SAEINDIA
Society of Automotive Engineers INDIA

BAJA SAEINDIA 2026

Collegiate Design Series

BAJA SAEINDIA® Rules

Applicable for mBAJA and eBAJA

Rev01

Foreword

Welcome to BAJA SAEINDIA 2026

The BAJA SAEINDIA® Organising Committee has come up with an updated Rulebook for the 2026 season. There are a significant number of changes, many of which are made through insights gained from the 2025 BAJA season. As you are aware, the BAJA SAEINDIA® Rulebook follows the pattern set by BAJA SAE (USA). Additionally, many Indian teams are now participating in BAJA SAE challenges abroad and hence our Rulebook needed to be modified to reflect the changes. For this season a common rulebook for both mBAJA and eBAJA, with specific sections mentioned as – mBAJA only and eBAJA only, respectively to refer.

Starting from 2024 the BAJA SAEINDIA® Organising Committee has decided to make 4WD/AWD compulsory for mBAJA. It is essentially required for all the teams to use 4WD/AWD mode in all the dynamic events and Endurance. Teams can use fulltime 4WD or switchable 4WD/AWD mechanisms to adapt for the event.

eBAJA event will have an option of choosing between a 2WD or 4WD option for the year 2026. **eBAJA teams opting for 4WD/AWD are essentially required to use 4WD/AWD mode in all the dynamic events and Endurance. No bonus points will be rewarded for opting for 4WD/AWD.**

eBAJA teams opting for 4WD/AWD can choose between full-time AWD or selectable 4WD:

- **Full-Time AWD: eBAJA teams opting for this must use AWD mode for all dynamic events and the Endurance race. These teams shouldn't remove any drivetrain components, such as the Front Differential Gearbox, to switch to 2WD mode.**
- **Selectable 4WD: eBAJA teams opting for selectable 4WD can switch between 4WD and 2WD modes during dynamic events and the Endurance race.**

No bonus points will be rewarded for opting for 4WD/AWD. Teams can use fulltime 4WD or switchable 4WD/AWD mechanisms to adapt for the event.

Starting from 2026 Event Onwards, 72V Tractive System is mandatory for all New Teams*. Returning teams can still decide to opt for either 48V or 72V Tractive System.* ***Teams opting for 72V Tractive system will get additional Bonus Points which will be added in Overall Scores*****.**

Please note that Tractive System Voltage allowed from eBAJA SAEINDIA 2027 event may be only 72V for all the teams. Teams are advised to plan accordingly

Thorough and repeated reading of the rulebook is strongly recommended!

Wishing all the team's good luck for an exciting BAJA SAEINDIA® season ahead.

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Revision History

Date	Revision	Description	Author
29/06/2025	00	1st Release	Technical Team
06/11/2025	01	2nd Release	Technical Team

⚠ Read all Rules thoroughly!

⚠ Please be sure to refer to the Baja SAEINDIA Website (*http://www.bajasaeindiaforum.com*) for all updates.

⚠ The section marked with "mBAJA Only" apply to only mBAJA teams, and "eBAJA Only" apply to only eBAJA teams.

⚠ All other sections apply to both mBAJA and eBAJA teams.

Using this Document

Important Notes.

⚠ Additional information and warnings.

Reference to another article in this document.

PART A ADMINISTRATIVE REGULATIONS

ARTICLE A.1 BAJA SAE OVERVIEW

A.1.1 Program History

The BAJA SAE competition series originated at the University of South Carolina in 1976, under the direction of Dr. John F. Stevens. Since that time, the BAJA SAE Series has grown to become a premier engineering design series for university teams.

A.1.2 Collegiate Design Series Objective

SAE International's Collegiate Design Series (CDS) programs prepare undergraduate and graduate engineering students in a variety of disciplines for future employment in mobility-related industries by challenging them with a real-world, engineering application.

Through the Engineering Design Process, experiences may include, but are not limited to:

- Project management, budgeting, communication, and resource management skills
- Team collaboration
- Applying industry rules and regulations
- Design, build, and test the performance of a real vehicle.
- Compete with other students from around the globe.
- Develop and prepare technical documentation.

Students also gain valuable exposure to and engagement with industry professionals to enhance 21st-century learning skills, build their network, and help prepare them for the workforce after graduation.

A.1.3 BAJA SAEINDIA® Program Objective

BAJA SAEINDIA® is an intercollegiate engineering design competition for undergraduate engineering students. The objective of the competition is to simulate real-world engineering design projects and their related challenges. Each team is competing to have its design accepted for manufacture by a fictitious firm. The students must function as a team to design, engineer, build, test, promote and compete with a vehicle within the limits of the rules. They must also generate financial support for their project and manage their educational priorities.

A.1.4 Design Subject

Each team's goal is to design and build a single-seat, all-terrain, sporting vehicle whose driver is contained within the structure of the vehicle. The vehicle is to be a prototype for a reliable, maintainable, ergonomic, and economical production vehicle that serves a recreational user market sized at approximately 4000 units per year. The vehicle should aspire to market-leading performance in terms of speed, handling, ride, and ruggedness over rough terrain and off-road conditions. The performance will be measured by success in the dynamic events which are described in the BAJA SAEINDIA® Rules and are subject to event-site weather and course conditions.

For the 2026 competition, the mBAJA teams should compulsorily have a 4-wheel drive (4WD) or all-wheel drive (AWD) while eBAJA teams have an option to incorporate 4WD/AWD or 2WD in their design. However, there will be no bonus points for opting 4WD/AWD. Demonstration of 4WD/AWD in working conditions is a must.

ARTICLE A.2 COMPETITION INFORMATION

A.2.1 Competitions

SAE International will host up to three competitions within the United States and Canada in a given competition year. Locations will change yearly and are dependent on local support of SAE Sections, Universities, and Sponsor Companies.

Competitions outside the US and Canada include:

- BAJA SAE Brazil – hosted by SAE Brazil
- BAJA SAE Korea – hosted by Yeungnam University

- BAJA SAE South Africa – Sponsored by Sasol and hosted by the Gerotek Test Facility
- BAJA SAE Mexico – hosted by SAE Mexico
- BAJA SAEINDIA – Up to Four Event locations - Sponsored by SAEINDIA

A.2.1.1 BAJA SAEINDIA® Competition

Started in 2007, BAJA SAEINDIA is a premier engineering competition organized by the Society of Automotive Engineers India (SAEINDIA), where university students design, build, and compete with small, off-road vehicles. The event aims to simulate real-world engineering design projects and their related challenges, providing participants with practical engineering experience.

BAJA SAEINDIA® is conducted for four different categories -

1. **mBAJA (I. C. Engine Vehicle)** - Students are required to design and fabricate a single seater All-Terrain Vehicle within the boundaries of the rulebook, propelled by an IC engine. This was the very first category of BAJA SAEINDIA and has been in place since its inception.

2. **eBAJA (Battery Operated Vehicle)** - Started in 2015, with the vision of Dr. APJ Abdul Kalam to upskill engineering students for the upcoming challenges in mobility, the eBAJA category requires the students to build a battery-operated, electric motor propelled single-seater All-Terrain Vehicle and take part in various BAJA SAEINDIA events similar to the mBAJA category.

3. **hBAJA (hCNG Injected Engine Vehicle)** - The newest addition to BAJA SAEINDIA, this category aims to impart the knowledge of alternative fuels particularly towards Hydrogen powered IC Engines. It has begun with CNG powered IC engines, and will see the addition of Hydrogen in phases in the future.

4. **aBAJA (Autonomous Vehicle)** - One of the newest categories of BAJA SAEINDIA, the aBAJA category aims to expose students to autonomous mobility by introducing driver assistance features to the electric BAJA buggy. By enabling students to work with both hardware and software, BAJA SAEINDIA aims to prepare them for the future.

BAJA SAEINDIA 2026 Events will be conducted in 2 Phases:

1. Virtual Round
2. Physical Round

- **Registration for the above-mentioned event phases would be common.**
- **The participation of international teams will be allowed in both Virtual Round and Physical Round of BAJA SAEINDIA 2026.**
- **Locations will change yearly and are dependent on local support of SAE Sections, Institutes and Sponsor Companies.**
- **Please refer BAJA SAEINDIA Forum and BAJA SAEINDIA Website regularly for details regarding event dates and schedules.**

A.2.2 Official Announcements

Teams are required to read the articles posted on the BAJA SAEINDIA Website and BAJA SAEINDIA Forum published by BAJA SAEINDIA® Organizing Committee. Teams must also be familiar with all official announcements concerning the competitions and rules clarifications released by the BAJA SAEINDIA® Organizing Committee.

- **BAJA SAEINDIA Forum accounts of the registered teams shall be created, and the credentials shall be shared to their official team e-mail ids given at the time of registration, in due time after the closure of registrations.**

A.2.3 Official Languages

The official language of the BAJA SAE® Series is English. Document submissions, presentations, and discussions in English are acceptable at all competitions in the series. Team members, judges, and officials at non-U.S. competition events may use their respective national languages for document submissions, presentations, and discussions if all the parties involved agree to the use of that language.

A.2.4 Event specific:

The dynamic and Endurance events at different competitions are different. The teams should check the BAJA SAEINDIA Forum and consider any unique requirements that might affect the design and fabrication of their vehicle.

A.2.5 SAEINDIA Technical Standards Accesses

A list of accessible SAEINDIA Technical Standards can be found in Part I: Appendices - Article 2. For getting access to those standards registered teams may send the specific request to the Knowledge Centre of ARAI Pune / SAEINDIA Western Section Pune at mail id: executive-ws@saeindia.org.

ARTICLE A.3 BAJA SAEINDIA® RULES AND ORGANIZER AUTHORITY

A.3.1 Rules Authority

The BAJA SAEINDIA® Rules are the responsibility of the BAJA SAEINDIA® Organizing Committee and are issued under the authority of the BAJA SAEINDIA® Organizing Committee. Official announcements from the BAJA SAEINDIA® Organizing Committee shall be considered part of and have the same validity as these rules. Ambiguities or questions concerning the meaning or intent of these rules will be resolved by the BAJA SAEINDIA® Organizing Committee or Technical Inspectors during the competition onsite.

A.3.2 Rules Validity

The newest version of the BAJA SAEINDIA® Rules posted on the BAJA SAEINDIA Website and BAJA SAEINDIA Forum and dated for the calendar year of the competition are the rules in effect for the competition. Rule sets dated for other years or older versions of the current year are invalid.

A.3.3 Rules Compliance

By entering a BAJA SAEINDIA® competition, the team members, faculty advisors, and other personnel of the entering university agree to comply with and be bound by, the rules and all rules' interpretations or procedures issued or announced by the BAJA SAEINDIA® Organizing Committee. All team members, faculty advisors, and other university representatives are required to cooperate with, and follow all instructions from competition organizers, officials, and judges.

A.3.4 Rules Comprehension

Teams are responsible for reading, understanding, and comprehending the rules in their entirety for the competition in which they are participating. The section and paragraph headings in these rules are provided to facilitate reading: they do not fully explain all the paragraph contents. Questions regarding rules may be submitted by registered teams through BAJA SAEINDIA Forum.

A.3.5 Rules Questions

A.3.5.1 Privacy

By submitting a rules inquiry on BAJA SAEINDIA Forum, the submitter agrees that both question and the Organizing Committee's/Technical Evaluation Team's answer can be reproduced and distributed by SAEINDIA, in edited versions, in any medium or format anywhere in the world.

A.3.5.2 Duplication

The Organizing Committee/Technical Evaluation Team will answer questions that are not already answered in the rules or FAQs or that require new or novel rule interpretations. For example, if a rule specifies a minimum dimension for a part, the Technical Evaluation Team will not answer questions asking if a smaller dimension can be used.

A.3.5.3 Submission

If a registered team has any Questions regarding rules (except such that can be classified under A.3.5.2), it can submit the inquiry through BAJA SAEINDIA Forum.

A.3.5.4 Documentation

Teams submitting questions are required to bring copies of the questions and answers with them to technical inspection.

A.3.5.5 Response Time

Please allow a minimum of two (2) weeks for a response. The Organizing Committee/Technical Evaluation Team will respond as quickly as possible. However, responses to questions presenting new issues, or of unusual complexity, may take more than two weeks.

- **Please keep in mind that the final operating approval of any BAJA SAEINDIA® vehicle can only be given onsite at the competition.**

A.3.6 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 BAJA SAEINDIA®, so any perceived loopholes should be resolved in the direction of increased safety of the competition.

A.3.7 Participating in the Competition

Teams, team members as individuals, faculty advisors, and other representatives of a registered university who are present on-site at a competition are considered to be "participating in the competition" from the time they arrive at the event site until they depart the site after the competition or earlier by withdrawing.

A.3.8 Violations of Intent

The violation 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 BAJA SAEINDIA® Organizing Committee or Technical Inspectors.

A.3.9 Right to Impound

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

A.3.10 General Authority

BAJA SAEINDIA® Organizing Committee reserves the right to revise the schedule of any 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 safe and efficient operation of the event or the BAJA SAEINDIA® series as a whole.

A.3.11 Penalties

Organizers have the right to modify the penalties listed in the various dynamic event descriptions to better reflect the design of their event courses, the course lengths or any special conditions unique to the site. The standard dynamic event penalties in these rules are default values that will be applied unless there is a change by the organizer.

A.3.12 Force Majeure

The **BAJA SAEINDIA® Organizing Committee** and **SAEINDIA** shall not be held responsible for the non- fulfilment of their obligations as the organizers of the BAJA SAEINDIA® event due to the exigency of one or more of the **Force Majeure** events such as but not limited to the acts of God, war, flood, earthquake, strikes, lockouts, pandemics, epidemics, riots, civil commotion, scarcity of water, electricity or other such basic facilities, etc., and shall inform the participating colleges on the occurrence and cessation of the event within one week of such decision being made. If the Force Majeure conditions continue beyond a reasonable period where running the event is not feasible either due to the Force Majeure conditions or any other reasons, the event may be cancelled for the year.

"Force Majeure Events": -

a. Earthquake, flood, inundation, landslide, storm, tempest, hurricane, cyclone, lightning, thunder, pandemics, epidemics or other extreme atmospheric disturbances, or any other act of God.

b. Strikes, labour disruptions, or any other industrial disturbances not arising on account of the acts or omissions of the organizers, war, hostilities (whether declared or not), invasion, the act of a foreign enemy, terrorism, rebellion, riots, weapon conflict or military actions, civil war, ionizing, radiation, contamination by radioactivity from nuclear fuel, any nuclear waste, radioactive toxic explosion, volcanic eruptions or other such occurrences beyond the control of the organizers.
c. Acts of expropriation, compulsory acquisition, or takeover by any government agency of the said venue where the event is to be held or any part thereof.
d. Any prohibitory order of any Court.

A.3.13 Protests and Appeals

It is recognized that hundreds of hours of work are put into the design and construction of a vehicle. In the heat of competition, emotions may peak, and disputes can arise. The BAJA SAEINDIA® Organizing Committee will make every effort to fully review all questions and resolve problems quickly and efficiently.

A.3.13.1 Preliminary Review

If a team has a question about scoring, judging, policies, or any official action it must be brought to the attention of the Convener/Joint Convener (this may be designated) of the BAJA SAEINDIA® for an informal preliminary review.

A.3.13.2 Cause

A team may protest any rule interpretation, score, or official action (unless specifically excluded from protest) that they feel has caused some actual, non-trivial harm to their team, or has had a substantive effect on their score. Teams may not protest rule interpretations or actions that have not caused them any substantive damage.

A.3.13.3 Format and Forfeit

All protests must be filed in writing and presented to the relevant committee (there will be three committees

Technical Evaluation Committee, Static Events Committee, and Dynamic Events Committee) by the team captain or a designated student team member. To have a protest considered, a team must post a twenty-five (25) point protest bond, which will be forfeited if the protest is rejected.

☑ **Any of the above-designated committees of BAJA SAEINDIA, judges, or volunteers will not review any video footage as part of the protest brought by any of the teams.**

A.3.13.4 Protest Period

Protest related to the event -

Protests concerning any aspect of the competition must be filed within 30 minutes of the end of the event to which the protest relates.

Protest related to Scores-

Protests concerning scores awarded to the teams in any of the events of the BAJA SAEINDIA competition must be filed within 30 minutes of the scores released on the BAJA SAEINDIA Forum.

☑ **Events that are solely award-based and do not impact the Overall Event Scores are not considered for protest.**

The Scores will only be released on BAJA SAEINDIA Forum between 9:00 am and 9:00 pm IST. Teams are required to check BAJA SAEINDIA Forum, and Social Media Handles regularly for any updates about the event or scores.

A.3.13.5 Hearing

The time of protest will be noted and decided upon by the designated committee.

A.3.13.6 Decision

The decision regarding any protest is finalized by BAJA SAEINDIA Organizing Committee.

A.3.14 Prohibited Actions

To ensure the safety, fairness, and integrity of the event, the following actions are strictly prohibited. Any team found violating will be levied the specified penalties for each instance of non-compliance as under, and these penalties will be deducted from their overall event scores.

Prohibited Actions	Penalty
Speeding the vehicle at more than walking pace while moving it to various event sites	25
Team members found inside the event site after 9 PM or event site closure time based upon the PA announcement whichever is earlier	100
Consuming alcohol/drugs or smoking inside the event location	100
Driving the vehicle without completing the fitment of all components and protective covers	50
Testing and running the vehicle on any undefined area during the BAJA SAEINDIA event endangering safety	50
Receiving outside assistance whatsoever from any skilled worker, team alumni, or college staff at the event site	100
If team members (except driver(s)), faculty, family members, college alumni are present on the Endurance race track or dynamic event track	100
Any member other than the designated team driver(s) driving the vehicle under any circumstances	25
Cranking the engine in the pit areas post clearing the Engine Inspection	50
Performing cutting, grinding, drilling, welding, etc., operations inside the pit and hot pit without using personal protective equipment (gloves, goggles, etc.)	50
Performing any kind of repair work in areas outside the event site or other than designated area	100
Any person apart from the team members and the faculty advisors is present inside the allotted pit of the respective teams	25
Fueling the vehicle or carrying fuel inside the pit	50
Performing welding operation inside the pit	50
Taking the supporting frame or structure of pit banners.	25

Any actions not mentioned above but found to affect the safety, fairness, and integrity of the event will be penalized as per the discretion of the BAJA SAEINDIA Organizing Committee.

ARTICLE A.4 PARTICIPATION REQUIREMENTS

A.4.1 Students

A.4.1.1 Eligibility

Eligibility to compete is limited to undergraduate students to ensure this is an engineering competition rather than a race. Individual members of teams participating in this competition must satisfy the following requirements:

A.4.1.2 Student Status

Team members must be enrolled as degree-seeking undergraduate students in a college or university. Team members who have already graduated before the competition are NOT eligible to participate.

A.4.1.3 Society Membership

Members of Indian Teams must be members of SAEINDIA (https://saeindia.org/become-a-member/).

It is mandatory for members who are enrolling for a new SAEINDIA Membership to select the current year+1 year type exclusively.

The SAEINDIA Membership year for new enrolment is considered from April 1st, 2025, to March 31st, 2026.

In case any BAJA SAEINDIA 2026 event takes place after 31st March 2026, registered SAEINDIA members whose membership is expiring will be considered participants only, if they have submitted their SAEINDIA membership cards before March 31st, 2026. This policy is applicable to already registered SAEINDIA members only.

Members of International Teams must be members of at least one of the following societies.

- Local automotive associations like the Institution of Automotive Engineers, etc.
- SAE International (SAE International) or an SAE International affiliate society
- FISITA (Join FISITA) or societies that are members of FISITA (FISITA Society Members)

☑ **In case any team willing to participate is not a part of any of the associations listed above, they must write to BAJA SAEINDIA® Organizing Committee at bajasaeindiacommunications@saeindia.org with a copy to saeindiaindore@saeindia.org for further clarification.**

Proof of membership, such as a valid membership card, is required while registering for the event and also needs to be produced during the event to participate in the BAJA SAEINDIA® competition.

For more information regarding society membership, please contact saeindiaindore@saeindia.org (For SAEINDIA) or saeindiaindore@saeindia.org (For SAE International).

A.4.1.4 Age

Team members must be at least eighteen (18) years of age at the time of the competition.

A.4.1.5 Driver's License

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

A.4.1.6 Indemnity Bond

All on-site participants are required to bring a notarized indemnity bond to be submitted at the time of registration on-site. All the members to be present on-site are required to sign the indemnity bond.

A.4.1.7 Insurance

Individual medical and accident insurance coverage is required and is the sole responsibility of the participant.

A.4.2 Faculty Advisors

A.4.2.1 Faculty Advisor Status

Each team is expected and encouraged to have at least one and a maximum of two Faculty Advisors appointed by the college/university. The faculty advisor/s will be considered by competition officials to be the official university representative accompanying the team. Their presence during the competition is **mandatory** for all the event days on-site.

Faculty advisor/s of the participating Indian Teams must be members of SAEINDIA (https://saeindia.org/become-a-member/).

Faculty advisor/s of International Teams must be members of at least one of the following societies.

- Local automotive associations like the Institution of Automotive Engineers, etc.
- SAE International (SAE International) or an SAE International affiliate society
- FISITA (Join FISITA) or societies that are members of FISITA (FISITA Society Members)

- **It is mandatory for faculty advisor(s) to accompany the team during the physical dynamic event and at least one Faculty Advisor must be present with the team for the entire event duration, the absence of which will lead to a penalty of 100 points, as per the discretion of BAJA SAEINDIA® Organizing Committee.**

A.4.2.2 Age

Faculty Advisors must be at least eighteen (18) years of age at the time of the competition.

A.4.2.3 Indemnity Bond

All on-site participants and faculty are required to bring a notarized indemnity bond to be submitted at the time of registration on-site. All the members and faculty to be present on-site are required to sign the indemnity bond.

A.4.2.4 Faculty Advisor Responsibilities

Faculty Advisors are expected to advise their teams on general engineering and engineering project management theory. She/he may: -

- Advise, review, and monitor the progress of the team for the overall design, development, manufacturing, and testing of the BAJA vehicle.
- Ensure the safety of the vehicle and facilitation of in-house manufacturing within the college premises.
- Support and assist the BAJA SAEINDIA® Organizing Committee to conduct the event peacefully and in case of any disputes arising during the competition, help to resolve those.
- Accompany the team at the main event site and be present with the vehicle during technical evaluation, brake test, static events, and dynamic events.

A.4.2.5 Faculty Advisor Limitations

Faculty advisors must not design any part of the vehicle, or any system of the vehicle nor directly participate in the development of any documentation or presentation.

Faculty Advisors or college staff should neither fabricate nor assemble any components nor assist in the preparation, maintenance, testing, or any operation of the vehicle.

Faculty Advisors may remain present during the technical inspection, cost audit, or design presentations. The team captain or other designated members of the team must do all the presenting work. However, Faculty Advisors may silently observe the process and work towards improvement in future participation years of the college/university.

