lower base of the chassis.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"



7.1.2 Floor Closeout:

- All Go-Karts must have a floor close-out made of one or more panels, which separate the driver from the pavement of the chassis.
- Small gaps should not exceed more than 3mm, also the close out should be capable of taking drivers load while he stands, egress & moves out of the kart, non-rigid close outs will not be entertained.
- It must prevent track debris to enter the kart. Note: Floor close out should start from firewall of roll hoop and should be up to the front most part.
- The panels must be made of a solid, non-flexible, non-brittle material. Panels must be minimum of 1mm thickness.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

8. Stickers:

- Before coming to Final Round all the teams compulsorily need to paste Kart Number stickers on the front body panel, both sides and rear bumper body work as shown in the figure below.
- For team number stickers:
 - **Diameter:** 6 inches
 - **Background color:** Yellow
 - **Text color:** Black
 - **Shape:** Circular
- The text should be placed such as that it is visible clearly from the distance of 10 m.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

DRIVER'S HANDBOOK

Driver's Requirement:

Every team should have minimum two drivers.

1.1 Driver's License:

Team members who will drive a competition vehicle at any time during a competition must hold a valid, the government issued driver's license.

1.2 Driver's Restrictions:

Driver must be from the team. The professional driver from outside is not allowed to ride the vehicle during the competition.

1.3 Medical Insurance:

Individual medical insurance coverage is required for both driver and is the sole responsibility of the driver. A driver without a valid Medical Insurance will not be allowed to drive in the Dynamic Events.

1.4 Age:

The minimum age required to be a driver in the competition is 18 years.

2. Driver's Requirement:

2.1 Drivers Safety Gear:

The following are the minimum requirements and restrictions that will be enforced through technical inspection, at any stage of the competition. Noncompliance if any observed by the inspection/organizing/judging committee members must be corrected and no vehicles without passing the technical inspection would be allowed to participate further in the event. All the parts of Driver's Safety Gear must meet the required rating (specified). No driver would be allowed to drive the vehicle without the complete driver's safety gear in any of the dynamic events.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

2.2 Driver's Suit:

A fire resistant one piece suit, made from a minimum of 1 layer that covers the body from the neck Down to the ankles and the wrists. The suit must be certified to either one of the Following standards and be labeled such as SFI 3.2A/1 (or higher) / FIA Standard 1986.



2.3 Underclothing:

It is strongly recommended that all drivers Wear fire resistant under clothing SFI 3.2A/5 / FIA standard 1986 or higher (long pants and long sleeve t -shirt) under their approved driving suit. This fire resistant underclothing (SFI/ FIA rated) should be made from an acceptable fire resistant material and should cover the driver's body completely from neck down to ankles and also the wrists.

Note: If you do not wear fire resistant under clothing, it is strongly recommended that you wear cotton underclothing (t-shirt and long underpants) under your approved driving suit.



ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

2.4 Helmet:

A well- fitting closed face helmet that meets one of the following certifications and is labeled as such-Snell K2000, K2005, K2010, M2000, M2005, M2010, SFI 31.2A, SFI 31.1/2005-FIA 8860-2004, FIA 8860-2010. Open faced helmets are not allowed. All helmets to be used in the competition must be presented during Technical Inspection where approved helmets will be a sticker. The organizer reserves the right to impound all non approved helmets until the end of the competition.

2.5 Balaclava:

A balaclava which covers the driver's head, hair, and neck, made from an acceptable fire resistant material (SFI 3.2A/5 / FIA standard 1986 or higher) as or a full helmet skirt of acceptable fire resistant material. The balaclava requirement applies to drivers of either gender, with any hair length.



2.6 Neck Support:

The neck support must be a full circle (360°) and SFI rated. Horseshoe collars are not allowed. Simpson, RCI, G-Force, Deist or Leaf Racing Products supply neck collars that meet this requirement



ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

2.7 Gloves:

Fire resistant gloves made from made from acceptable fire resistant material (SFI/ FIA rated) Gloves of all leather construction or fire resistant gloves constructed using leather palms with no insulating fire resisting material underneath are not acceptable.



2.8 Shoes:

Fire resistant shoes made from acceptable fire resistant material shoes must be certified to the standard and labeled as such: SFI 3.2A/ FIA 8856-2000.

Note: Sports shoes/Canvas shoes/Leather shoes/Industrial safety shoes are not allowed at any point of the event.



2.9 Socks:

Fire resistant socks made from acceptable fire resistant material, which covers the bare skin between the driver's suit and the boots or shoes.



ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

3. Code of Conduct during the event:

- When attending driver's meet or any other meeting/briefing session driver should be there with complete safety gears, unless advised otherwise by organizing committee of EKVC.
- Driver's suit and other safety gears should always be ready in the pit so that they can change into their suits as soon as possible.
- The driver should not drive the car during the event unless advised to do so.
- If the team is found driving the vehicle unnecessarily without permission then the team will be disqualified.
- Before every event teams must inform the driver who will be driving the vehicle. Only he will be allowed to drive for that event. However, if team decide to change the driver then they must do it by consent of organizing a team of EKVC. During endurance, change of driver is not permitted.
- The driver should not consume any objectionable items (cigarette, alcohol, etc.,) before entering for the event.
- The driver should drive in a safe and professional way.
- The vehicle should not touch each other, as this may result in disqualification/penalizing of the team as per rule mentioned in the rulebook.
- Overtaking must be done in a legal way, illegal overtake (details will be explained before endurance event) may lead to penalty or disqualification of the team from endurance.
- While defending their position, it should be done in a professional way, the driver should not block faster vehicle's way intentionally. If found, they will be penalized accordingly.
- Driver's must follow and obey instructions of track marshals all the time. Marshals will communicate with the driver through flag signals, they must obey those signals.

ELECTRIC KART VEHICLE CHAMPIONSHIP

"Thrive for Eco Racing"

- Each driver should be on call with team representatives, throughout the endurance. This for the safety of the driver, so that in the case of medical emergency either teammate or organizers can reach him/her.
- Driver must use "in the ear" type of headphones only during the race, "over the ear" headphones are strictly restricted.
- In the case of mechanical failure/breakdown, the vehicle will not be allowed to continue further.
- If any team hits other teams' vehicle then the first team (which has caused the accident) will be disqualified, and the other team (which is the victim) will be allowed to run only after a complete checkup of components. In the case of breakdown due to this accident, the first team will have to pay for the loss of that component