Faculty Advisors cannot get involved directly in the design, build or repair of any part of the vehicle.

A.4.3 Visa Requests

International Teams can request a Registration Confirmation Letter for the individual event(s) that they will be attending, by sending an email to bajasaeindiacommunications@saeindia.org. In response to the same, they shall be provided personalized letter/s with the following information: Registered Student's Name, School's Name, the BAJA SAEINDIA® Event Name, Official Dates, and Location(s).

Caution: SAEINDIA cannot and will not intervene with, call or send personal letters to, the State Departments, Embassies, or Consulates of India or other governments on behalf of any meeting or event participant.

Caution: Apply early for visas. Neither SAEINDIA staff nor any competition organizers are permitted to advise on visas, customs regulations, or vehicle shipping. Nor will they intervene on either matter concerning India or any other country.

ARTICLE A.5 VEHICLE ELIGIBILITY

A.5.1 Student Created

The vehicle and associated documentation must be conceived, designed, manufactured, and fabricated by the team members without direct involvement from professional engineers, faculty, or professionals in the off-road and racing communities. Proof of manufacturing location may be required to be furnished by the teams on-site upon being asked by the officials.

A.5.2 Professional Fabrication Limits

1. Without exception, only those teams whose college management gives an undertaking allowing the use of their workshop facilities would be allowed to participate. Additionally, teams need to submit a list of operating facilities/equipment available to the college that will be used to fabricate and assemble the vehicle as per the design presented in the Preliminary Round of the BAJA SAEINDIA® event.
2. During the actual manufacturing and fabrication process, the video clips that cover students working in a college facility need to be taken and written on a CD/ downloaded on a pen drive, to be furnished anytime throughout the project. The video clip is required to cover each of the manufacturing processes carried out in college.
3. Extensive use of readymade subassemblies may invoke penalties. Vehicles that have been professionally fabricated may be penalized up to 400 points or disqualified from the competition. The decision of the organizing committee in this regard will be final. In such a case, the registration fee would NOT be refunded.
4. During the event if any team is found to be receiving outside assistance at the event site, the team will be penalized with 100 points at the first incident and subsequent act will lead to Disqualification from the event.

A.5.3 Kit Vehicles Prohibited

Vehicles fabricated from a kit or published designs are ineligible to compete. Vehicles that have been professionally fabricated will be disqualified from the competition or receive a penalty. In case a team does not have access to machine shop facilities, the frame can be professionally fabricated without a penalty attached. Lack of access must be documented (letter from the faculty advisor, copy of policies that prohibit machine shop access, etc.).

A.5.4 Prefabricated Subassemblies

These rules do not exclude the use of prefabricated or modified sub-assemblies. However, extensive use of ready-made subassemblies may invoke penalties. The list of prefabricated parts that may be allowed is – shock absorbers, coil springs, brake drum, brake disc, brake calipers, brake holding assembly, master cylinder, steering gear box, steering column, steering wheel, wheel rims and tyres, seat frame and tie rod ends, etc.

All other parts need to be fabricated in-house and are not permitted to be outsourced from professional/other manufacturers/ designers.

Any outsourcing must be reflected in the cost report with supporting receipts from the outsourcing vendor.

A.5.5 Bills and Document

For all procured items, teams must submit original tax invoices. In case of an electronic copy of bills, the team MUST carry a printed copy signed by the Faculty Advisor, HOD, and Accounts Department of College, along with the college's stamp on it.

- **For items whose original bills are retained by college authorities, teams must submit photocopied bills signed by the Faculty Advisor, HOD, and Accounts Section of the College, along with the college's stamp on them.**

ARTICLE A.6ARTICLE A.6: REGISTRATION

A.6.1 Individual Registration

A.6.1.1 SAE Membership

A.6.1.1.1 SAEINDIA Membership (For Indian Teams)

Please note all student participants and faculty advisors of Indian teams must be SAEINDIA members to participate in the event.

All participating Institutes from India must have an operational SAEINDIA collegiate club with at least 50 active student members and 2 faculty advisors. (SAEINDIA Collegiate Club Formation Guidelines)

For membership of student's/faculty advisors with SAEINDIA, visit - (https://saeindia.org/become-a-member/)

Faculty advisors should choose an option under the "Professional Registration" link.

For details on membership or Collegiate Club, please visit http://www.saeindia.org/ or contact the below SAEINDIA representatives.

Ms. Sowmiya Assistant (Membership) – SAEINDIA sowmiya@saeindia.org	**Ms. Jean Sophiya Shiny** Officer – SAEINDIA shiny@saeindia.org	**Mr. Himanshu Maru** BAJA Secretariat – Indore saeindia_Indore@saeindia.org
SAEINDIA HQ – Contact Number: +91-44 2441 1904, +91-44 4332 7336		

A.6.1.1.2 SAE International Membership (For International Teams)

Please note all the student participants and faculty advisors of International Teams must be members of at least one of the following societies:

- Local automotive associations like the Institution of Automotive Engineers, etc.
- SAE International (SAE International) or an SAE International affiliate society

For membership of students with SAE International, visit - SAE International and click Join Today

Faculty advisors should choose an option under the "Professional Membership" link - SAE International

- FISITA (Join FISITA) or societies that are members of FISITA (FISITA Society Members)

☑ **In case any team willing to participate is not a part of any of the associations listed above, they must write to BAJA SAEINDIA® Organizing Committee at bajasaeindiacommunications@saeindia.org with a copy to saeindiaindore@saeindia.org for further clarification.**

A.6.2 Team Registration

A.6.2.1 Online Registration

Registration for the BAJA SAEINDIA® event held in India must be completed online on the BAJA SAEINDIA Website. Online registration must be done by either (a) An SAEINDIA or SAE International (For International teams) or a member of other allowed societies (for international teams) or (b) the official faculty advisor connected with the university and recorded as such in the SAEINDIA or SAE International (For International Teams) or any other allowed societies (for international teams) record system.

An active SAEINDIA collegiate club is required for the Indian colleges to register the team. Also, the collegiate club should have an active SAEINDIA collegiate bank account and bank details must be available before the competition.

A.6.2.1.1 International team registration

Teams interested in participating in BAJA SAEINDIA®, shall visit the BAJA SAEINDIA Website and register as per the latest version of BAJA SAEINDIA® Registration Guidelines for the calendar year.

A.6.2.1.2 Multiple Event Participation

Teams willing to participate in more than one event with same team members can refer to the below enclosed table.

S.No.	College Participating in	Common Team Members
1	mBAJA & hBAJA	Not Allowed
2	eBAJA & aBAJA	Allowed
3	mBAJA & eBAJA	
4	mBAJA & aBAJA	
5	eBAJA & hBAJA	
6	hBAJA & aBAJA	
*Only mBAJA and hBAJA Teams are not allowed to register common team members.		

A.6.2.1.3 Onsite Registration

An Onsite verification will be done during physical round of the BAJA SAEINDIA event.

i. Teams need to submit the indemnity bond on the BAJA SAEINDIA Website. The format of the indemnity bond will be shared on BAJA SAEINDIA Forum closer to the event dates.
ii. After verification teams will receive a confirmation mail about the successful online submission of documents.
iii. The teams need to carry the printout of the successful online submission confirmation mail and submit it at the respective registration bay as per the slotting.
iv. Any member of the team can submit the confirmation mail printout along with the indemnity bond, and letter of deviation if applicable and obtain their respective registration kit.

A.6.2.2 Team Size

Team Members	5 [Minimum]	25+5+10 * [Maximum]
Faculty Advisors	1 [Minimum]	2 [Maximum]

- To promote diversity amongst the teams; if the team has reached the 25 members limit, they can add 5 more girl team members without any additional amount in the registration fee. Thus, the number of total team members in such a case should not exceed 30.
- Team Can Add up to 10 additional members beyond the 30-member limit by paying ₹1,500 per male Student member and 1,000 per female student member on or before 30th September 2025
- These members must have a valid SAEINDIA membership card and should be in their 1st or 2nd year of Engineering as of 30th January 2026. They will only participate as team members and cannot take on roles such as Captain, Vice-Captain, Co-Driver, or Driver.
- These members will be designated as Interns, and upon successful participation, they will receive an Internship Certificate, acknowledging their attendance at the event to gain practical exposure and learning experience.
- This initiative aims to provide younger students with valuable learning and exposure at BAJA.
- Registration of multiple teams from the same college on different event format will be allowed for BAJA SAEINDIA 2026 event under different heads.
- It is mandatory for faculty advisor(s) to accompany the team during the main physical event and a minimum of 1 Faculty Advisor must be present with the team for the entire event duration.

- eBAJA teams must contain a minimum of 2 members and maximum of 12 members from Electrical/ Electronics/ Instrumentation/ Mechatronics / Computer science and/or other similar backgrounds to successfully complete the registration process.
- aBAJA teams must contain a minimum of 2 members from Electrical/ Electronics/ Instrumentation/ Mechatronics / Computer science and/or other similar backgrounds to successfully complete the registration process.
- **Teams that participated in any of the last three physical eBAJA events are eligible to compete in aBAJA, using either their old or current eBAJA vehicle.** Teams with older vehicles must ensure that components such as tyres, shock absorbers/fox suspension, CVT, and the driver's seat have not been in use for more than three years.
- **aBAJA and hBAJA teams can comprise of members pursuing undergraduate and postgraduate studies from the same college/institution/Deemed University within the member's limit.**

Note: - This is being done in line with the advent of Autonomous drive technology in the Automotive Industry, undergoing disruption is to learn towards latest trends in Mobility industry. Hence, BAJA SAEINDIA has taken this initiative to promote inter-disciplinary engineering among the teams.

- **Teams are advised to take proper care while forming the team before initial registration for Preliminary Round and refrain from further modification at a later date. Before virtual round Teams have to register at least 5 Team members and 1 Faculty Advisor. Post virtual round profile of all teams will be unlocked for 1 week for addition of remaining Team Members and Faculty Advisor. Exceptional cases such as death, natural calamity, etc. shall be dealt with separately. In such cases a letter on the Institution's/College's letterhead with a declaration from the Institution's Head / Principal is mandatory. Backing out or withdrawal of any member from the team, due to any reason other than "exceptional" as mentioned above, is NOT permitted. Penalties for the same will have to be borne by the team.**

A.6.2.3 Registration Dates

Teams must register for the BAJA SAEINDIA® competition by the specified date as published in the latest version of BAJA SAEINDIA® Registration Guidelines for the calendar year.

A.6.2.4 Registration Fees

Registration fees must be paid to the organizer by the deadline specified on the latest versions of Registrations Guidelines for the calendar year. Registration fees are not refundable and not transferrable to any other competition. Registration fees for the BAJA SAEINDIA® event are taken in two phases, please refer to the latest version of BAJA SAEINDIA® Registration Guidelines at the time of registration.

The registration fee for BAJA SAEINDIA® must be paid through payment mode as mentioned in the latest version of BAJA SAEINDIA® Registration Guidelines at the time of registration. The exact deadlines for the payment of registration fees for each event phase shall be notified to the teams at the pertinent time, while the requisite fees to be paid for each event phase shall be as stated in the Registration Guidelines.

Registration Fee is NON-REFUNDABLE and will not be returned to the teams under any circumstances.

GST is applicable @ 18% for the registration fees and non-refundable, which means once SAEINDIA collects the GST, the same will be remitted to the Government within the due date and not be returned to the teams under any circumstances.

GST invoices will be issued in the below two types:

1. Unregistered category (B to C) for which the college cannot avail of ITC (Input Tax Credit).
2. Registered Category (B to B) for which college can avail ITC – The respective college needs to submit the GST No. on the portal during payment.

Kindly note that going forward BAJA SAEINDIA will not entertain any request related to GST Modification or B2B Invoice if the team have not submitted the above said details during payment.

A.6.2.4.1 Registration Fees Waiver

- **All Girls Team Waiver:** For RETURNING All Girls teams, up to 25% discount on overall registration fees, and for NEW All Girls Teams up to 50% discount on overall registration fees in both phases excluding fee waiver amount.
- **Debut - NEW Team Waivers:**

Teams meeting any of the following criteria below are classified as Debut Teams:

1. Teams entering BAJA SAEINDIA for the first time.
2. Instances where a NEW team from a college joins a new category while the RETURNING team from the same college continues participation in another category until physical round.
3. Teams transferring between categories and registering as NEW teams in the newly selected category.

The team meeting any one of the aforementioned criteria will **be eligible for up to a 10% discount on the overall registration fee.**

☑ **The definition of new and returning team is mentioned in the latest version of BAJA SAEINDIA® registration guidelines**

NOTE: EITHER EARLY BIRD DISCOUNT OR ONE OF THE ABOVE FEE WAIVERS WILL ONLY BE APPLICABLE.

Promoting Women's Inclusion: If a team in physical round includes 10 or more female participants, they will qualify for a reimbursement equivalent of up to INR 10,000 after the conclusion of the season.

NOTE: THE ABOVE WAIVER WOULD BE APPLICABLE TO ALL THE NON-ALL-GIRL TEAMS OVER AND ABOVE THE WAIVERS MENTIONED ABOVE TO PROMOTE MORE INCLUSIVE BAJA SAEINDIA.

In case of any further queries or clarifications, we recommend the teams to contact BAJA SAEINDA to get those cleared and refrain from making their assumptions.

Mr. S Hariharan	Mr. Joel Jo Thomas
Convener – Virtual Round	**BAJA Alumni Committee Head**
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hariharan.baja@gmail.com	thomasjoeljo@gmail.com
BAJA SAEINDIA Email ID	bajasaeindiacommunications@saeindia.org
BAJA SAEINDIA Forum	bajasaeindiaforum.com
BAJA SAEINDIA Website	www.bajasaeindia.org

A.6.2.5 Withdrawals

Registered teams for the BAJA SAEINDIA® events that determine they will not be able to attend the competition are required to officially withdraw by emailing bajasaeindiacommunications@saeindia.org with a copy to saeindiaindore@saeindia.org no later than 15 days before the event. Registration fees are NOT refundable or transferable.

A.6.2.6 Failure to Meet Deadlines

All teams registered for the BAJA SAEINDIA® competition are required to submit all required documents before the competition. The required documents provide evidence their car complies with the frame rules, supports the technical inspection process, and provides material that the Cost and Design event judges need to evaluate the team during the competition. When these documents are not submitted, the judges cannot properly assess the vehicle or the team.

Additionally, failure to submit the required Cost, Engineering design, Sales, and Technical Documents is a clear violation of the rules. Any blank document submitted to subvert the submission date will be treated as a failure to submit.

Therefore, it is the policy of BAJA SAEINDIA® that failure to submit the required Cost, Design, Sales Presentation Plan, or technical documents within the deadline will constitute an automatic withdrawal of your team from the respective static event.

A.6.2.7 International Participation – Vehicle Shipping and Customs

BAJA SAEINDIA® Organizing Committee strongly recommends international teams ship their vehicles early to allow enough time to compensate for any delays that may occur in clearing Indian Customs. Please check with the Indian Customs Service concerning the regulations governing the temporary importation of vehicles. Teams may want to consider using the services of a freight forwarder, who is familiar with the international shipping of racing vehicles.

Vehicle shipments by the commercial carrier must comply with the laws and regulations of the nations from which, and to which, the vehicle is being sent. Teams are advised to consult with their shipping company or freight forwarder to be sure their shipment fully complies with all relevant customs, import/export, and aviation shipping requirements.

Shipments must be sent with the participating university listed as the receiving party. The competition organizers, SAEINDIA Staff, nor the competition sites can be listed as the receiving party for your vehicle.

The vehicle shipping procedure for the BAJA SAEINDIA® competition shall be published on the BAJA SAEINDIA Forum and is incorporated into these rules by reference. Neither BAJA SAEINDIA® Organizing Committee nor SAEINDIA staff is permitted to provide advice on Indian Custom matters.

ARTICLE A.7ARTICLE A.7: REQUIRED EVENT SUBMISSIONS

A.7.1 A.7.1 Required Event Submissions

All required reports or other documents and/or files shall be submitted through the BAJA SAEINDIA Website. The standard forms and/or templates and/or guidelines that are required for documentation and submissions at BAJA SAEINDIA® competitions shall be posted on BAJA SAEINDIA Forum.

A.7.1.1 Responsibilities and Restrictions

There will be only a single account per team on the BAJA SAEINDIA Website.

Uploading Documents - All the requisite documents and/or files can be submitted by the team only once on the BAJA SAEINDIA Website. Teams to note that once submitted, they cannot replace or change the submitted documents and/or files.

Document Access - Uploaded documents can only be viewed by (1) members of the submitting team, (2) authorized judges, technical inspectors, and officials, and (3) BAJA SAEINDIA® staff.

Reminder - The website cannot interpret the submitter's intentions or thoughts. Anything uploaded to the website by a team will be deemed as an official action of that team.

A.7.1.2 Process

Teams competing in BAJA SAEINDIA® competitions must submit the required documents and/or files online through the BAJA SAEINDIA Website. Documents and/or files must be uploaded on the website from the time submission is started until the due date

A.7.1.3 Deadline

Submissions must be received by the due date listed on the BAJA SAEINDIA Forum and/or BAJA SAEINDIA Website.

Submission will be acknowledged on the BAJA SAEINDIA Website with a visual indicator. Teams should have a printed copy of this acknowledgment available at the competition as proof of submission in the event of a discrepancy.

A.7.1.4 Late Submission / Non-Submission Penalty

Late submission or failure to submit the Design Report and/or Sales Presentation Plan and/or Cost Report and/or any other required submissions will be penalized, as per the discretion of the BAJA SAEINDIA® Organizing Committee. If either report is received late after the due date, it will be classified as "Not Submitted" and will result in an automatic withdrawal of your team from the respective static event.

PART B TECHNICAL REQUIREMENT

ARTICLE B.1 GENERAL DESIGN REQUIREMENTS

B.1.1 General Requirements

The vehicle must be capable of carrying one (1) person 190 cm (75 in.) tall weighing 113 kg (250 lbs).

B.1.2 Ergonomic Design

As a prototype of a commercial product, the design intent must accommodate drivers of all sizes from the 95-percentile male to the 5-percentile female in India. All the clearances permissible for the Roll cage as mentioned in this rule book, must be adhered to fit all drivers. Also, all drivers shall be able to reach all the controls of vehicle comfortably.

Teams shall be prepared to demonstrate the compliance to this requirement in the design event.

B.1.3 Good Engineering Practices

Vehicles entered into BAJA SAEINDIA® competitions are expected to be designed and fabricated with good engineering and manufacturing practices.

B.1.4 All-Terrain Capability

B.1.4.1 Terrain Type

The vehicle must be capable of safe operation over rough land terrain including obstructions such as rocks, sand, logs, steep inclines, mud, and shallow water in any or all combinations and in any type of weather including rain.

B.1.4.2 Clearance and Traction

The vehicle must have adequate ground clearance and traction for the terrain type at the competition.

B.1.5 Vehicle Configuration

Vehicle designs shall be unguided ground vehicles (vehicles not requiring fixed guideways) operated by an onboard driver.

Teams may reuse TYRES, shock absorbers/fox suspension, CVT, and driver's seat for a maximum period of three years. However, for every event, the original invoice needs to be showcased to the TEJ team at the competition site.

B.1.5.1 Running Gear Arrangement

B.1.5.1.1 Wheeled Vehicles

Wheeled vehicles with flexible tires are permitted. Examples of flexible tires include pneumatic tires and flexible "airless" tires. The vehicle shall have four or more wheels not in a straight line.

⚠ Cast alloy wheels are explicitly prohibited.

B.1.5.1.2 Air Cushion Vehicles

Air cushioned vehicles (hovercraft), fan drives (air-boats), or other similar designs are explicitly prohibited.

B.1.5.2 Four-Wheel Drive / All-Wheel Drive

For the 2026 competition, the mBAJA teams should compulsorily have a 4-wheel drive (4WD) or all-wheel drive (AWD). While eBAJA teams have an option to incorporate 4WD/AWD or 2WD in their design. However, for eBAJA 2026 there will not be any bonus points for opting 4WD/AWD. To be considered a 4WD/AWD vehicle, the vehicle must have a powertrain system capable of providing power to all its wheels. 4WD/AWD may be full-time (AWD) or selectable (4WD); selectable 4WD implies provision in a vehicle to switch between 4WD and 2WD. Demonstration of 4WD/AWD capability in working conditions is a must. Teams may attempt the 4WD/AWD check at any time after Engine check and before Final Technical Inspection.

B.1.5.2.1 Penalties

Teams must pass 4WD/AWD check before the "passed tech" sticker to be issued.

Teams unable to successfully pass the 4WD/AWD check will be allowed to complete the final stages of technical inspection and compete in the dynamic events as well as the Endurance event. However, such teams will not receive their 4WD drive check clearance sticker and a 4WD non-compliance penalty will be applied appropriately.

The non-compliance penalty for each dynamic event will be 50 percent of the maximum points that can be scored in that event. The team's score for each event will not drop below zero points even if a non-compliance penalty is assessed that would otherwise result in a negative score.

B.1.6 Limitations

Width: 162 cm (64 in) at the widest point with the wheels pointing forward at static ride height

Length: Unrestricted.

Weight: Unrestricted.

Teams should keep in mind that BAJA SAEINDIA® tracks are designed for vehicles maximum dimensions of 162 cm (64 in.) in width by 274 cm (108 in.) in length.

ARTICLE B.2 ENGINE (mBAJA only)

B.2.1 Engine

For the BAJA SAEINDIA 2026 competition, Honda power products India has generously agreed to provide engines to BAJA SAEINDIA teams with subsidized charges. In addition, teams are required to pay shipping and handling charges.

To provide a uniform basis for the performance events, all vehicles shall use: an unmodified, four-cycle, air-cooled **Honda GX430T QX engine, fitted with a dual cartridge type air filter. Teams are allowed to use only this engine for BAJA SAEINDIA 2026 events onwards.**

Documents will be verified in the Technical Inspection. In case the documents found are not genuine teams will be liable for a penalty or disqualification as per the discretion of BAJA organizing committee.

Teams must refer BAJA SAEINDIA Forum for engine ordering deadlines, and necessary payment to be made to Honda for procurement of engine. For any further notifications on Engine, ordering teams must keep updated on BAJA SAEINDIA Forum.

Teams participating in international events are advised to follow the international event Rulebook.

Teams must purchase following spares along with engine,

Part Number	Description	Qty
17210-ZE3-505	AIR CLEANER ELEMENT (with foam)	2
98079-55876	SPARK PLUG	3
16955ZE1010	JOINT, FUEL TANK	1
18331ZE3811	CAP, MUFFLER	1

B.2.2 Engine Features and Technical Specifications

- Engine Model: Honda GX430T QX
- Engine Type: Air-cooled, 4-stroke, OHV (Overhead Valve)
- Displacement: 425 cc
- Maximum Power Output: 12.87 HP (9.6 kW) at 3,600 rpm
- Maximum Torque: 27.7 Nm at 2,500 rpm
- Dry Weight: 32.4 kg
- Fuel System: Integrated fuel tank mounted on engine
- Fuel Tank Capacity: 6.1 litres
- Engine Oil Specification: SAE 10W-30
- Engine Oil Capacity: 1.1 litres
- Engine box dimension: 413 X 469 X 453 mm

Figure B- 1: Engine, Honda GX430T QX

Oil Monitoring: The engine is not equipped with an oil level sensor. Regular manual checks are mandatory.

Notes: Any modification to the entire engine as supplied by the manufacturer, that may alter engine performance characteristics is strictly prohibited unless explicitly allowed in the respective rule sections. The use of a starter motor for vehicle propulsion is explicitly prohibited.

The GX430T QX engine is equipped with an engine-mounted fuel tank. So, teams are not allowed to use any other or additional fuel tank. This engine does not come with catalytic converter.

B.2.3 Engine Orders

Refer BAJA SAEINDIA Forum for details

B.2.4 International Orders

Refer BAJA SAEINDIA Forum for details

B.2.5 Additional Engines

Teams may purchase additional specified engines directly through the official authorized supplier, in case of Indian teams. International teams may purchase through their local Honda dealers.

B.2.6 Hybrid Electric Systems

Hybrid-electric drivetrain systems are explicitly prohibited.

B.2.7 Energy Storage Devices

B.2.7.1 Hydraulic

Hydraulic accumulators are the only type of stored energy device that may be incorporated into the vehicle for propulsion purposes. Hydraulic power systems must be properly shielded, and documentation of the shielding made available for review. Teams shall provide a hydraulic power specification sheet at the time of technical inspection.

For the hydraulic power, the specification sheet refers to PART I: ANNEXURE, ARTICLE 2.

B.2.7.2 Kinetic

Kinetic energy storage devices, such as flywheels, are explicitly prohibited.

B.2.7.3 Electric

Batteries or other electric energy storage devices for vehicle propulsion are explicitly prohibited. Hybrid electric vehicle propulsion systems are explicitly prohibited.

B.2.7.4 Compressed Gas

Compressed gas systems for vehicle propulsion are explicitly prohibited.

B.2.8 Engine Requirements and Restrictions

B.2.8.1 Replacement Parts

Only original equipment Honda replacement parts may be used. Consumable parts can only be procured from authorized Honda GX430T QX engine dealer.

B.2.8.2 Piston Rings

Only standard size, original Honda GX430T QX piston rings may be used.

B.2.8.3 Intake Ports

No grinding, polishing, or removal of casting flash from the intake or exhaust ports is allowed. Ports must remain in stock condition as supplied by Honda.

B.2.8.4 Valves

The intake and exhaust valves must remain unmodified. No reshaping, polishing, or coating is allowed. Valve seat angles and geometry are proprietary and must not be altered.

B.2.8.5 Shafts and Rods

The camshaft, crankshaft, connecting rod, and flywheel must not be altered or modified.

B.2.8.6 Spark Plugs

The only permitted spark plug is 98079-55876.

B.2.8.7 Flywheel Rotation

The flywheel shall not be rotated to advance or retard timing. The stock Honda flywheel key must be used.

B.2.8.8 Engine Governor

Each engine is equipped with a speed governor. Each governor will be set at the competition to 3,800 RPM or lower. Honda team may perform random inspections of the governor on any vehicle, and these may be conducted at any time. Any attempt to modify the engine governor setting to vary the engine speed is grounds for immediate disqualification. A clearance of 12.7 mm (0.5 in) must be maintained between any engine throttle and governor linkage or the nearest non-engine obstruction.

⚠ CAUTION: GOVERNOR SETTING NOT TO EXCEED 3,800 RPM

The governor's operation must remain free of obstructions at all times. The Governor area is covered by the fuel tank in stock configuration and no modification should be done.

The governor spring shall be engaged with, and only with, hole as per stock configuration. The part number for Governor Spring is 16561-ZE3-000.

B.2.8.9 Idle Speed

Any idle speed adjustment is allowed; Honda recommends 1,400 RPM ± 150 RPM.

B.2.8.10 Air Cleaner

Engine is integrated with a stock dual cartridge type air filter and any modification or rerouting to the air filter is strictly prohibited. Team must ensure minimum 152 mm (6 in) of clearance vertically above the air filter cover from any vehicle component to ensure easy service. Refer to the figure B-2. The part number for air cleaner element is 17210-ZE3-010. The part number for air pre-filter is 17218ZE3000.

- **A fresh air pre-filter is required during On-site Technical Inspection - Engine at the BAJA SAEINDIA® competition site.**

B.2.8.11 Carburetor

B.2.8.11.1 Jetting

Modifying the carburetor jet or re-jetting the carburetor is prohibited.

B.2.8.11.2 Float

The carburetor float is not adjustable and may not be modified.

B.2.8.11.3 Venturi

Modification of the carburetor venturi is prohibited.

B.2.8.12 Exhaust System

B.2.8.12.1 Muffler Relocation

If the vehicle design requires an exhaust system redirection, team must use a Honda standard deflector plate part number 18331-ZE3-811 to redirect the exhaust away from the vehicle.

- Any such re-routing of exhaust system using additional tubes is strictly prohibited.

B.2.8.12.2 Exhaust System Complete

The complete exhaust system shall be located such that its extremities lie at least 100 mm within the perimeter of the vehicle. (The perimeter of the vehicle stands for the envelope formed by the planes of the roll cage members). (Refer figure B-2). If the team is using an exhaust deflector plate (Part number: 18331-ZE3-811) then the clearances will be measured from deflector plate.

- **Engines shall not be placed in a way such that the exhaust is facing towards the firewall. In case of exhaust facing the firewall, minimum of 100 mm clearance between exhaust deflector plate and firewall is mandatory (after redirection of exhaust, if any). It will be validated by Honda team at the main event.**

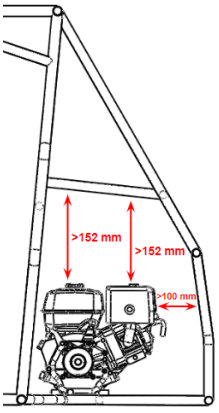

Figure B- 2: Exhaust-Firewall Clearance

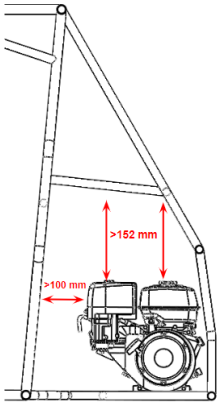

Figure B-3: Exhaust-Firewall Clearance (for Exhaust Facing Driver)

- **Red colour arrows indicate the minimum clearance required between the outer periphery of the exhaust deflector plate and RRH which should be > 100mm.**

B.2.8.12.3 Muffler Cage

Teams must retain the protective wire cage surrounding the muffler to reduce the risk of burns.

B.2.8.13 Starting Devices

The starter pull rope may be extended to facilitate the driver for starting the engine, while seated. Starter motors are explicitly prohibited.

ARTICLE B.3 ROLLCAGE

B.3.1 Objective

The purpose of the roll cage is to maintain a minimum space surrounding the driver. The cage must be designed and fabricated to prevent any failure of the cage's integrity during normal operation or during a collision or roll over.

- **Teams must build a new roll cage every year. Teams using roll cage from previous competitions will not be allowed for the main event. The roll cage MUST have a unique signature on the driver's left side of RRH member, refer to the figure below,**

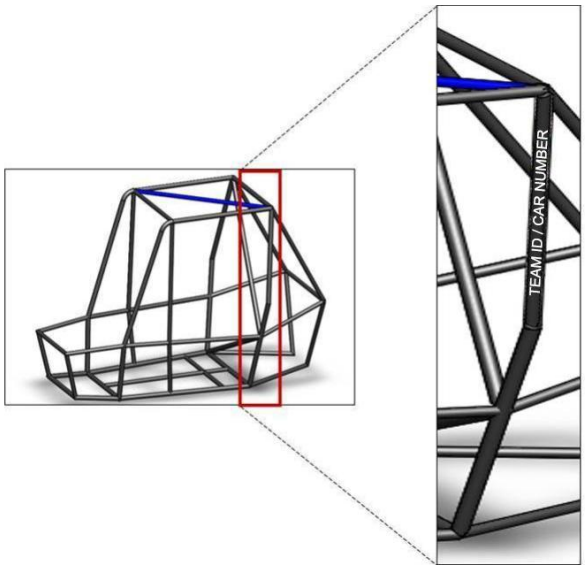

Figure B-4: Signature location on RRH

Roll cage signature to be in the following format.

TEAM ID / CAR NUMBER (THREE DIGIT)

For example, team XYZ with Team ID 26161, car number 87 participating in BAJA SAEINDIA® 2026 has the roll cage signature as,

26161 / 087

The signature on the roll cage is to be stamped using a 6 mm sized number punch. Refer to the Figure below:

Figure B-5: Tool to be used for Roll cage Signature.

B.3.2 Roll Cage Structure

The roll cage must be a space frame of tubular steel. The following section outlines the requirements of the physical members and joining methods of the roll cage. Roll cage and Frame Members must be fully welded, and welds must not be ground, sanded or modified so as to allow rightful inspection. Roll Cage Members and tubes shall not exhibit cuts, notches, wrinkles, kinks, or any detrimental deformation to the cross-section. Roll cage members and tubes shall be joined by welding the entire circumference and shall not exhibit any injurious defects such as cracking, burn-through, cold lapping, or insufficient penetration. Terminology used in the rule book relating to the roll cage structure is given below:

Frame: The entire tubular structure, including required members and non-cantilevered tubes.

Roll Cage: Primary and Secondary Members used to protect the driver.

Tube: A Primary or Secondary element, which is not required to begin and/or end at Named Points (except where noted).

Member: A Primary or Secondary required element, which has beginning and ending at Named Points.

Named Point: The intersection of the centrelines of two or more joining members.

B.3.2.1 Member Requirements

Roll cage members shall be made of steel tube which may be straight or bent. Any straight members may not extend longer than 1016 mm (40 in.), between Named Points. Members exceeding this length shall comply with Rule B.3.2.4 - Additional Support Members. Bent members shall not contain an individual bend greater than 30 deg. that does not occur at a Named Point; and may not extend longer than 838 mm (33 in.) between Named Points or comply with Rule B.3.2.4 - Additional Support Members. Small bend radii (<152 mm or 6 in.) that terminate at Named Points are expected, and are not considered to make a member bent, regardless of angle. A bend that terminates at a Named Point implies the point lies at or between the points of tangency of the bend, as shown in Figure B-6. Required dimensions between roll cage members are defined by measurements between member centrelines, except where noted. Junctions of Primary and Secondary members described below must be within 51 mm (2.0 in) of the Named Point, except where noted.

Mitered tubing joints of greater than 5 deg. will be treated as bends. Miters of less than 5 deg. will be treated as butt joints and subject to Rule B.3.2.14 - Butt Joints. Required members constructed of multiple members, such as the SIM and LFS, will be judged as continuous members from Named Point to Named Point (except where noted).

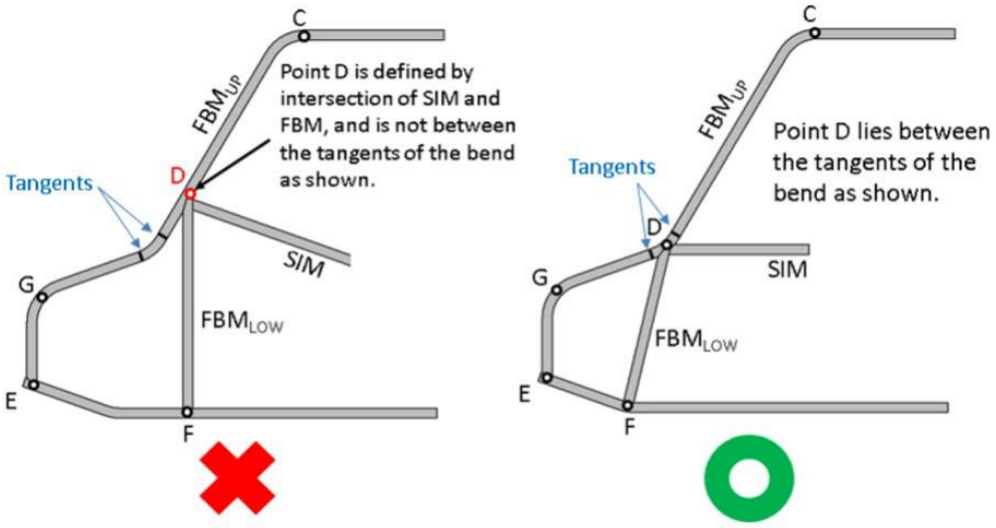

Figure *B-6: Roll Cage, Bend and Member Termination*

B.3.2.2 Primary Members

They are required members of the roll cage as illustrated in Figure B-7 and Figure B-8. These members shall always begin and end at Named Points. Tubes, wherever necessary, are not required to terminate at Named Points (except where noted). Primary members and tubes shall conform to B.3.2.16 - Roll Cage Materials.

Primary members are:

- RRH: Rear Roll Hoop Members
- RHO: Roll Hoop Overhead Members
- FBM: Front Bracing Members (Upper, Lower, and Lower when present)
- ALC: Aft Lateral Cross Member
- BLC: Overhead Lateral Cross Member
- CLC: Upper Lateral Cross Member
- DLC: SIM Lateral Cross Member
- ELC: Nose SIM Lateral Cross Member (When Present)
- FLC: Front Lateral Cross Member
- GLC: Nose Front Lateral Cross Member (When Present)
- LFS: Lower Frame Side Members

Primary Tubes are:

- B.3.2.8.1 - Gussets for Lateral Clearance
- B.3.2.12.1 - Gussets for RHO and FBM
- B.3.2.10 - Additional Structure for Driver Toe Protection

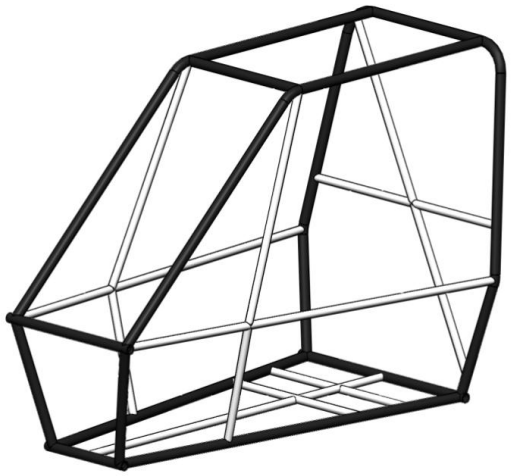

Figure B-7: Roll Cage, Primary Members (filled in black), Front Braced Frame

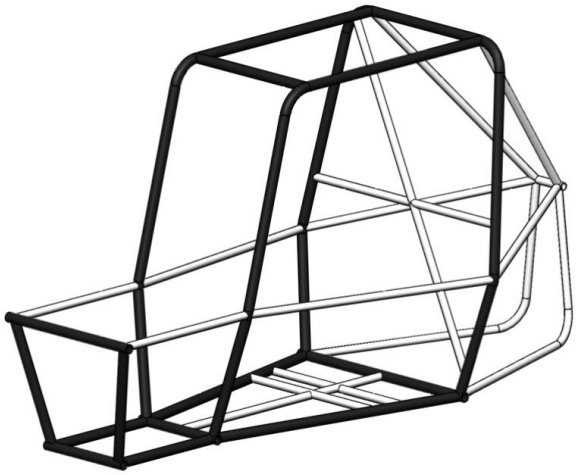

Figure B-8: Roll Cage, Primary Members (filled in black), Rear Braced Frame

B.3.2.3 Secondary Members and Tubes

Secondary members and tubes shall be of tubular steel, having a minimum wall thickness of 0.89 mm (0.035 in) and a minimum outside diameter of 25.4 mm (1.0 in) or rectangular steel tubes having a minimum wall thickness of 0.89mm (0.035 in) and a minimum outside dimension of 25.4 mm (1.0 in).

Secondary members are:

- LDB: Lateral Diagonal Bracing Member(s)
- SIM: Side Impact Members
- FAB: Fore/Aft Bracing Members
- RLC: Rear Lateral Cross Member
- RHO diagonal bracing member

Secondary tubes are:

- B.3.2.11 - Under Seat Tube (UST)
- B.3.2.4 - Additional Support Tubes
- B.3.2.8.1 - Gussets for Lateral Clearance
- B.4.2 - Any tube used to mount safety belts
- B.6.5 - Any tube used to protect the fuel system.

- **Ends of the ALC member should be extended and left open for measurement of the cross-section.**
- **Any one member in the engine compartment area should also be left open for the same purpose.**

B.3.2.4 Additional Support Tubes

For bent or straight Primary Roll Cage Members that exceed the maximum allowable length or bend angle, Additional Support Tubes shall be added. For straight members, a single secondary tube shall connect from the mid-point (+/-127 mm or 5 in.) to a Named Point. For bent members, a single secondary tube shall connect between the tangents of the bend to a Named Point. If Additional Support Tubes are used, the supported Roll Cage Member will be re-evaluated for length, between Named Points and the location of the Additional Support Tube. Additional Support Tube members shall comply with maximum allowable length and bend angle.

For bent or straight Secondary Roll Cage Members that exceed the maximum allowable length or bend angle, Additional Support Tubes shall be added. For members that exceed only the allowable length OR the allowable bend angle, a single Additional Support Tube is required, with one end connected as described above and the other shall terminate within 2" of a Named Point. For members that exceed both the length AND bend angle limits, two Additional Support Tubes shall connect between the tangents of the bend to two unique Named Points.

- **As an exception to the definition of Tube in B.3.2.2 – Primary Members and Tubes, additional Support Tubes shall have one end terminate at a Named Point.**

SECONDARY MEMBERS ONLY			
Length / Bend Angle	**≤ 838 mm (33 in)**	**> 838 mm (33 in) & < 1016 mm (40 in)**	**> 1016 mm (40 in)**
0°	No Supports Required	No Supports Required	1 Support Member Required*
≤ 30°	No Supports Required	1 Support Member Required**	1 Support Member Required**
> 30°	1 Support Member Required**	2 Support Members Required**	2 Support Members Required**
* Support member is required within 50 mm (2 in) of the midpoint of the overall tube length. ** Support member(s) are required within the tangents of the bend.			

Figure B-9: Secondary member support

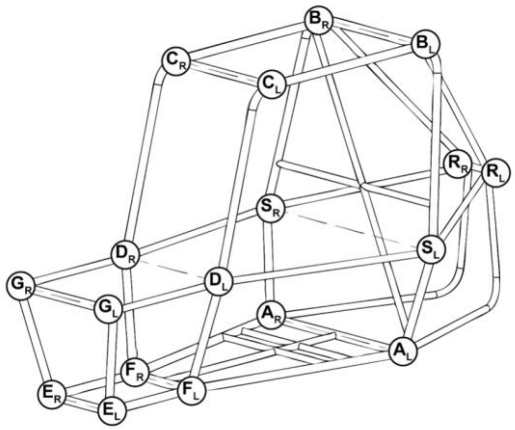

Figure B-10: Roll Cage Example, Named Points, Nose; Car with Rear Bracing.

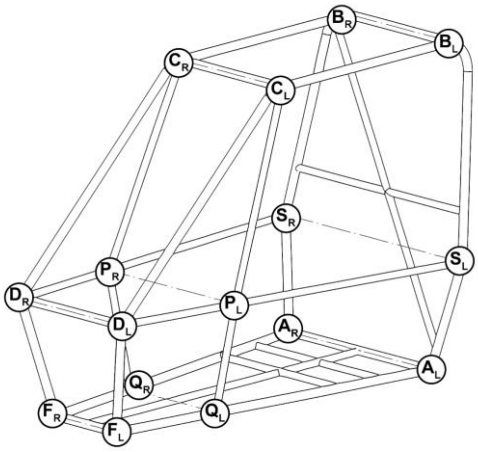

Figure B-11: Roll Cage Example, Named Points, Front Bracing

B.3.2.5 LC – Lateral Cross Member

Lateral cross members (LC) shall not be less than 203.5 mm (8 in.) long. LCs shall not have a bend. However, they may be part of a bent system, provided the minimum length is met between bend tangents. LCs are denoted by the points they connect (e.g. ALC, FLC, etc.). The cross members which connect the left and right points A, B, C, D, F and E/G for 'Nose' cars (in which case DLC may be omitted), shall be made of primary materials. However, the LC at Point R, for Rear FAB systems may be of secondary material. But, it must meet the minimum length described above.

- **Minimum length requirement for ALC member 457mm (18in) and does not fall under the above clause of (8in) requirement.**

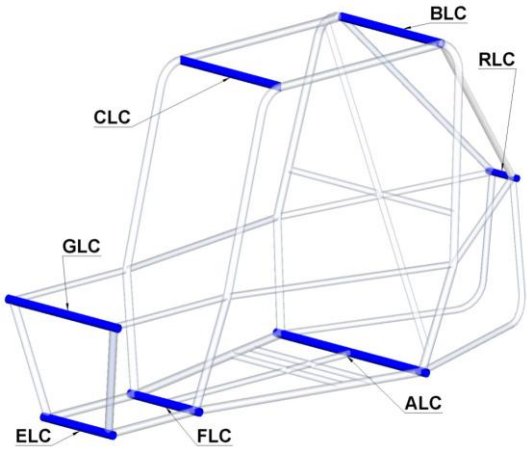

Figure B-12: Roll Cage, LC

- **RLC exists only with complete Rear Bracing as per B.3.2.13.2**

B.3.2.6 RRH – Roll Hoop Members

The RRH is a planar structure behind the driver's back and defines the boundary between the front-half (fore) and rear-half (aft) of the roll cage. The driver and seat must be entirely forward of this plane. The RRH shall be inclined between 0 and 20 deg. from vertical as viewed from the side of the vehicle.

The minimum width of the RRH is 736 mm (29 in.), measured at a point 686 mm (27 in.) above the inside seat bottom. In addition to this, the minimum width of the RRH measured 356 mm (14 in.) above the inside seat bottom should be a minimum of 813 mm (32 in.).

The vertical members of the RRH may be straight or bent and are defined as beginning at Point A (at the lower end) and terminating (at Point B at the upper end) as shown in Figure B-13. The vertical members shall be continuous from Point A to B (i.e. not multiple segments joined by welding). The vertical members shall be joined by Lateral Cross members ALC and BLC at the bottom and top for becoming the part of RRH. ALC and BLC members must be continuous tubes or adhere to B.3.2.14 - Butt Joints.

Points AR/AL, at the lower end of the RRH vertical members, are defined as the intersection with the LFS and ALC.

Points BR/BL, are defined as the uppermost end of the RRH vertical members. For Roll Cages constructed with bends at the upper end of the vertical members, Point B occurs at the uppermost tangent of the bend. Point B is the intersection of the RRH vertical members with the RHO and BLC. Point B may not reside on the bend or a linear distance from the end of the bend.

- **ALC, BLC, RRH members, LDB and the shoulder belt tube shall all be coplanar.**

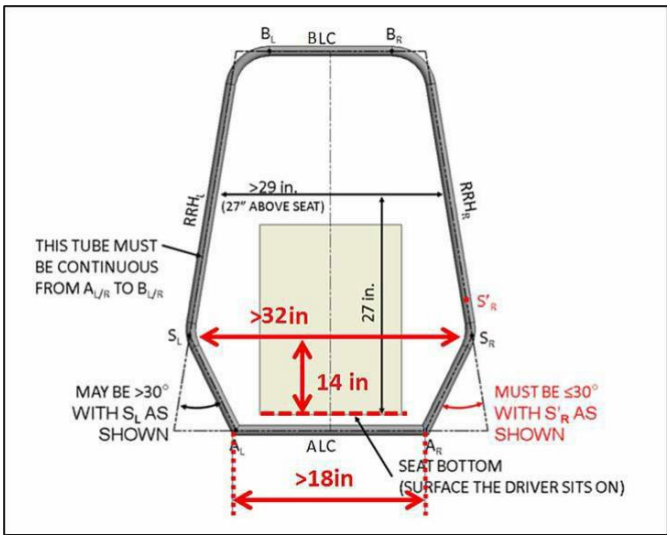

Figure B-13: Roll Cage, RRH

B.3.2.7 LDB – Lateral Diagonal Bracing

The RRH must be diagonally braced. The diagonal brace(s) must extend from one RRH vertical member to the other. The distance of top and bottom intersections of the LDB members with the RRH vertical members from points A and B must be less than 127 mm (5 in.). The angle between the LDB members and the RRH vertical members must be greater than or equal to 20 deg. Lateral bracing may consist of more than one member. A single straight LDB is exempted from the rule of maximum permissible length as per B.3.2.1 - Member requirements.

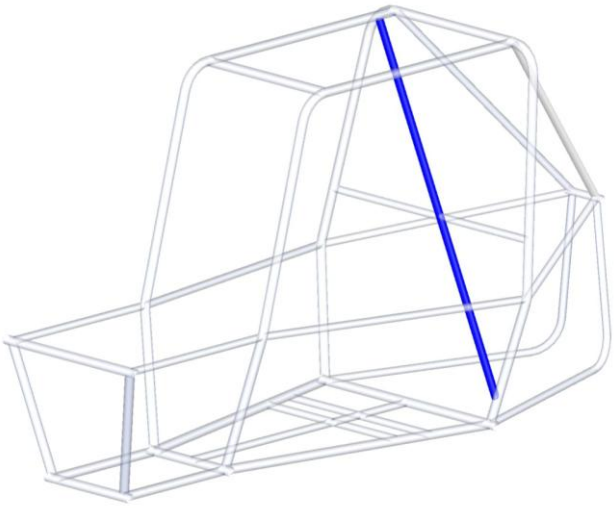

Figure B-14: Roll Cage, LDB

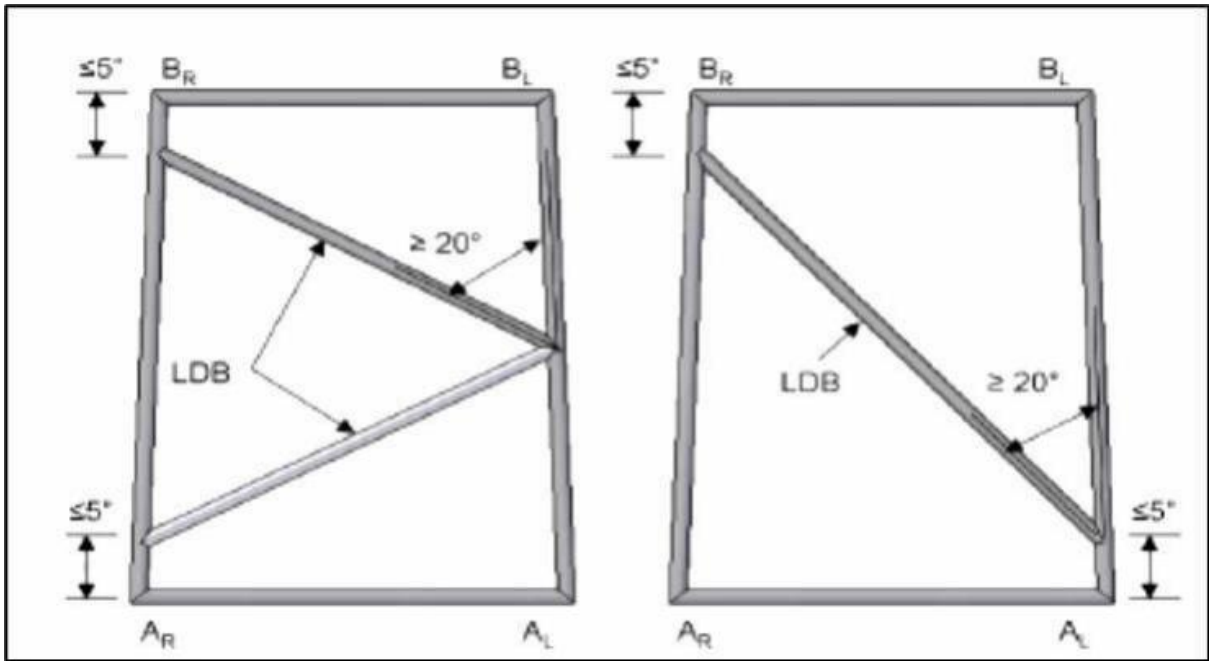

Figure B-14A: Roll Cage, LDB

☑ **If more than one member is used for LDB (as shown in Figure B-14A), both members must meet at the same point.**

B.3.2.8 RHO – Roll Hoop Overhead Members

The aft (rearward) ends of the RHO members intersect with the RRH within 51 mm (2.0 in.) distance from Points BR and BL (BLC). The forward ends of the RHO members, or the start of the bend between RHO and FBM defined by points CR and CL (Figure B-10, B-11 &B-12). CLC, BLC and RHO members must all be coplanar. Out-of-plane bends at the aft (rearward) ends of the RHO members are not permitted. When a bend is used at Point CR/CL or BR/BL these points are defined at the start of the bend on the top-most plane of the Roll Cage, as shown in Figure B-16: Roll Cage, Template Installation. When a bend is used at Point C, CLC must attach at or between the tangents of the bend, but shall not be further aft of the start of the bend.

The ends of the BLC define the location of points BL and BR. For cars constructed with bends at the top of the RRH, point B shall be on the inside end of the bend. Point B may not reside on the bend or at a linear distance from the end of the bend.

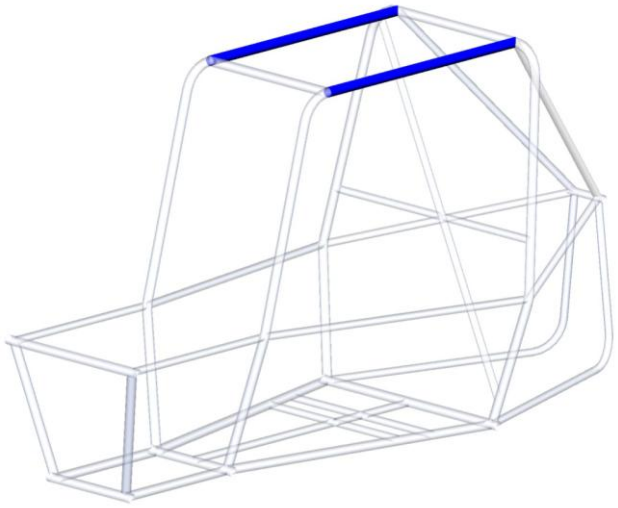

Figure B-15: Roll Cage, RHO

Points CR and CL must be between at least 305 mm (12 in.) forward of a point, in the vehicle's side view, defined by the intersection of the RHO members and a vertical line rising from the aft end of the seat bottom. This point on the seat is defined by the seat bottom intersection with a 101 mm (4 in.) radius circle which touches the seat bottom and the seat back.

Points CR and CL as well as Points BR and BL must also be no lower than the top edge of the template. They should be more than 1041.4 mm (41 in) above the seat and shall satisfy the Lateral Space requirements in Rule B.3.3.1 – Lateral Space.

- **The top, longitudinal edge of the template shall be oriented exactly horizontal with respect to ground.**

The two RHO members must be braced using a diagonal member confirming to Rule 3.2.1 Secondary member as highlighted in blue in Figure B – 15A. The end points of the diagonal members welded must lie in the same plane as the RHO members and must be less than 3 inches away from points CR/CL and BR/BL respectively, when measured in the direction of the vehicle's longitudinal axis.

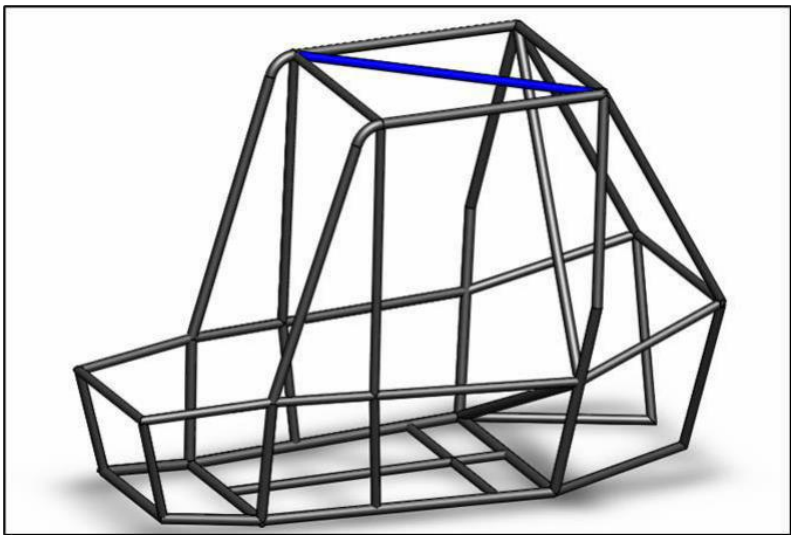

Figure B- 15A: Diagonal Bracing for RHO members

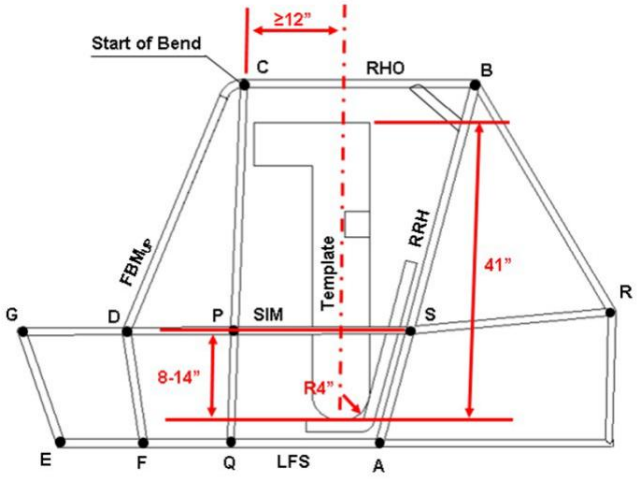

Figure B-16: Roll Cage, Template Installation

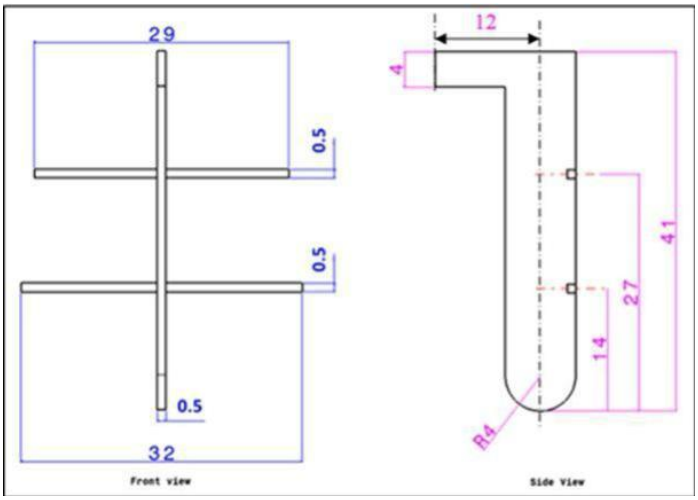

Figure B-17: Roll Cage Template Drawing (All Dimensions are in inches)

B.3.2.8.1 Gussets for Lateral Clearance

Gussets may be added between the RHO and RRH to satisfy the requirements of Rule B.3.3.1 - Lateral Space. The added tubes shall be of primary material (B.3.2.16 - Roll Cage Materials).

Gusset tubes connecting the SIM to RRH or FBM for the purposes of satisfying the requirements of Rule B.3.3.1 - Lateral Space shall be of secondary material (B.3.2.3 - Secondary Members and Tubes) and shall be closed in with Body Panels per B.8.5 - Body Panels. Gussets shall not interfere with the minimum radial clearance required around the fire extinguisher pull knob (B.8.8.5 - Location and Clearance).

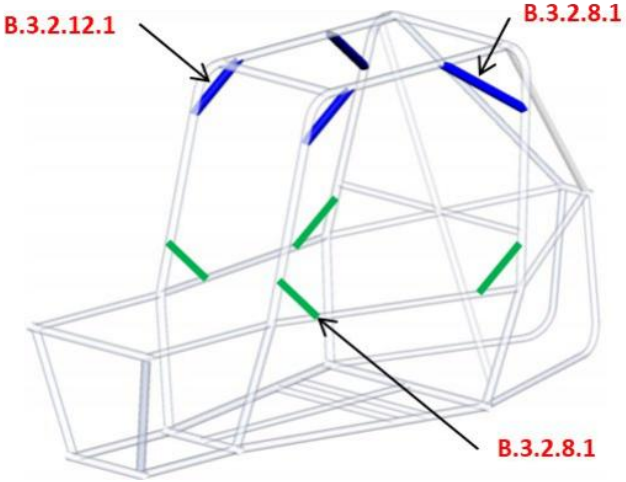

Figure B-18: Roll Cage, Gussets

B.3.2.9 LFS – Lower Frame Side Members

The Lower Frame Side (LFS) members define the lower right and left edges of the roll cage. These members are joined to the bottom of the RRH at Point A and extend generally forward, to Point F, at least as far forward of every drivers' heels when seated in a normal driving position and actuating the pedals to their full extents. The forward ends of the LFS members are joined by a lateral cross member, FLC (Figure B-11). The intersection of the LFS members and the FLC define the points FR and FL. In 'Nose' designs, as shown in Figure B-18, the LFS shall extend forward to Point E, and is joined by lateral cross members FLC and ELC (Figure B-11). Alternative 'Nose' designs are feasible wherein Points E and F are co-located, provided adequate foot protection is achieved.

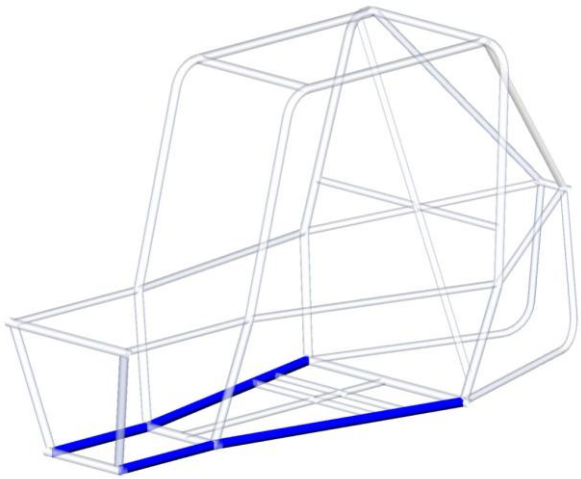

Figure B-19: Roll Cage 'Nose' Example, LFS

B.3.2.10 SIM – Side Impact Members

The two Side Impact Members (SIM) define a horizontal mid-plane within the roll cage. These members are joined to the RRH, defining Point S, and extend forward, to a point at least as far forward of every drivers' toes when seated in a normal driving position. The forward ends of the SIM members shall intersect with the FBM, defining Points DR and DL, this intersection shall be joined by a lateral crossmember, DLC. The SIM members must be between 203 mm (8 in.) and 356 mm (14 in.) above the inside seat bottom (Figure B-13 and Figure B-16) at all positions between points S and D. In 'Nose' designs, as shown in Figure B-19, the SIM extends forward to Points GR and GL, which shall be joined by a lateral cross member, GLC (Figure B-11). In this case, DLC may be omitted if GLC provides adequate protection for the driver's toes as noted below.

The feet of any driver must be entirely behind the plane defined by points FR/FL and DR/DL. In nose designs the driver's feet must be entirely behind the plane defined by points GR/GL and ER/EL and below the plane defined by GR/GL and DR/DL.

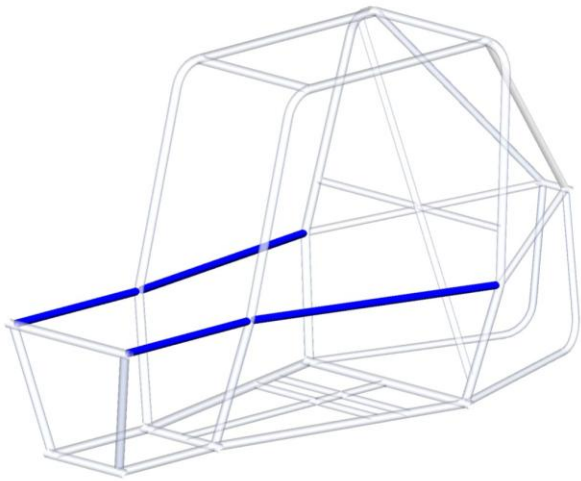

Figure B-20: Roll Cage 'Nose' Example, SIM

B.3.2.11 UST – Under Seat Tubes

A secondary tube, or system of secondary tubes, shall pass underneath the seat, positioned in such a way to prevent the driver from passing through the plane of the LFS in the event of seat failure. The UST may also serve as the mounting location for the seat and/or the anti-submarine belts per B.4.5.3 - Seat Mounting Points and B.4.2.6.3 - Anti Submarine Belt Attachment.

Two options are given for the UST member:

1. Lateral UST - The two LFS members shall be joined by the Under Seat Members. The UST shall pass below the driver within the fore-aft envelope of the part of the template as noted in Figure B-17 that intersects the seat bottom; or
2. Longitudinal UST - The ALC and FLC members shall be joined longitudinally by the Under Seat Member. The forward end of the UST may also terminate at an additional cross member made from a primary material that joins the LFS members between Point A and Point F. The UST must pass within the fore-aft envelope of the template as noted in Figure B-17 intersects the seat bottom and the lateral centreline of the seat.

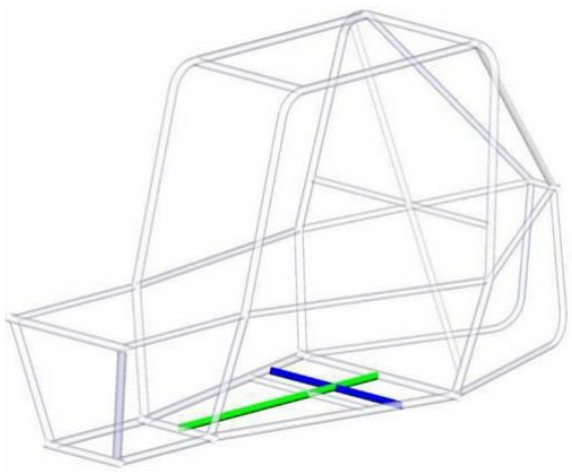

Figure B-21: Roll Cage 'Nose' Example, UST

B.3.2.12 FBM – Front Bracing Members

Front Bracing Members shall join the RHO, SIM and LFS (Figure B-21) at Points C, D and F respectively. The upper Front Bracing Members (FBMUP) shall join Point C on the RHO to Point D on the SIM. It is preferred to notch the SIM around the FBM. The lower Front Bracing Members (FBMLOW) must join point D to point F. The FBMup and FBMlow shall each be continuous tubes. The angle between the FBMUP and the vertical must be less than or equal to 45 deg. If Front FAB, per Rule B.3.2.13.1 - Front Bracing, is used there is no angle requirement between FBM and vertical.

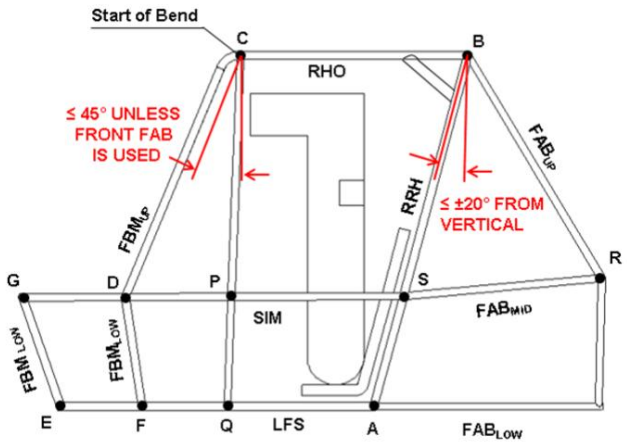

Figure B-22: Roll Cage, FBM

B.3.2.12.1 Gussets for RHO and FBM

If the RHO and FBM on one side of the vehicle are not comprised jointly of one tube, bent at point C, then a gusset is required at point C to support the joint between the RHO and the FBM. The total weld length of the gusset must be two times the tubing circumference (of the primary material). Thus, if a tube is used to brace the FBM and RHO, it must be primary material. Plate gussets may be used if the thickness of the material meets or exceeds the thickness of the primary material used.

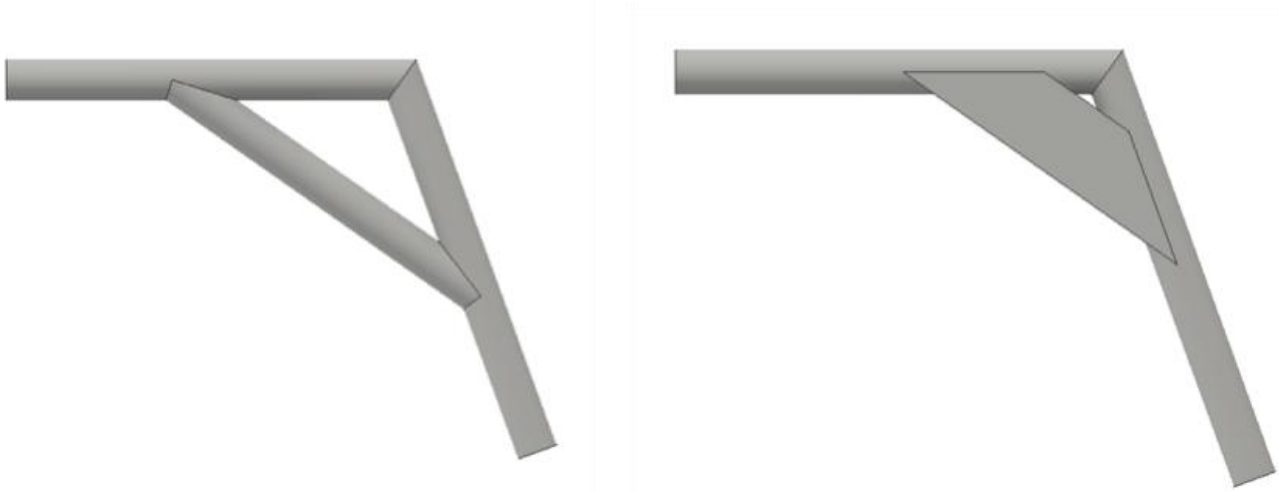

Figure B-23: RHO / FBM Gussets

B.3.2.13 FAB – Fore - Aft Bracing

The RRH shall be restrained from rotation and bending in the side view by a system of triangulated bracing. Triangulation angles (projected to the side view) must be at least 20 deg. between members. Bracing shall either be front bracing or rear bracing (FAB), a better design will result if both front and rear bracing are incorporated:

1. Rear Bracing – will directly restrain both Points B from longitudinal displacement in the event of failure of the joints at Points C; or
2. Front Bracing – will restrain both Points C from longitudinal and vertical displacement, thus supporting Points B through the RHO members.

B.3.2.13.1 Front Bracing

Front Bracing systems shall connect the FBMUP to the SIM, on the same sides. The intersection with the FBMUP members shall be within 127 mm (5 in.) measured as a straight-line distance from centreline to centreline of Point C. The intersection with the SIM members defines Point P which shall be vertically supported by further members extending from Point P to the LFS members, which defines Point Q. Points P and Q exist only with complete Front Bracing.

B.3.2.13.2 Rear Bracing

Rear Bracing systems shall create a structural triangle, in the side view, on each side of the vehicle. Each triangle shall be aft of the RRH, include the RRH as a vertical element, have one vertex at Point B, and one vertex at either Point S or Point A. The members forming this structural triangle shall be continuous and comply with Rule B.3.2.1. The third vertex is the intersection of these two continuous members and is joined by a Lateral Crossmember (RLC) defining Point R which shall additionally be connected to Point S or A, whichever is not part of the structural triangle. This additional connection, which is required for a complete FAB system, and is not subject to B.3.2.1 - Member Requirements, which may be formed using multiple joined members as well as may encompass a bend of greater than 30 deg.

Attachment of rear FAB system shall be within 51 mm (2 in) from all three points Point A, Point B and Point S, on each side of the vehicle. Members connecting to Point A shall be attached at an angle of 45 degrees or greater as measured from the ALC. Distances are measured in a straight-line from centreline to centreline of the tube intersections. The aft vertex of each rear bracing triangle defines Point R and shall be joined by a lateral crossmember, RLC, as per B.3.2.5 - LC – Lateral Cross Member.

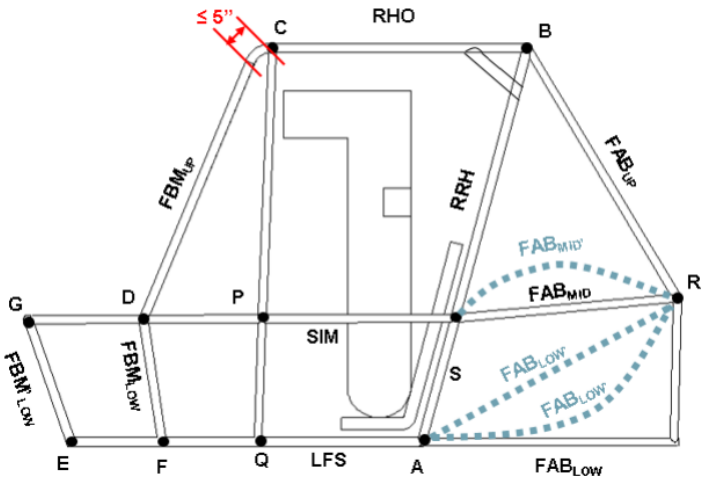

Figure B-24: Roll Cage, FAB

B.3.2.14 Butt Joints

B.3.2.14.1 Requirement

Many roll cage members are required to be continuous tubes and may not be made of multiple pieces. Roll cage members which are made of multiple tubes, joined by welding in a butt joint, shall be reinforced with an internal sleeve. Tubes which are joined at an angle greater than 5 deg. need not be sleeved.

B.3.2.14.2 Size

Sleeves shall be designed to fit tightly inside the joint being reinforced. External sleeves are not allowed. Sleeves shall extend into each side of the butt joint, a length of at least two times the diameter of the tubes being reinforced and shall be made from steel at least as thick as the tubes being reinforced.

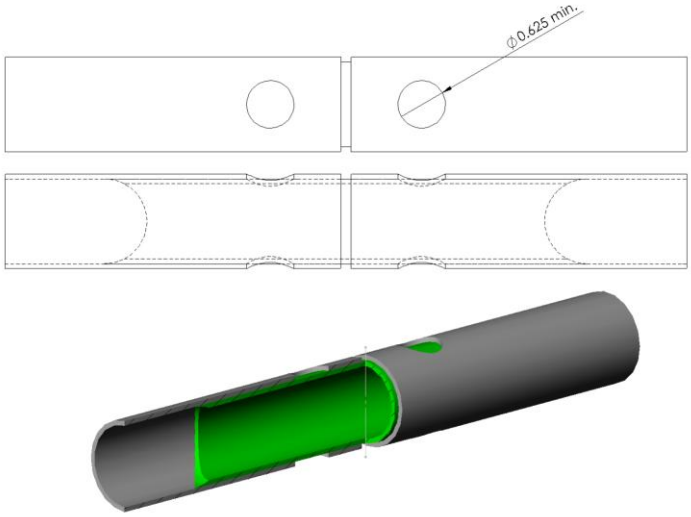

Figure B-25: Roll Cage, Butt Joint Sleeve

B.3.2.14.3 Welding

The general arrangement of an acceptable sleeved joint is shown in Figure B-25. A butt weld and four (4) rosette welds are required. Two (2) rosette welds are required on each tube piece. Rosette welds are to be made in holes of a minimum diameter of 16 mm (0.625 in.).

A minimum of 102 mm (4.0 in.) of linear weld is required to secure the sleeve inside the joint, including the butt joint and the rosette welds.

B.3.2.15 Welding Process Check

Prior to welding any joint on any of the vehicle's roll cage elements, each person (who will be welding the Rollcage for your team) shall individually complete two welding samples as defined below, by using the same primary materials and processes as used in the roll cage element welds. All welding samples shall be submitted during Technical Inspection. Vehicles for which complete sets of welding samples are not submitted, or for which any of the welding samples are judged inadequate, will not be allowed to compete in dynamic or Endurance events.

Welding samples shall be made from the same tube material, diameter, and thickness as the welds made by each person on the primary roll cage elements. For information on best practices for weld samples, see Tech Team Documentation in Additional Guidelines and Resources Section.

All weld samples shall be indelibly marked, by permanent means such as engraving, etching, or stamping

with all the following information:

- College Name or college Initials
- Welder Name or Welder Initials
- Date of construction of weld sample

Sample 1 – Destructive Testing:

The sample shall comprise of a 90-degree joint, the leg length of which is unrestricted (as per Figure B-26) shall be destructively tested. Passing samples will exhibit a joint failure in the base material and not in the weld metal. The testing method is free and either tensile or bending failure may be induced; however, the peak stress must be located at the weld. In the case of bending failure, take care that the largest bending moment is located at the weld. Samples shall be tested prior to arrival at competition, and both pieces presented for inspection in the case of complete separation during testing.

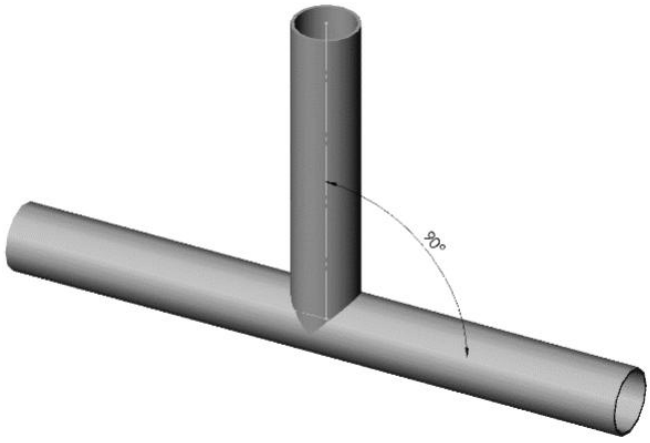

Figure B-26: Roll Cage, Welding Sample 1

Sample 2 – Destructive Inspection

The sample shall comprise of two tubes joined at a 30-degree angle with a length of at least 150 mm (5.9 in.) from the centre of the joint (Figure B-27) to the end of each extended leg. The sample shall be sectioned along the length of tube to reveal adequate and uniform weld penetration (Figure B-27). Samples shall be tested prior to arrival at competition, and both pieces presented for inspection in the case of complete separation during testing.

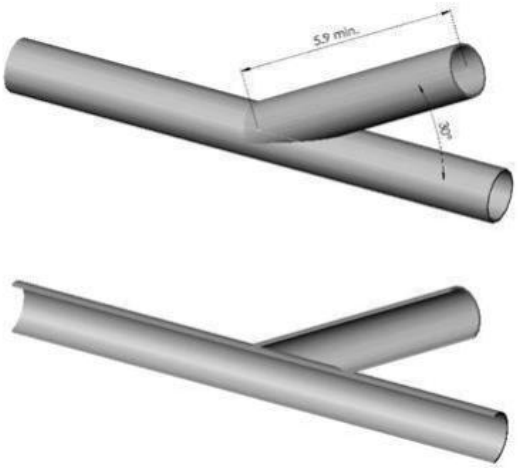

Figure B-27: Roll Cage, Welding Sample 2

B.3.2.16 Roll Cage Materials

The material used for the Primary Roll Cage Members and bracing must meet one of the following requirements:

- Circular steel tubing with an outside diameter of 25.4 mm (1 in) and a wall thickness of 3 mm (0.118 in.) and a carbon content of at least 0.18%.
- A steel shape with bending stiffness (minimum 2.76×10^9 Nmm^2) and bending strength exceeding that of circular steel tubing with an outside diameter of 25 mm (0.984 in.) and a wall thickness of 3 mm (0.118 in.). The wall thickness must be at least 1.57 mm (0.062 in.) and the carbon content must be at least 0.18%, regardless of material or section size. The bending stiffness and bending strength must be calculated about a neutral axis that gives the minimum values.

☑ **Docol R8 tubing is permitted without the required carbon content, provided the aforementioned dimensional requirements or equivalencies are met. This material is not intended to undergo any heat treatment after welding and sizing as this may alter the mechanical properties of the material.**

Bending stiffness, kb, is given by:

$$k_b = EI$$

Where:

E - Modulus of elasticity (205 GPa for all steels)

I - Second moment of area for the structural cross section

Bending strength, Sb, is given by:

$$S_b = \frac{S_y I}{c}$$

Where:

Sy - Yield strength (365 MPa for 1018 steel)

c - Distance from neutral axis to extreme fibre

Documentation of the materials must include:

1. Invoices of roll cage materials.
2. Material certificate from the supplier and certificate of material composition specifying carbon content and yield strength test performed at NABL accredited laboratory are mandatory. Both, supplier and team's test report are mandatory and should be presented during technical inspection.
3. If the tubing used is not the tube specified above, equivalency calculations are required. All calculations shall be typed and brought to technical inspection. Calculations shall prove sufficient bending stiffness and bending strength. All calculations shall be in SI units to three significant figures to the nominal tube sizes as specified by the invoice. Teams shall show figures for 1018 steel and the substitute material.

⚠ Teams are not allowed to use old test reports.

B.3.3 Driver Clearance

B.3.3.1 Lateral Space

Minimum space is based on clearances between the driver and a straight edge applied to any two points on the outside edge of the roll cage structure. The driver's helmet shall have 152 mm (6 in.) clearance, while the driver's shoulders, torso, hips, thighs, knees, arms, elbows, and hands shall have 76 mm (3 in.) clearance. Clearances are relative to all designated drivers of the team, seated in a normal driving position, and wearing all required equipment.

For all the members involved in measurement of lateral clearances should satisfy,

1. B.3.2.1 - Member Requirements
2. B.3.2.2 Primary Members, or B.3.2.3 - Secondary Members,
3. B.3.2.8.1 - Gussets for Lateral Clearance or B.3.2.12.1 Gussets for RHO and FBM, if any

Suspension members will not be considered for lateral spacing measurements.

B.3.3.2 Vertical Space

The driver's helmet shall have 152 mm (6 in.) minimum clearance from any two points among those members that make up to top of the roll cage. These members are: the RHO members (exclusive of any covering or padding); the RRH upper, LC; and the LC between points C (left and right). In an elevation or side view no part of the driver's body, shoes, and clothing may extend beyond the envelope of the roll cage.

B.3.4 Sharp Edges

The entire vehicle, including the frame, shall have no exposed sharp edges which might endanger the driver, track workers, or people working around the vehicle while the vehicle is in any condition (static, dynamic, inverted, etc.).

B.3.5 Bolted Roll Cage Joints

Bolted Roll cage joints are acceptable only if the following requirements are met (Figure B-28):

1. Removable members are permitted on non-primary tubes.
2. The tube joint shall be of the design free from injurious defects. Dimensions shown do not include manufacturing tolerances.
3. The only permitted tube sizes for removable members are 25 mm (1.0 inch) diameter and 32 mm (1.25 inch) diameter.
4. The tube joint diameter shall match the diameter of the removable member.
5. The tube joint wall thickness recess shall match the wall thickness of the removable member.
6. Two 6 mm (0.25 in) socket head cap screws meeting the requirements of B.12 are required to fasten the tube joint.
7. Nuts used shall meet the requirements of B.12.
8. The tube joint shall be constructed of steel, with a minimum strength requirement matching 1018 steel.
9. Each side of the joint shall have two rosette welds, separated by 180 degrees.

10. Each side of the joint shall be fully welded to the tube of the removable member.
11. Chamfer size C1 shall match the measurement of the wall thickness of the tube.
12. Chamfer size C2 shall nominally be 1.0 mm (0.04 inches).

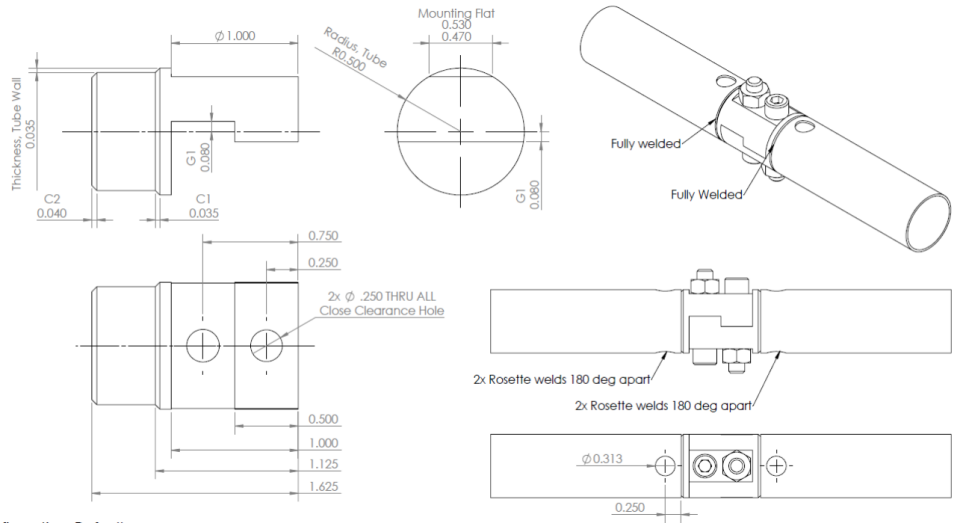

Figure B-28: Roll Cage, Required Joint for Removable Members

B.3.6 Drilled Members

B.3.6.1 Sleeved Joints

Members which need to be drilled through both walls for the purpose of mounting fasteners or routing accessories shall be reinforced with a weld-in sleeve. Sleeves shall be designed to fit tightly on the inside of the hole or joint being reinforced as well as the fastener passing through the sleeve. Sleeves in required members shall be on the tube centreline, have an outer diameter no larger than 0.5 times the member diameter, have a wall thickness greater than or equal to the tube it is welded to and extend beyond the tube on both sides and be fully welded to the tube. An unacceptable joint is denoted by a red "X". An acceptable joint is denoted by a green "O" in Figure B-28.

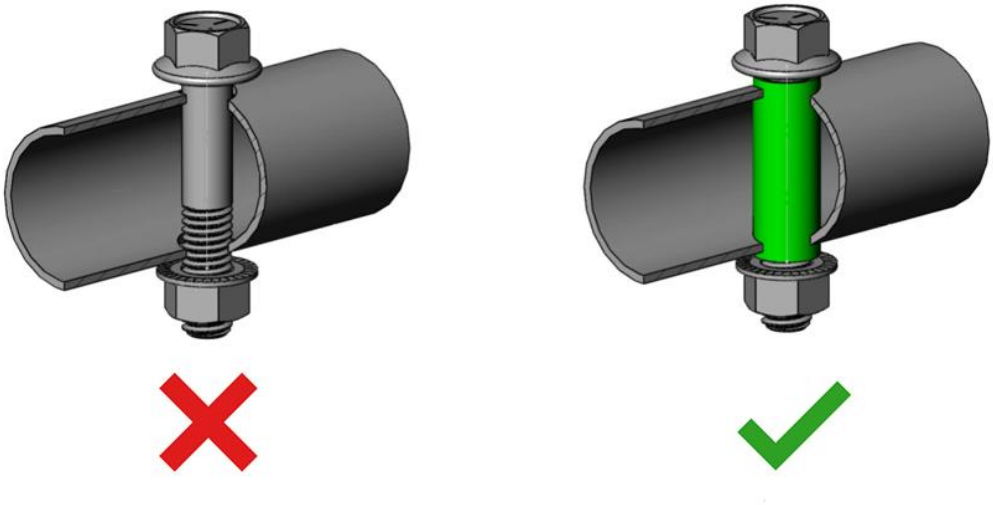

Figure B-29: Roll Cage, required sleeve for drilled holes

B.3.6.2 Drilled Holes

Single drilled holes in members with a diameter less than or equal to 5 mm (0.197 in) do not require a sleeve.

ARTICLE B.4 DRIVER RESTRAINT

B.4.1 Function

The driver restraint system shall function to safely and securely hold the driver within the envelope of the vehicle's roll cage. The driver restraint system shall also quickly and completely disengage when required to

allow the driver a minimum egress time. The driver restraint system consists of a safety harness, arm restraints, and the vehicle's seat. The driver restraint system shall be fully functional and properly worn whenever the driver is seated in the vehicle.

B.4.2 Driver Harness

The driver harness shall consist of a 5-point (or more) system comprised of two shoulder belts (left and right), two lap belts (left and right), and one or more anti-submarine belts all joining at a single point - central buckle (connect and disconnect point). The anti-submarine belt serves to positively locate the buckle and prevent the driver from riding under the lap belts.

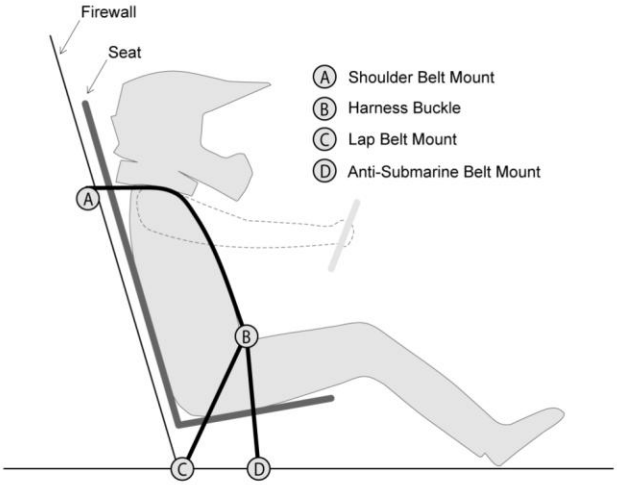

Figure B-30: Driver Harness Schematic

B.4.2.1 Certification

All driver restraint systems shall meet either SFI Specification 16.5/16.1, or FIA specification 8853/98. The material of shoulder and lap belts shall be of Nylon or Dacron polyester and in new or like-new condition, 76 mm (3.0 in.) in width, and free from any kind of defects. Anti-submarine belts shall meet the same conditions, but have a minimum nominal width of 44.5 mm (1.75 in).

B.4.2.2 Expiration

All driver restraints shall have current SFI tags indicating "Valid until:". Driver restraints may be used provided the valid until date is on or later than the last day of the competition.

Figure B-31: Driver Harness, SFI Tag

B.4.2.3 Release Mechanism

All belts in the driver harness must join to a single, central, metal-to-metal, lever-type, quick-release buckle. Cam-Lock, and other enclosed buckles susceptible to jamming from small debris (such as sand particles) are explicitly prohibited. The release mechanism (buckle) shall be protected against accidental unfastening from a direct pull, rollover or slide along the side.

B.4.2.4 Shoulder Belts

The shoulder harness shall be of the over-the-shoulder type. Only separate shoulder straps are permitted. "Y"-type shoulder straps are explicitly prohibited.

- **Shoulder belt tube shall connect to the RRH vertical members at both ends.**

B.4.2.4.1 Positioning, Vertical

The shoulder belt mounting point (A) (see Figure B-32) shall be positioned no higher than shoulder level of driver, and no lower than 102 mm (4.0 in.) vertically below each driver's shoulders.

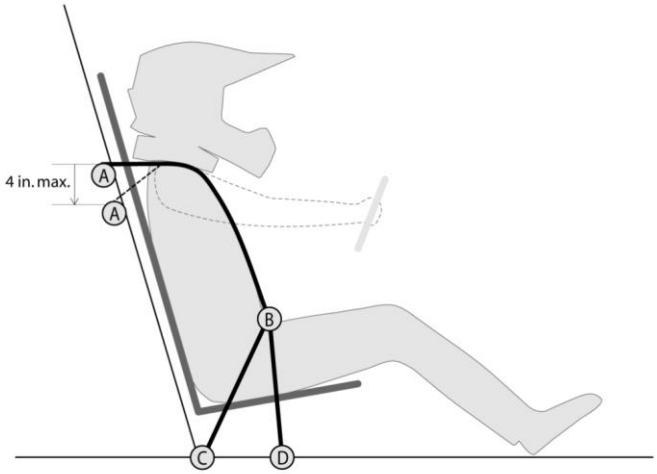

Figure B-32: Driver Harness, Shoulder Harness Vertical Position

B.4.2.4.2 Positioning, Lateral

The lateral spacing of the shoulder belts shall be between 152 mm (6.0 in.) to 229 mm (9.0 in.) when measured centre-to-centre. See Figure B-33.

Lateral movement of the shoulder belts must be restrained by a structure other than the firewall.

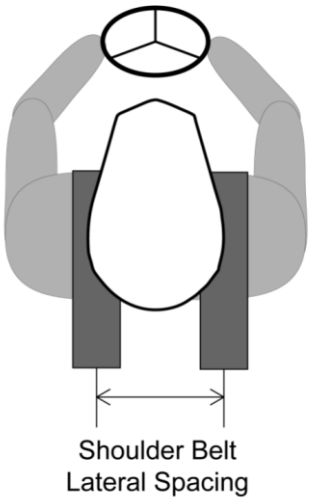

Figure B-33: Driver Harness, Shoulder Harness Lateral Position

B.4.2.4.3 Attachment

The shoulder belts shall be looped and secured around a straight, horizontal tube welded within the plane of the RRH. The tube that the shoulder belts are looped around shall meet the requirements of, B.3.2.3 - Secondary Members and Tubes. Refer Figure B-35 for shoulder belt looping.

Figure B-34: Driver Harness, Shoulder Harness Lateral Restraint

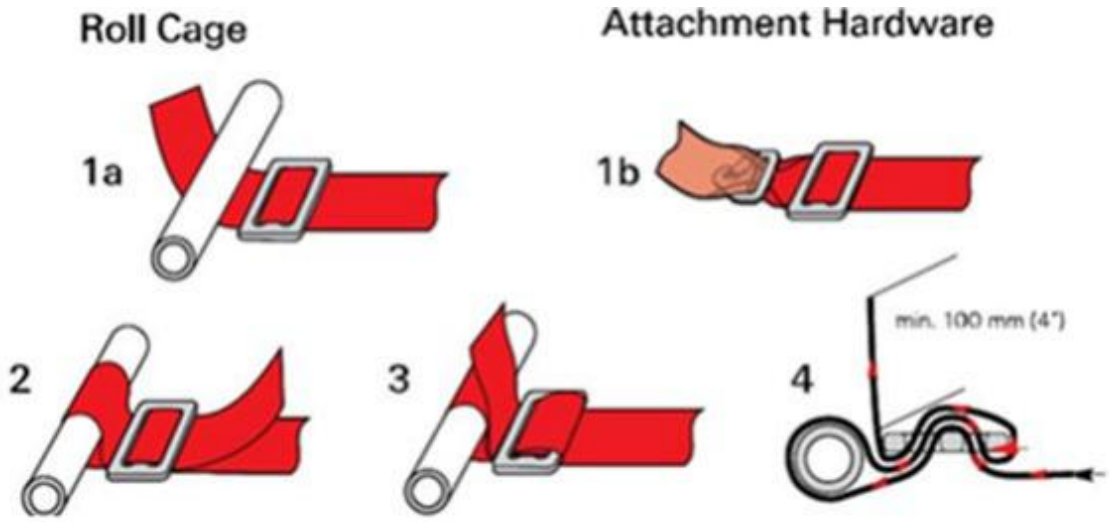

Figure B-35: Driver Harness, Diagram of Proper Wrapping of Webbing

B.4.2.4.4 Redirection

The shoulder belts must run directly from their mountings to the driver's shoulders, without redirection by any part of the vehicle or its equipment, including seats.

Webbing shall not be twisted or rotated at any point along the path of the shoulder belt.

B.4.2.4.5 Adjustment

The shoulder belts shall be in proper adjustment for the driver, at all times. When the driver harness is worn, each buckle or adjuster in the system shall have excess adjustment capacity to fit all drivers. The minimum length of excess shoulder harness webbing is 102 mm (4.0 in). See Figure B-35.

B.4.2.4.6 Protection

The shoulder belts shall be protected from potential damage from aft of the RRH. The firewall must protect the shoulder belts. The firewall may be pocketed or extended to facilitate this requirement, as long as no open gaps result. Excess shoulder belt webbing shall be neatly contained and kept within the roll envelope of the vehicle. Proper grommets should be provided to completely cover the cut in the firewall. Visible gaps to be avoided.

B.4.2.5 Lap Belts

The lap belt halves must run directly from the buckle, over the driver's hips and to their mounting points without redirection by any part of the vehicle or its equipment (including the seat). The lap belt halves must be mounted to frame tabs using the bracket supplied with the safety harness. Lap belts mounted by wrapping around tubes are strictly prohibited.

B.4.2.5.1 Positioning

The lap belt (point B to point C) in Figure B-36 shall be positioned such that it passes over the driver's pelvic area below the Anterior Superior Iliac Spines (the hip bones). The lap belt shall not be worn over the driver's intestines or abdomen.

In a side view, the lap belt must be at a minor angle (angle "L" or angle BCD) between 45 deg to 80 deg, to the horizontal.

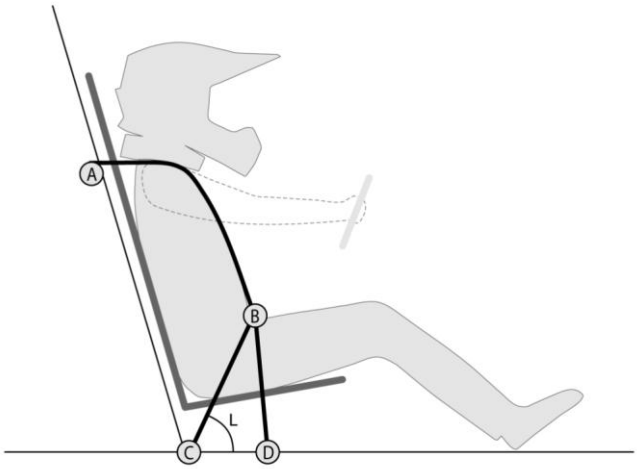

Figure B-36: Driver Harness, Lap Belt Angle

B.4.2.5.2 Attachment

The lap belts shall be securely attached to the vehicle frame with threaded fasteners and metal tabs meeting the requirements of B.12.2 - Required Attachment Tabs. Webbing shall be routed through buckles per Figure B-35. The frame lap belt tabs shall be installed such that the lap belt tabs pivot freely and are not loaded in bending. Refer Figure B-37.

Lap belts wrapped around tubes or secured with eye-bolts and/or eye-bolt hardware are explicitly prohibited. Lap belts shall be fastened to the vehicle frame with bolts no less than 12 mm (7/16 in) in diameter. Threaded fasteners in the driver restraint system shall match the nominal diameter of the mounting holes in the lap belt mounting bracket. For example, if a lap belt mounting tab is drilled for a 14 mm hole, the fastener, and the frame lap belt tab shall be 14 mm in diameter.

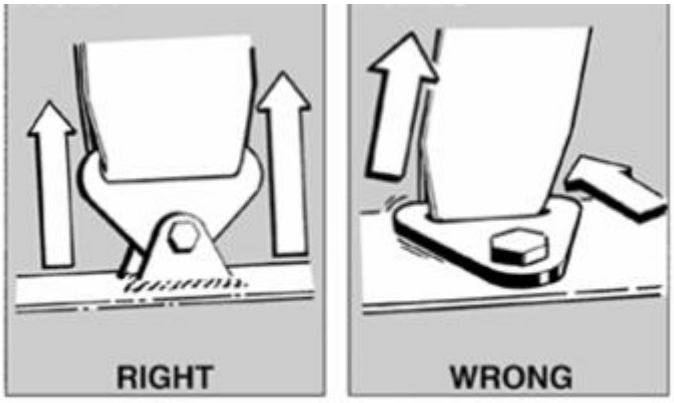

Figure B-37: Driver Harness, Lap Belt Tab Orientation

B.4.2.5.3 Redirection

The lap belts shall be routed directly from the mounting points over the driver's hips and to the release mechanism (buckle) without redirection by any part of the vehicle or its equipment (including the seat).

Webbing shall not be twisted or rotated at any point along the path of the lap belt.

B.4.2.5.4 Adjustment

The lap belts shall be in proper adjustment for the driver, at all times. When the driver harness is worn, each buckle or adjuster in the system shall have excess adjustment capacity. The minimum length of excess lap belt webbing is 102 mm (4.0 in). See Figure B-35.

B.4.2.5.5 Protection

The lap belts shall be protected from potential damage by the vehicle's body panels. Excess lap belt webbing shall be neatly contained and kept within the roll envelope of the vehicle.

B.4.2.6 Anti-Submarine Belts

B.4.2.6.1 Number of Points

The anti-submarine belt (Line BD in Figure B-38) shall be at least a single-point mount (a 5-point driver harness configuration). Driver harnesses of the 6-point and 7-point types are permitted. A 6-point system utilizes two anti-submarine belt mounting points. A 7-point system utilizes three anti-submarine belt mounting points.

B.4.2.6.2 Positioning

Anti-submarine belts shall be mounted to the vehicle frame at a point aft of the chest line as denoted by a positive angle "S" in Figure B-38. The anti-submarine belt mounting point shall be forward of the lap belt mounting points. The chest line passes through point B and is parallel to the driver's sternum. The anti-submarine belt angle (angle S) is suggested to be 20 deg. The anti-submarine belt shall be mounted either to a frame tab or wrapped around a frame member meeting at least secondary member requirement.

6-point and 7-point harnesses shall be installed per the manufacturer's instructions. Teams shall be prepared to provide documentation of mounting instructions to TEJ at the time of technical inspection.

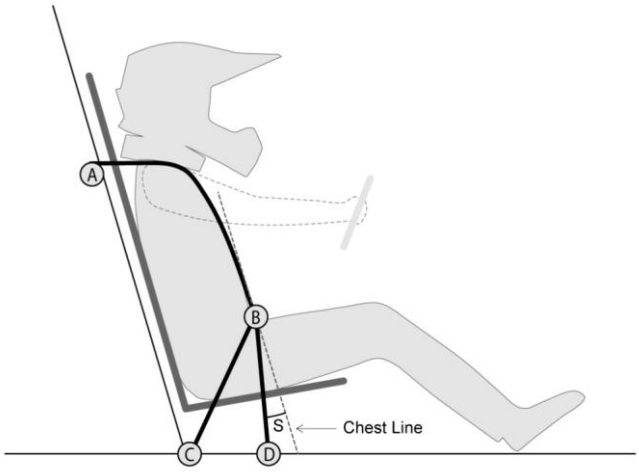

Figure B-38: Driver Harness, Anti-Submarine Belt Angle

B.4.2.6.3 Attachment

The anti-submarine belts shall be securely attached to the vehicle frame by one of the following methods:

a. Metal tabs joined by a threaded fastener.
b. Webbing wrapped around a frame member
c. Webbing wrapped around a bolt secured by metal tabs in double shear.

Anti-submarine belts secured with eye-bolts are explicitly prohibited. Webbing shall be wrapped per Figure B-35: Driver Harness, Diagram of Proper Wrapping of Webbing.

Any threaded fastener in the driver restraint system shall meet the requirements of Part B : Article 12 - Fasteners. Anti-submarine belts, if bolted, shall be fastened to the vehicle frame with bolts no less than 12 mm (7/16 in) in diameter. Threaded fasteners in the driver restraint system shall match the nominal diameter of the mounting holes in the lap belt mounting bracket. For example, if a lap belt mounting tab is drilled for a 14 mm hole, the fastener, and the frame lap belt tab shall be 14 mm in diameter.

The frame tabs which accept the metal anti-submarine belt tabs or bolt in method “a” or “c” shall meet the following requirements of B.12.2 - Required Attachment Tabs.

If the anti-submarine belt is wrapped around a frame member (method “b”) or a bolt (method “c”), the following requirements shall be met:

1. The anti-submarine belt mounting tube shall have features designed to limit maximum lateral movement to 25.4 mm (1.0 in.).
2. The anti-submarine belt webbing shall be protected from sharp edges such as bolt threads, tab edges, and
3. The anti-submarine belt mounting tube or tube holding tabs shall meet the frame requirements of a secondary member. The mounting tube may be constructed of a single tube with bends, or may be constructed with no more than three tubes and two mitered joints (excluding connections to the LFS). The anti-submarine belt mounting tube shall join both LFS members of the vehicle and be oriented parallel to the LCs. The mounting tube should not be cantilevered creating an undue bending moment.

B.4.2.6.4 Redirection

Redirection of the anti-submarine belt by a rigid frame, seat member, or seat edge is allowed. Redirected belt webbing must not contain a bend of more than 30-degree (Figure B-39). The redirecting member or edge must be designed to prevent chaffing or abrasion of the belt webbing.

Webbing shall not be twisted at any point along the path of the anti-submarine belt.

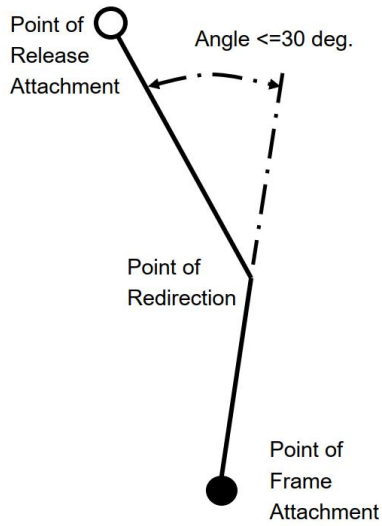

Figure B-39: Driver Harness, Anti-Submarine Belt Redirection

B.4.2.6.5 Adjustment

The anti-submarine belts shall be in proper adjustment for the driver, at all times. When the driver harness is worn, each buckle or adjuster in the system shall have excess adjustment capacity.

B.4.2.6.6 Protection

All anti-submarine belts shall be protected by the vehicle skid plate. Excess anti-submarine belt webbing shall be neatly contained and kept within the roll envelope of the vehicle.

B.4.3 Arm Restraints

In the event of a rollover, the driver’s arms must be kept within the limits of the roll cage space (B.3.3.1 - Lateral Space) by use of arm restraints. Arm restraints must be securely fastened to the driver restraint system. Only

commercially available arm restraints meeting SFI 3.3 are allowed. Left and right arm restraints must be separate individual pieces, which independently connects to the safety belts.

B.4.3.1 Condition

The restraints must be in overall good condition and show no signs of wear, no cuts, fretting, chafing or wear. The restraints must bear the appropriate labels, provided by manufacturer.

Figure B-40: Driver Harness, Arm Restraints

B.4.3.2 Expiration

For old style tags: Harnesses shall be no more than three (3) years old (On April 1st of the competition year)

For new style tags: Arm restraints shall have current SFI tags indicating "Valid until:". Such arm restraints may be used, provided the valid until date is on or later than the last day of the competition. See Figure B-31 for more information.

B.4.3.3 Positioning

Arm restraints must be installed such that the driver can release the harness and exit the vehicle unassisted (within the time limit for egress), regardless of the vehicle's position. The arm restraint must be worn by the driver on the forearm just below the elbow. With arm restraint on, the driver must be able to reach the cockpit kill switch and steering wheel, but not allow their arms to exit the cockpit.

B.4.3.4 Attachment

Arm restraints shall be attached to the buckle of the driver harness when assembled.

B.4.4 Head Restraint

A head restraint must be provided to limit rearward motion of the driver's head from a normal driving position. The head restraint shall be a minimum of ¾ inch (20 mm) thick. The head restraint shall be mechanically fastened to the vehicle with tab attached to vehicle frame, ensuring no rotational movement occurs. Hook-and-loop and adhesive methods are prohibited. Head restraints may also be mechanically fastened or integral to the driver's seat.

⚠ HANS devices and Leatt braces are not allowed out of concerns of improper fitment of these devices related to BAJA SAEINDIA® seat design and seating position.

B.4.5 Seats

The seat shall work in concert with the driver harness to secure the driver within the envelope of the roll cage. Seats shall be of conventional design. See details below. All seats shall be designed for the upright seating position. Suspension seats are prohibited. The upright seating position is defined by the angle of the driver's back to a horizontal line. The seat back angle (Figure B-41) for an upright seating position is greater than 65 deg. As a reference, a completely upright driver will have a back angle of 90 deg.

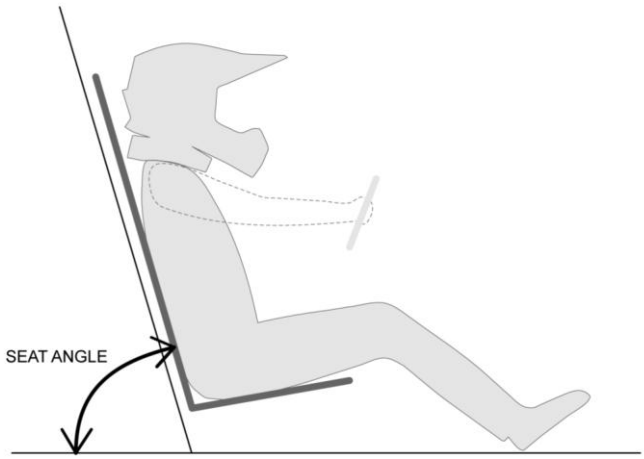

Figure B-41: Seat Angle

B.4.5.1 Seat Construction

B.4.5.1.1 Conventional Seats

Conventional seats shall be generally rigid and be of metal or composite construction (fibreglass or carbon fibre). Seats constructed of thermoplastic are prohibited. Conventional seats may also have a removable seat cover and/or closed-cell foam padding. The bottom and back panel of seats must have at least 2.0 inches (50.8 mm) of non-removable foam (in an uncompressed state, without the driver seated) on them. Seats may be purchased from a manufacturer or constructed by teams.

B.4.5.1.2 Suspension Seats

Suspension seats, sling seats, hammock seats, or similar designs with webbing or cordage as the primary load path are explicitly prohibited.

B.4.5.2 Seat Design

Seats shall be designed to have at least two generally planar surfaces when the driver is seated in the vehicle. The seat back plane shall be inclined between 65 and 90 deg from horizontal as viewed from the side (see Figure B-41: Seat Angle.) The vehicle's firewall shall not be considered as any part of the seat. The seat bottom plane shall be underneath the driver and be horizontal or generally sloped such that the leading edge of the seat bottom plane is level with or higher than the intersection with the back plane. Seats may also include material oriented vertically along the sides of the seat bottom plane and the seat back plane designed to assist in laterally restraining the driver.

B.4.5.3 Seat Mounting Points

B.4.5.3.1 Quantity

Seats shall have minimum six (6) mounting points to the vehicle frame. A minimum of four (4) is required for the seat bottom plane. A minimum of two (2) is required for the seat back plane. The minimum fastener size used for seat mounting points should be M6.

B.4.5.3.2 Arrangement

Seat back mounting points shall be at or near the plane of the RRH, attached to the RRH or other tubes (having met the requirements of secondary roll cage members). Mounting points shall be generally symmetrical about the longitudinal centre line of the seat itself or the vehicle and 153 mm (6.0 inches) apart from each other. Seat mounting shall be designed to evenly distribute vertical load, and shall effectively secure the seat.

B.4.5.3.3 Structure

Any tabs used to mount the seat shall meet the requirements of B.12.2 - Required Attachment Tabs. When mounting with tabs, direct contact of the tab to the seat is preferred, however, spacers up to 13mm (0.5in) will be allowed. Any tube used to mount the seat shall have both ends terminated and be fully welded to other

frame members. Any tube used to mount the seat with radial holes drilled in the tube shall be sleeved and reinforced as per rule B.3.6 - Drilled Members.

ARTICLE B.5 DRIVER EQUIPMENT

☑ **The following items must have COLLEGE NAME INITIALS marked with PERMANENT MARKERS (in contrast colour with the safety gears) For example, for the college named, "XYZ Hub of Technology" mark as "X.H.T." on items.**

⚠ Without markings, these items won't be considered valid. Thinner is strictly banned inside the main event premises.

Items to be marked with college name Initials:

- Driver's Helmet (B.5.1)
- Arm Restraint (B.4.3)
- Driver's Suit (both Upper and Lower Garments, for teams using split Driver's Suit B.5.4.3 and B.5.4.4)

B.5.1 Helmet

All drivers must wear a properly sized motocross-style helmet with an integrated (one-piece composite shell) chin/face guard.

All helmets used in BAJA SAEINDIA® shall meet the requirements of Snell M2020, or ECE R22-05 or R22-06. Any helmets not meeting these standards are explicitly prohibited.

⚠ DOT, ISI, and DOT+ISI rated helmets are not allowed.

⚠ This rule has no exceptions, and it will be strictly enforced. Helmets certified to other rating systems not specified above are explicitly prohibited.

⚠ Some Motocross helmets have extended chin guards that will not contact the required neck collars when the head is flexed forward. This combination of helmet/collar system is prohibited.

⚠ Helmets without affixed labels/markings on helmet will be deemed non-compliant, regardless of certification details provided on the bill.

⚠ Any non-specification helmets will be confiscated by the TEJ for the duration of the event. At the close of the Endurance race, all confiscated items will be available for pick up.

⚠ Do not rely on salespeople to determine if a helmet is Snell rated. Check for the Snell sticker under the foam liner of the helmet.

Figure B-42: Driver Equipment, Example Snell Sticker

Figure B-43: Driver Equipment, Example ECE Tags

B.5.2 Eye Protection

B.5.2.1 Type

All drivers shall wear motocross-style goggles with a full-circumference elastic band that wraps completely around the driver's helmet. "Quick Straps" or other quick-release systems are explicitly prohibited.

B.5.2.2 Lens Protection

All goggles used by drivers must have laminated tear-off lens protectors. These laminated tear-offs are used to ensure the driver has unobstructed vision through their goggles. Teams must present their goggles with properly installed tear offs at tech inspection. Teams without laminated tear offs are subject to being black flagged.

⚠ The use of laminated tear-offs is mandated, while regular tear-offs are not permitted under any circumstances.

Laminated tear-off example: ARMEGA FORECAST Laminated Tear-Offs 2x7 Pack – 100%`

B.5.3 Neck Support

B.5.3.1 Neck Collar

All drivers must wear neck support/neck collar. The neck support must be a full circumference (360 deg.) and SFI 3.3 rated. Simpson, RCI, GForce, Deist or Leaf Racing Products supply neck collars that meet this requirement. Horseshoe collars are not allowed.

The support/collar must be in overall good condition and show no signs of wear or other injurious defects. The support/collar must have the appropriate SFI labels.

B.5.3.2 Expiration

For old style tags: Neck collar shall be no more than three (3) years old (On April 1st of the competition year)

For new style tags: Neck collar shall have current SFI tags indicating "Valid until:". Such neck collar may be used provided the valid until date is on or later than the last day of the competition. See Figure B-31 for more information.

B.5.4 Clothing

Teams are allowed to use two-piece or single-piece driver suits complying with rulebook section B.5.4.3 and B.5.4.4. The clothing must be in overall good condition and show no signs of wear, no cuts chaffing or wear.

B.5.4.1 Gloves

Drivers shall wear gloves to protect their hands. Durable, abrasion resistant gloves are required.

B.5.4.2 Shoes

Drivers shall wear socks and shoes.

B.5.4.3 Upper Garments

Drivers shall wear a fire-resistant shirt or suit rated SFI 3.2, SFI 3.3, SFI 3.4, or FIA 8856-2000 in good condition. Any garment not allowed by the TEJ will be confiscated for the duration of the competition and may be retrieved by the team at the end of the competition.

B.5.4.4 Lower Garments

Drivers shall wear properly sized fire-resistant long pants having an SFI, FIA, NFPA 2112, or other fire-resistant rating.

B.5.4.5 Combustible Material

Jerseys, gloves, socks or other garments made from nylon or any other synthetic material which will melt or combust when exposed to open flame or extreme heat, are explicitly prohibited from use during competition.

ARTICLE B.6 FUEL SYSTEM (mBAJA only)

B.6.1 Function

All vehicles shall have a fuel system comprising of a fuel tank, fuel hose, fittings, drain line and drip pan. The fuel system shall function to safely contain and control fuel and to safely convey fuel to the engine carburettor. The entire engine is considered to be part of the fuel system.

B.6.2 Fuel

The only fuels permitted for BAJA SAEINDIA® competitions are grades of automotive gasoline consisting of hydrocarbon compounds. The fuel may contain antioxidants, metal deactivators, or corrosion inhibitors.

At the BAJA SAEINDIA® site, Bharat Petroleum's fuel supply is available, and hence outside fuel is restricted.

B.6.2.1 Specific Gravity

The specific gravity of the fuel may not exceed 0.80 for unleaded gasoline when measured at 15.5 deg. C (60 deg. F).

B.6.2.2 Prohibited Additives

The addition of nitrogen-bearing additives or additives designed to liberate oxygen is explicitly prohibited. Leaded gasoline is explicitly prohibited.

Caution: Lead alkyl compounds such as tetra-ethyl lead are explicitly prohibited.

B.6.3 Location

The entire fuel system, including carburettor, air cleaner cover, drip pan, and engine must be located within the envelope of the vehicle's roll cage. The envelope shall be tested using a straight edge in contact with any two points on the outside of the vehicle frame. The fuel tank must be mounted on the engine and any modification to the same is strictly prohibited.

B.6.4 Fuel Cap

A standard Honda gas cap with a built-in check valve is required. Engine is supplied with standard fuel cap having part number 17620-Z1T-801, only this fuel cap is allowed for the competition.

B.6.5 Fuel Tank

One fuel tank is permitted on the vehicle. Fuel tanks shall be unmodified and free from injurious defects. Application of stickers, paint, or other coatings shall be considered a modification. Removable tanks are explicitly prohibited.

Only permitted fuel tank is Honda part 17510-Z5T-000ZB.

B.6.5.1 Mounting

Fuel tank is integrated with the engine and no modification should be done to the mounting of fuel tank. There must be minimum 152 mm (6 in) clearance vertically above the fuel tank to ensure ease of refuelling. Refer to the Fig. B-2 and Fig. B-3.

B.6.6 Fuel Lines and Filters

Fuel line and fuel filters are integral part of the engine and any modification to the same is strictly prohibited. Part number of fuel filter is 16955-ZE1-010.

B.6.6.1 Fuel Sensors

The engine does not come with a fuel level gauge, but fuel level gauges and sensors are allowed as long as the fuel tank is not modified. Fuel level gauges and sensors are allowed such that the capacity of the fuel system is not increased.

B.6.7 Drip pan

B.6.7.1 Drip Pan Mounting

Drip pans must be mounted using sound engineering practices. A drip pan mounting comprised only of fastening to the fuel tank filler neck is insufficient and is not allowed. Drip pans must be graded or inclined such that all spilled fuel drains from the drip pan. Fuel must not pool anywhere in the pan. Drip pan must extend minimum 63.5 mm (2.5 in) vertically above the fuel cap top surface and inner surface of drip pan must be minimum 63.5 mm (2.5 in) radially away from the outer surface of fuel cap seen in top view.

B.6.7.2 Drip Pan Drain

Fuel must drain from the drip pan through a drain line composed of pipe or tubing that carries fuel to the bottom of the vehicle and releases it under the vehicle. Tubing shall be rated for fuel use and shall have appropriate fuel-rated markings. Fuel may not be released onto the belly pan, flotation, or any other part of the vehicle. The drain line shall be robust and be mechanically fastened to the drip pan with a threaded connection or a hose barb and hose clamp, or a combination of the two. Adhesive connections are specifically prohibited. All materials in the drip pan system shall be rated for fuel or fuel resistance. The nominal minimum inside diameter of the drain line is 12.7 mm (0.5 in) and the minimum inside diameter of fittings is 9.5 mm (0.375 in). The drain line connection to drip pan should be properly sealed to avoid any fuel leakage to engine.

B.6.7.3 Drain Line Material

Drain lines must be made of either fuel line material or other pipe or tubing which is not weakened or dissolved by fuel. The drain line connected to the drip pan must be sealed and robust. The cross-section of the pipe shall not reduce throughout the length when compressed.

- **Use of m-seal is strictly prohibited for drip pan.**

B.6.8 Fuel Tank Access Panels

Any panels or doors that must be removed or opened to provide access to the fuel tank must be easily openable or actuated by track workers wearing gloves. To provide line-of-sight for track safety workers, and observer directly behind the vehicle shall have an unobstructed view of the fuel tank and associated components.

ARTICLE B.7 VEHICLE CONTROLS

B.7.1 Brake System

The vehicle must have a primary hydraulically actuated friction braking system that acts on all wheels and operated by a single foot pedal. The pedal must directly actuate the master cylinder through a rigid link (i.e., cables are not allowed). The brake system must be capable of locking and sliding all wheels, both in a static condition as well as at-speed, regardless of surface conditions or drivetrain mode. The braking system shall have sufficient force to hold the vehicle while the engine is running in any powertrain configuration, used at competition.

The performance of the braking system shall be subject to test upon request of TEJ at any point during competition. Failure of this performance test will result in teams being required to return to their paddocks to make sufficient repairs before participating in further competition.

- **Teams are advised to go through additional inputs for brakes design put up as an annexure labelled "GENERAL RECOMMENDATIONS FOR BRAKES DESIGN"**

B.7.1.1 Brake Pedal

Brake pedals and associated components shall be constructed from steel or aluminium, and be designed to withstand a minimum brake pedal force of 204 kg (2000 N).

The brake pedal shall have sufficient room for travel during a partial hydraulic failure condition. For bias-bar and tandem brake systems, a single circuit failure can result in longer required pedal travel to actuate the braking system. The brake pedal shall be designed for unobstructed travel.

Teams shall be prepared to show documentation and calculations of the pedal travel in failure modes showing a clear understanding of how far the brake pistons will travel.

Unobstructed travel means that the driver can actuate the pedal in nominal and failure modes with a single motion. No obstructions are permitted that prevent the driver from applying their full force into the brake pedal.

- **For use of the brake pedal and accelerator pedal on the same side (right side), There must be a minimum of 40 mm clearance between both the pedals. It is recommended that the driver does not use the brake and acceleration pedal simultaneously.**

B.7.1.2 Independent Circuits

The braking system must be segregated into at least two (2) independent hydraulic circuits such that in case of a leak or failure at any point in one system, effective braking power shall be maintained on at least two wheels.

Teams are encouraged to construct each circuit to have its own physically separate fluid reservoir with a durable, resilient mounting. A dammed, single-reservoir serving two circuits is currently permitted.

B.7.1.3 Brake Location

The brake(s) on the driven axle must operate through the final drive. Inboard braking through universal joints is permitted. Braking on a jackshaft through an intermediate reduction stage is prohibited.

B.7.1.4 Cutting Brakes

Hand or feet operated “cutting brakes” are permitted provided the section B.7.1 is also satisfied. A primary brake system must be able to lock all four wheels with a single foot. If using two separate pedals to lock two (2) wheels apiece; the pedals must be close enough to use one foot to lock all four wheels. Any and all brakes, when actuated, shall cause the brake light to illuminate.

B.7.1.5 Brake Lines

All brake lines shall be securely mounted to the vehicle and not project below the vehicle frame or suspension components. Teams are recommended to use Bundy tube where there are no relative motion between the brake lines and vehicle components in the circuit routing, this is to minimize the volume expansions in tubes.

All brake lines shall be routed and oriented such that they are not pinched by steering or suspension parts, nor engaged with sharp edges. All brake lines shall have full range of motion caused by steering and suspension system. At no time shall the brake lines be loaded in tension or become engaged with the vehicle’s tires and wheels.

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

- ⚠ Usage of plastic tubes for brake lines is strictly prohibited.

B.7.2 Throttle System

The vehicle’s throttle system shall be capable of fully actuating the throttle arm to full throttle (100%) on the engine and return to idle (0% throttle) when released. The throttle shall remain in the as-inspected condition for the duration of the event. “Throttle-by-wire” or other electronic throttle controls are explicitly prohibited.

B.7.2.1 Pedal

Only mechanical, pedal (foot) operated throttle controls are allowed. The throttle pedal shall actuate a throttle cable.

Foot pedals shall be positioned in such a way to avoid entrapment of the driver's foot when in any position. Mechanical extensions such as thick pads or blocks may should not be attached to the pedal or to the driver's feet.

- **Accelerator Pedal should be actuated by right foot only.**

B.7.2.2 Pedal Stop

A mechanical, wide-open throttle stop must be provided. Body panels or other flexible materials for such pedal stops are explicitly prohibited. The pedal stop shall be accessible during engine check and will be set for not allowing the pedal to over-extend the engine throttle linkage system.

B.7.2.3 Throttle Cable

The throttle cable must be covered (sheathed or jacketed to prevent debris ingress and abrasion of the cable) from the front mounting point in the cockpit till the engine. Throttle cables may be of "bicycle style" construction where the cable operates only in tension (pull only).

Throttle cables may be of "aircraft style" construction where the cable is capable of tension and compression (push-pull) operation.

Severe bending of the throttle cable at the engine or near the throttle pedal causing binding or restricted function (between inner cable and outer sheath/jacket) are prohibited. Redirections more than 15 degrees from the cable jacket centreline are not recommended.

B.7.2.4 Fail Safe

All throttle controls shall be designed to return to the idle-stop in the event of a failure.

B.7.3 Other Control Systems

B.7.3.1 Compressed Gas Systems

Compressed gas systems are only permitted for vehicle control systems. For example, a compressed gas system may be used to change transmission states (i.e. shift gears). Compressed gas systems are explicitly prohibited from providing increased engine power, cooling, and/or vehicle propulsion. The TEJ reserves the right to mandate additional protections or safety features on any compressed gas system.

B.7.3.1.1 Gas Composition

Compressed gas systems shall operate only with non-flammable or non-oxidizing gases. Air, nitrogen, and carbon dioxide are examples of acceptable gases. Methane, propane, and oxygen are examples of unacceptable gases.

B.7.3.1.2 Gas Storage

Compressed gases shall be stored in containers meeting the following requirements.

1. Compressed gases shall be stored in cylinders (tanks) of propriety manufacture, designed and built for storage and operating pressures, certified by an accredited testing laboratory in the country of the cylinder's origin, and be labelled or stamped appropriately.
2. The compressed gas cylinder shall be located within the roll envelope and aft of the RRH, protected from rollover and collision damage.
3. The compressed gas cylinder shall be protected from damage from failed rotating equipment.
4. The compressed gas cylinder shall be securely mounted to the vehicle frame, engine, or transmission, and oriented such that the longitudinal axis of the cylinder is not is in line with the driver.
5. The compressed gas cylinder shall be insulated from excess heat such as the engine or exhaust.

B.7.3.1.3 Gas Service Equipment

All service equipment in the compressed gas system shall meet the following requirements.

1. Pressure Regulators shall be rated for compressed gas service and be mounted directly to the compressed gas cylinder.

2. Any and all fittings or connectors in the compressed gas system shall be rated for the pressures and temperatures experienced downstream of the pressure regulator.
3. Any and all hoses, tubing, or other conveyances in the compressed gas system shall be rated for the pressures and temperatures experienced downstream of the regulator.
4. Any and all gauges, indicators, or other instrumentation in the compressed gas system shall be rated for the pressures and temperatures experienced downstream of the regulator.

B.7.3.1.4 Compressed Gas Mechanisms

All compressed gas mechanisms, including cylinders, slides, actuators, or motors shall be rated for the pressures and temperatures experienced downstream of the regulator.

ARTICLE B.8 COCKPIT

B.8.1 Design Objective

The cockpit shall be designed to protect the driver and permit easy egress in case of an emergency.

B.8.2 Cockpit Egress

Any and all drivers must be able to egress (exit) on either side of the vehicle within five (5) seconds. Drivers tested for egress time shall begin with all safety gear and be fully seated and secured in the vehicle with their hands on the connected steering wheel.

Egress time is timed from the instant either hand of the driver is removed from the steering wheel to the instant the driver is clear of the vehicle.

The TEJs will select one or more drivers to perform the cockpit egress test. Drivers unable to demonstrate successful egress will have their driver status revoked. Each team is required to have a minimum of two designated drivers.

B.8.3 Firewall

All vehicles shall have a firewall separating the cockpit from the engine and fuel tank compartments. The firewall shall be constructed of metal, at least 1.0 mm (0.04 in.) thick. The firewall shall be mounted in the plane of the RRH and cover the area between the ALC and BLC. The firewall shall be mechanically fastened to the RRH.

Multiple metal panels may be used to form the firewall, provided there are no gaps between the joints. Select cutouts are allowed for control cables, brake lines, electrical cables, or 4WD/AWD components, provided the cutouts have proper grommets and sealing.

Large cutouts in the firewall are explicitly prohibited. Large cutouts include those for CVT ventilation, and other similar items. Air intakes may not penetrate the firewall and must remain within the roll envelope. Cutouts for drivetrain components are permitted.

⚠ Use metal fasteners only. Plastic screws/snap-fit plugs/Zip ties are not acceptable.

B.8.4 Front or Mid-Engine Vehicles

If the mounting points of the engine are completely forward of the RRH, the following requirements shall be met:

1. The engine and any part of the fuel system forward of the firewall shall be completely separated from the driver and cockpit. The engine enclosure shall be metal and meet the requirements of B.8.3 - Firewall
2. Engine enclosures must prevent fuel from spilling into the cockpit when the vehicle is in any orientation/running condition.
3. Any engine starting cords shall be extended and accessible without opening/adjusting engine enclosures. Starting pull cord direction shall face away from the driver.
4. All engine compartment venting shall be directed away from the cockpit.
5. The driver must be able to egress from both sides of the vehicle.
6. The engine enclosure shall have minimum clearance of 100 mm (4 in) to the exhaust components and meet requirements of B.2.7.14.1 - Muffler Clearance. The engine exhaust shall not exit in the direction of the driver and shall be shielded from contact by track workers and competition officials.

7. Placement and design of the engine and engine enclosure shall not impede access to the fire extinguisher.
8. A panel, 300 mm x 300 mm, shall be affixed to the vehicle in the plane of the RRH, on the right side of the driver's head, and above the shoulder level of the tallest driver. This panel shall be used to affix the Technical Inspection sticker and shall be easily viewed by track workers and competition officials.

B.8.5 Body Panels

The cockpit must be protected with body panels that completely cover the area between the LFS and the SIM. No gaps can exist that are larger than 6.35 mm (0.25 in) and will be checked with a 6.35 mm (0.25 in dowel rod). These panels must be made of puncture resistant material, including: plastic, fibreglass, or similar material. They must be designed to prevent debris and foreign object intrusion into the driver compartment. The panels must be mounted securely to the frame with quick-disconnect fasteners using sound engineering practices (cable ties or hook-and-loop fastening is not acceptable).

☑ **Quick disconnect fasteners on body panels are required to facilitate a faster and more thorough technical inspection process.**

Quick disconnect fasteners include quarter-turn quick disconnect fasteners (i.e. Dzus, Camloc, Southco) or snap/pushbutton fasteners and be actuated manually or with simple tools. Rivets are prohibited.

⚠ The use of plastic fasteners is strictly prohibited for quick disconnect applications.

B.8.6 Skid Plate

The cockpit must be fitted with a skid plate (belly pan) over the entire length of the cockpit, so that the driver cannot contact the ground and is protected from debris while seated normally. Skid plate material shall be metal, fibreglass, plastic, or similar material mechanically fastened to the vehicle. Skid plates shall be designed to prevent debris and foreign object intrusion into the driver compartment. Expanded metal, fabric, or perforated panels are not allowed. Skid plates extending aft of the firewall shall have features to prevent leaking fuel from entering the cockpit.

Skid Plates shall be constructed using one or both of the following materials:

- Steel, at least 1.5 mm thick, meeting or exceeding the strength of AISI 1010 steel.
- Aluminium, is at least 3.0 mm thick, meeting or exceeding the strength of 6061-T6 aluminium.
- Fibre/plastic or equivalent, at least 5 mm thick

☑ **The belly pan should withstand the load of the driver in all conditions**

B.8.7 Shielding for Legs and Feet

B.8.7.1 Linkages

All steering or suspension links exposed in the cockpit shall be shielded with a sturdy, robust, metal cover. The shielding shall be continuous and extend the full width of the cockpit (from the left body panel to the right body panel) and shall prevent the driver's legs and feet from coming in contact, becoming entangled, or struck by the steering or suspension components during operation or a failure. No gaps may exist that are larger than 6.35 mm (0.25 in).

☑ **Quick disconnect or easily accessible fasteners for cockpit steering & suspension covers are recommended, and facilitate a faster technical inspection process.**

B.8.7.2 Universal Joints

Universal joints in the steering system or 4WD/AWD system and near the driver's feet shall be shielded or sealed such that the driver may not become entangled in the joint.

⚠ Loose shoelaces can and have become entangled in universal joints and steering parts and will hinder driver egress from the cockpit.

B.8.8 Fire Extinguisher

All vehicles shall be equipped with a charged and functional fire extinguisher in the event of a fire on the vehicle, in the paddocks, or on the track. All team members shall be familiar with the use and operation of fire extinguishers.

B.8.8.1 Rating and Required Features

All fire extinguishers for use on the vehicle shall be 1KG ABC DRY POWDER. All fire extinguishers for use on the vehicle shall be equipped with a manufacturer installed dial pressure gauge. The dial pressure gauge shall be readily visible and indicate that the unit has been properly charged. Each fire extinguisher shall be labelled with school name and vehicle number.

B.8.8.2 Quantity

Each team shall have two or more fire extinguishers meeting the requirements above. One fire extinguisher shall be installed on the vehicle, and the remaining extinguishers shall serve as spares.

- **Both the fire extinguishers (one Spare and one fixed in the vehicle) must have the same size.**

B.8.8.3 Required Bracket

The only permitted fire extinguisher mounting brackets are:

- Drake-FIREX-MNT-DOR
- Drake-FIREX-MNT-S-DOR
- Drake FIREX-MNT-DAG
- Drake FIREX-MNT-S-DAG

- **It is recommended teams keep a spare mounting bracket available.**

B.8.8.4 Mounting

The fire extinguisher mounting bracket shall be mounted in the plane of the vehicle's RRH. The fire extinguisher mounting bracket shall be affixed to the RRH via steel tabs meeting the requirements of B.12.2 - Required Attachment Tabs.

Mounting hardware shall be flat socket head cap screws with a countersink angle and head diameter matching the required Drake bracket. Hardware used to secure the bracket to the vehicle frame shall meet all requirements of Article 12, Fasteners.

The fire extinguisher shall be affixed to the mount via hose clamps such that the nozzle is pointed into the firewall or laterally away from the driver. The hose clamp adjusters shall be installed as not to interfere with the operation of the pull-knob on the Drake bracket. The hose clamp adjusters and protruding material shall be installed as not to snag on the clothing of a driver during vehicle egress. Hose clamps shall not be oriented in the manner described by Figure B-51. An example of incorrect clamp routing is shown in Figure B-52.

Figure B-51: Incorrect orientation of extinguisher clamps.

Figure B-52: Incorrect routing of hose clamps.

B.8.8.5 Location and Clearance

The fire extinguisher shall be positioned on the right side of the driver, within the cockpit such that the fire extinguisher is completely below the driver's eye-level, and the top half of the fire extinguisher is above the SIM. The fire extinguisher shall be easily accessible by track workers.

The pull knob of the required bracket shall be easily actuated. To facilitate this, a minimum radial clearance around the pull knob of 64 mm (2.5 in.) is required. It is understood that the area aft of the pull knob will be less than 64 mm (2.5 in.) due to the design of the bracket. See figure for further clarification.

- **Radial clearance is the unoccupied space between the edge of the pull knob and the nearest obstruction.**
- The measurement should not made from the centre of the pull knob. Refer figure B-35.

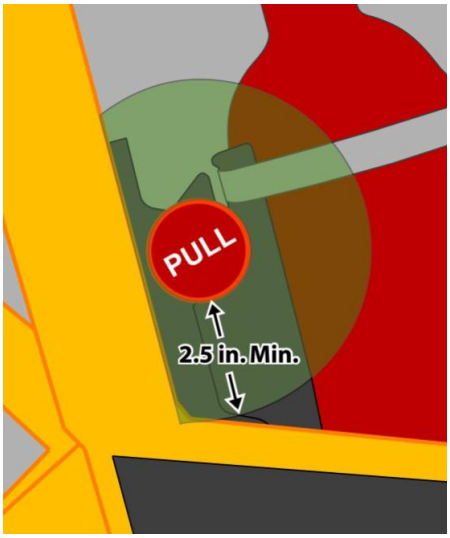

Figure B-53: Fire Extinguisher, Diagram of Clearance around Pull Knob (green)

ARTICLE B.9 POWERTRAIN GUARDS

B.9.1 Powertrain Guard Function

All powertrain components shall be guarded and shielded to prevent injury to the driver, track workers, or bystanders.

Powertrain guards shall perform one or more of the following functions: protect against hazardous release of energy, provide pinch point and entanglement protection, or protect against release of lubricating oil from gearboxes.

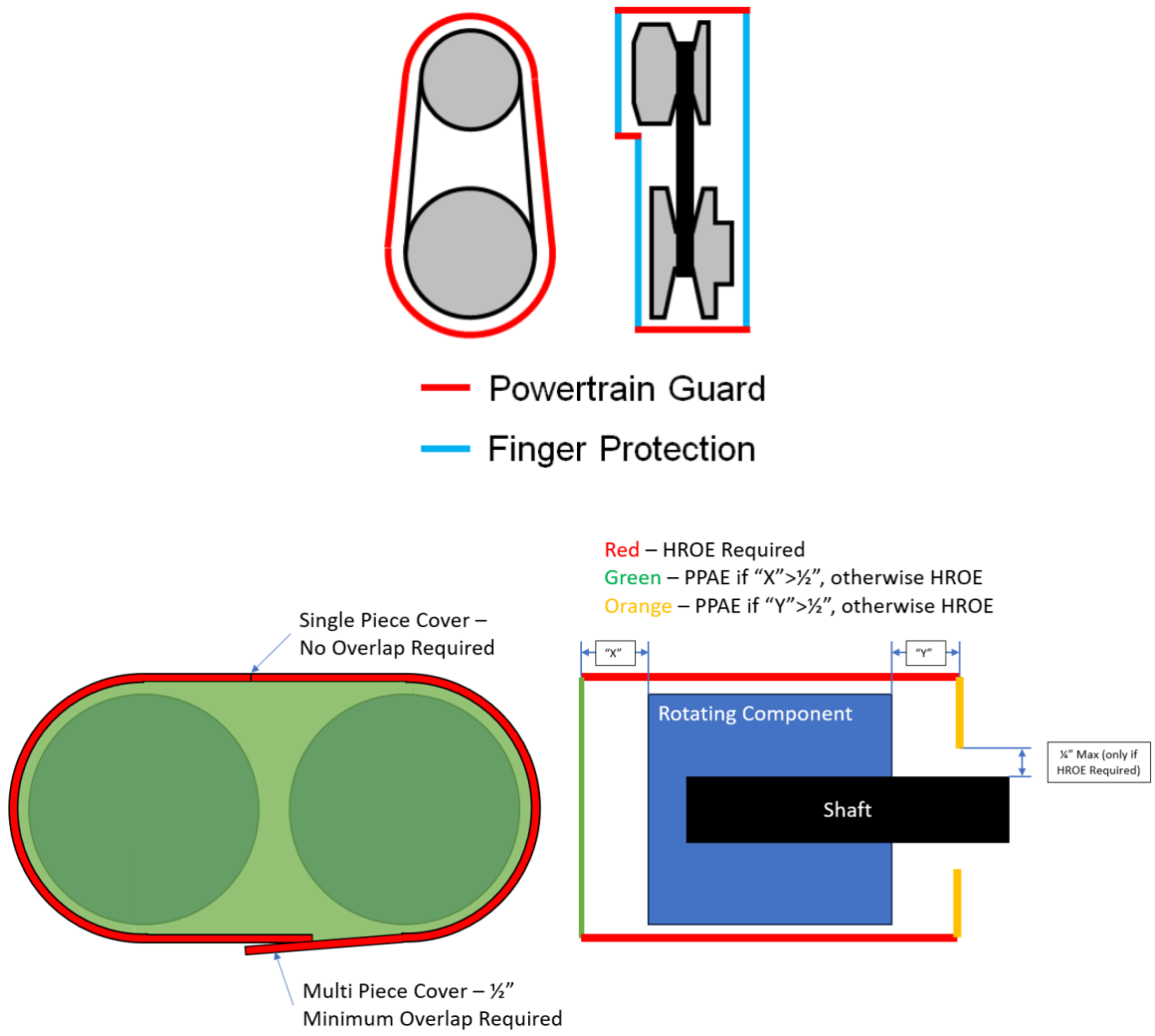

Figure B-54: Powertrain Guard Extent example on a CVT

B.9.2 Hazardous Release of Energy (HROE)

Powertrain guards shall safely dissipate a sudden, hazardous release of energy from powertrain components in the radial and tangential directions. HROE guards shall be durable and mounted with sound engineering practices. HROE guards shall extend around the entire periphery of the guarded components.

B.9.2.1 HROE Guard Materials

All HROE guards shall be constructed of one or both of the following required materials:

- Steel, at least 1.6 mm (0.063 in.) thick, meeting or exceeding the strength of AISI 1010 steel.
- Aluminium, at least 3.0 mm (0.12 in.) thick, meeting or exceeding the strength of 6061-T6 aluminium.

B.9.2.2 HROE Guard Features

B.9.2.2.1 Belt, Gear, and Chain Drives

HROE guards shall be a continuous metal band extending around the entire periphery of the drive assembly. The width of the continuous metal band shall be wider than the entire width of the rotating component by a minimum of 13 mm (0.5 in) on each side. If the band does not extend the required amount past the component on one or more sides, the side(s) shall have HROE compliant guarding perpendicular to the axis of rotation, extending from the outer band to the shaft. A 6 mm (0.25 in) gap between guarding and shaft is permitted. Multi-part covers must have at least 0.5 inch (12 mm) of overlap at joints along the periphery.

HROE guards may contain ventilation ports along the path of the guard. Ventilation ports shall be constructed from the same material as the guard, be arranged in such a manner that no radial or tangential path exists for

flying debris to exit the ventilation port. The ventilation port shall also be constructed to not allow a searching finger to contact the rotating components when the ventilation tube is removed.

B.9.2.2.2 Driveshafts

Driveshafts, also known as prop shafts, rotate at speeds faster than the drive axles and typically distribute power to front and rear differentials. A driveshaft consists of a structural tube between two flexible, power transmitting joints (universal joints, CV joints, or similar). A driveshaft may have longitudinal slip mechanism to compensate for length changes.

All drive shafts should be provided with two drive shaft hoops, within 51 mm (2.0 in.) of the 1/3 length point and the 2/3 length point. Hoops should have no more than 25.4 mm (1.0 in) clearance to the driveshaft. The driveshaft hoops shall be a minimum of 25.4 mm (1.0 in.) wide and shall be mounted by welding or threaded fasteners. Hoop mounting must rigidly connect the hoop to the frame via material meeting or exceeding HROE requirements.

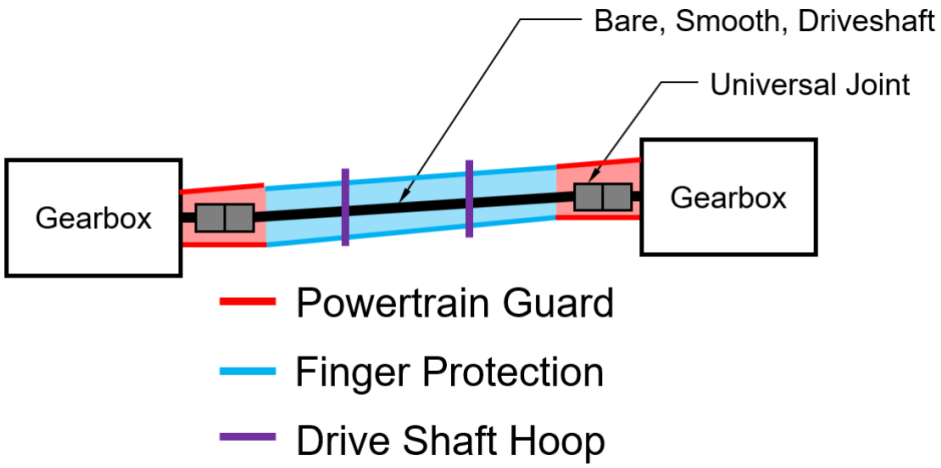

Figure B-55: Driveshaft Guarding

B.9.2.2.3 Hydraulic Systems

Hydraulic systems shall protect against hazardous release of energy. Hydraulic hoses shall have jacketing that meets ISO 3457. Hydraulic relief valves shall safely vent to the tank and away from people.

Any hydraulic hoses running through the cockpit to the front axle shall be protected from damage by a driver entering or exiting the vehicle. Protection shall be made by a sturdy, robust cover. Note that hydraulic systems shall meet the requirements of B.2.6.1 - Hydraulic.

B.9.2.2.4 Axleshafts

Axle shafts and associated CV or universal joints connecting the front wheels/uprights to the front differential do not require specific guarding, but shall be separated from the driver and cockpit by methods meeting requirements of B.8.5 - Panels and B.8.6 - Skid Plate.

All other universal joints, CV joints, or similar shall be protected with HROE guarding of 25.4 mm (1.0 in.) axially (beyond the extent of the joint).

B.9.3 Pinch Points and Entanglement (PPAE)

Pinch point and entanglement guarding shall prevent clothing and/or searching fingers from contacting or becoming injured due to rotating parts. PPAE guarding shall be resilient and be mounted with sound engineering practices.

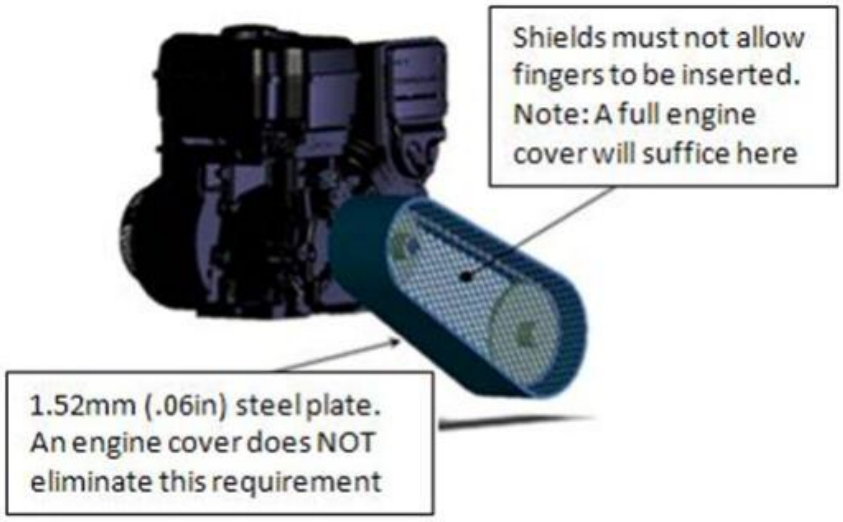

Figure B-56: Powertrain Guard Example

B.9.3.1 PPAE Guard Materials

PPAE guarding shall be constructed from rigid, resilient materials. Fabric or other similar materials are explicitly prohibited. The guarding for pinch points shall be constructed of metal greater than 1 mm thick.

B.9.3.2 PPAE Guard Features

PPAE guarding for belt, gear, and chain drives shall cover all directions that HROE guard does not protect. PPAE guarding may contain holes or slots for ventilation.

Fastening methods may consist of threaded fasteners or quick release latches. Temporary fastening methods such as hook-and-loop fasteners, adhesives, or ratcheting tie-downs are explicitly prohibited.

B.9.3.2.1 Belt, Gear, and Chain Drives

Belt, gear, and chain drives shall have PPAE guarding.

B.9.3.2.2 Driveshafts

All driveshafts shall have PPAE guarding. Drive shafts (prop shafts) connecting to rigid (solid) axles are exempt from PPAE requirements.

B.9.3.2.3 Axle shafts

Axle shafts and associated CV or universal joints aft of the firewall directly connecting the rear wheels/uprights to the rear differential, hub, rotors and bare section of shafts are exempt from the requirements of this article. Portal hubs/uprights are permitted.

Axle shafts and associated CV or universal joints forward of the firewall directly connecting the front wheels/uprights to the front differential do not require specific guarding, but shall meet the requirements of B.8.5 - B.8.6 - Body Panels.

- **All guards, whether Chain-drive or CVT, must maintain a clearance of at least 15mm from any nearby roll cage member or suspension component. This is also applicable to the Front differential & steering components in the front side of the cockpit.**

B.9.4 Drivetrain Breather / Vent System

Gearboxes and transmissions using lubricants such as gear oil, automatic transmission fluid, or similar mineral oils shall be equipped with a vent system that shall minimize loss of fluid by way of a rollover and by thermal expansion. This shall be accomplished either with a closed system expansion chamber or an air trap vent system. Portal hubs are exempt from the requirements of this rule.

If a closed system with an expansion chamber is used, the expansion chamber shall be properly sized to match the fluid volume and temperature changes of the system being vented. If an air trap vent system is used it should create a sufficiently large air trap, and shall meet the following requirements:

Left –to-right or right-to-left hose routing must extend past the sides of the device being vented. There is no requirement for longitudinal horizontal routing.

Vertical hose routing must extend higher than the top of the device being vented and shall terminate below the device being vented.

Horizontal hose routing must be sloped for fluid lines to drain.

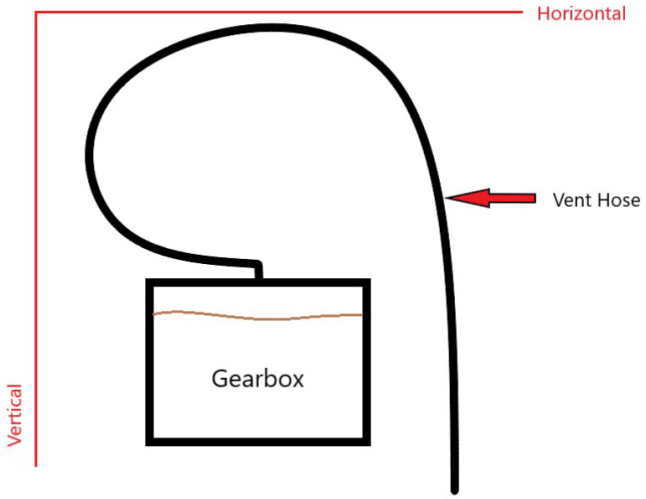

Figure B-57: Air Trap Vent Line Routing (Horizontal = Left to Right)

Differentials are classified as a gearbox and shall be vented by the same means unless the gearbox in question is separated from the engine by way of the firewall.

Expansion chambers and connecting hoses or tubes shall be made of a material suitable for oil used in the gearbox or transmission. At all times, all the vent lines shall maintain a clearance of at least 100 mm (3.94 in.) from the exhaust.

All components of the vent system shall be within the rollcage of the vehicle.

For remote mounted expansion chambers, the chamber should not be mounted above the engine.

B.9.5 OEM Guards, Unmodified

Unmodified OEM powertrain guards are acceptable. Any OEM, factory stock guards that are not modified are exempt from the requirements in rule B.9.1 – Powertrain Guard. All powertrain components shall be guarded and shielded to prevent injury to the driver, track workers, or bystanders.

Powertrain guards shall perform one or more of the following functions: protect against hazardous release of energy, provide pinch point and entanglement protection, or protect against release of lubricating oil from gearboxes.

Hazardous Release of Energy. OEM covers must still meet the requirements of B.9.3 - Pinch Points and Entanglement.

ARTICLE B.10 ELECTRICAL SYSTEM

A minimum electrical system comprising of at least two engine kill switches, a brake light, brake switch, battery, and associated wiring is required. The vehicle electrical system shall be designed and constructed in accordance with good engineering and electrical practices. Brake lights, reverse lights and alarms shall operate regardless of kill switch setting. Brake lights, reverse lights and alarms shall be powered and functional at all times. Cut-off switches capable of interrupting power to the brake light, reverse light, or reverse alarm circuits are strictly prohibited.

B.10.1 Power Sources (mBAJA only)

B.10.1.1 Batteries (Auxiliary Battery)

Any electronic part or items on the vehicle can be battery powered, without the loss of power in running the alternator. Any battery used for safety appliances (brake light, reverse light, reverse alarm) shall have sufficient electrical capacity to last the entire length of the Endurance event.

B.10.1.1.1 Mounting

All batteries shall be mounted with sound engineering practices and not become loose during normal operation, a collision, or rollover. Battery terminals shall be insulated and protected against an electrical short circuit.

B.10.1.1.2 Sealing

All batteries must be factory sealed and maintenance free. Batteries shall be incapable of being opened or serviced and do not leak in the event of a collision or rollover.

B.10.1.2 Solar Panels

Solar panels are permitted to recharge on-board batteries.

B.10.2 Wiring and Connectors (mBAJA only)

B.10.2.1 Wire Routing

All vehicle wiring and connectors shall be cleanly and neatly installed. Wiring shall be routed away from sources of excessive heat, abrasion, chafing, and possible short circuit. Wiring shall be installed and routed such that it does not become a hazard to cockpit egress.

B.10.2.2 Wire Termination

Wires shall be properly terminated with appropriate terminals and fittings for all connections. Bare wire connections are not permitted. (i.e. bare wire under a screw terminal, wire nuts, etc)

B.10.2.3 Connectors

Cable and wiring terminations shall have features to protect against reverse polarity connection.

B.10.3 Engine Kill Switches

Engine kill switches shall be employed to ground the ignition circuit and shut down the engine. Cut-off or disabling switches or devices preventing the immediate function of the engine kill switches are strictly prohibited.

B.10.3.1 Quantity

Each vehicle shall be equipped with a minimum of two (2) engine kill switches.

- ☑ **All the Kill Switches must be PUSH TO KILL type.**

B.10.3.2 Required Switch (mBAJA only)

The vehicle shall be equipped with one or more of the following required switches:

- Polaris Part 4015321 or 4019114
- Ski-Doo Part 01-171 (http://www.mfgsupply.com/01-171.html)
- WPS 27-0152 (http://www.parkeryamaha.com/skidoostopswitch.aspx)
- WPS 27-0154(http://www.parkeryamaha.com/skidoostopswitch.aspx)

The switches listed above shall only be used as engine kill switches. Old kill switches are permitted, provided they are purchased within the last three years before the end of the competition

For eBAJA kill switches specification refer to article C.2.2.3

B.10.3.3 Location

B.10.3.3.1 Cockpit Switch

A minimum of one cockpit kill switch is required as defined by this rule. Additional cockpit kill switches are permitted provided the switch meets rule B.10.3.2 - Required Switch.

The cockpit kill switch shall be mounted on the left side of the driver, along the SIM, within reach of a driver that is properly secured in the vehicle. No other push button switches may be mounted along the Left SIM. Cockpit kill switch mounting should be such that accidental contact of driver is avoided.

The switch must not be placed close to the driver's elbow and knee. The switch must be positioned ahead of the driver's torso. Teams should ensure that the kill switch mount does not hinder cockpit egress. Proper knee and elbow clearances are to be maintained.

B.10.3.3.2 External Switch

One of the required kill switches shall be located within easy access for track workers on the right side of the vehicle, aft of the plane of the RRH, and forward of the right FABUP. The external kill switch should be generally perpendicular to the firewall (±15 deg), and the axis of the switch action should be generally horizontal (±15 deg), below named point BR, no further than 180 mm (7.0 inches), dimension "Z" as shown in Figure B-58. It should be mounted on a tab connected directly to the RRH. The external kill switch shall not be recessed more than 51 mm (2.0 inches) from the outside edge of the RRH tube.

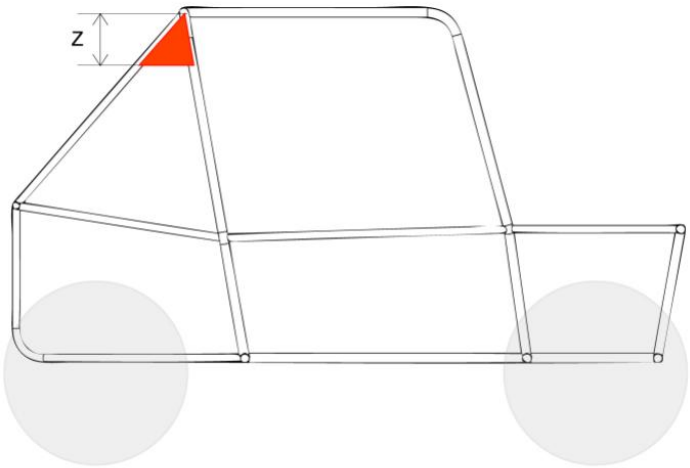

Figure B-58: Engine Kill Switch Mounting Position

B.10.3.4 Mounting

All engine kill switches shall be rigidly mounted to the vehicle frame with unobstructed access to the switch. All engine kill switches shall be free and clear of sharp edges or other hazardous conditions to track workers or the driver. All switches shall be mechanically fastened to the frame. Usage of adhesives is explicitly prohibited. If threaded fasteners are used to mount an engine kill switch, they shall meet the requirements of Article 12 - Fasteners. Any type of guard, cover, or obstruction to prevent accidental contact is explicitly prohibited within 3" of the kill switches.

Rivets and other robust, captive methods are acceptable fasteners for fastening kill switches to the mounting tab. Technical inspectors will evaluate each of these designs individually.

Both the kill switches shall be located within the roll cage envelope and protected from rollover and collision damage.

B.10.4 Signalling

Each vehicle shall be equipped with Signalling devices. Cut-off or disabling switches or devices preventing the immediate function of the required Signalling devices are strictly prohibited.

B.10.4.1 Brake Light

All vehicles are required to have a functional brake light to signal to other drivers the vehicle is stopping or slowing down.

B.10.4.1.1 Required Brake Light

All brake lights must have a homologation marking engraved directly on the lens or housing of the lamp. Stickers or any form of pasted markings are strictly not permitted. To verify compliance, teams must present an original bill or invoice for the brake light at the event site. Brake lights with DOT SAE markings are acceptable. Additionally, lamps with E4 and E9 homologation codes, which are commonly available in India, are also permitted. In addition to Indian OEM brake lights and those with valid DOT SAE ratings, following brake light models are approved for use;

- Polaris Part # 2411450
- Polaris Part # 2411099
- Polaris Part # 2411092-432
- Haul-Master – Part # 93263
- Command Electronics Part # 003-6018R
- Command Electronics Part # 003-6016

Modification of the brake light from its original OEM design is strictly prohibited. The brake light must be configured to illuminate fully when the brakes are applied and to turn off completely when the brakes are released. It must emit a RED light, and remain clearly visible from a distance of at least 20 meters in daytime, under any weather condition. The wattage of the bulb used in the brake light must be in accordance with the AIS (Automotive Industry Standards) specifications.

B.10.4.1.2 Location and Orientation

The vehicle brake light shall have a resilient and durable mount and be positioned within 102 mm (4.0 in.) to 203 mm (8.0 in.) vertically below from the top surface of BLC and should be within the plane of roll cage.

The vehicle brake light shall be oriented to be visible to trailing vehicles and shine parallel to the ground or at a slightly downward angle. Brake lights mounted to face upward direction are not permitted. The brake light must be visible at least 45-degree angle from the left and right of centre of the vehicle, for a total field of view of at least 90 degrees.

⚠ The path between the brake light and the trailing vehicle must always remain unobstructed. The use of transparent materials in this pathway is strictly prohibited.

B.10.4.1.3 Brake Light Switch

The brake light shall be activated only by a hydraulic pressure switch installed in the brake hydraulic lines. Each independent hydraulic brake circuit must be equipped with a hydraulic pressure switch. Cutting brakes are required to activate the brake light by way of a hydraulic pressure switch.

⚠ Mechanical switches, push or pull, are explicitly prohibited.

B.10.4.2 Reverse Light

Vehicles with a reverse gear shall be equipped with a reverse light. The reverse light shall illuminate when the vehicle is shifted to reverse gear and is extinguished when the vehicle is shifted out of reverse gear. The wattage of Reverse light bulbs should be as per AIS standard.

B.10.4.2.1 Specification

Reverse lights shall be 'White' in colour, marked with an SAE "R" on the lens of the reverse light and be of LED design, equal to or exceeding the SAE standard J759. Indian OEM Reverse lights are also permitted along with the SAE Rated Reverse Light.

Reverse light must have homologation marking engraved on the lens/housing part of the lamp. (Not allowed with stickers pasted). An original bill copy would be needed for verification at the event site. In the case of SAE DOT ratings, DOT SAE J759 R markings are also acceptable. The most common lamps available in India with E4 and E9 marking are acceptable.

⚠ LED strips for reverse light are strictly prohibited.

B.10.4.2.2 Location and Orientation

The reverse light shall have a resilient and durable mount and be positioned within 102 mm (4.0 in.) to 305 mm (12.0 in.) vertically below from the top surface of BLC and should be within the plane of the roll cage. The reverse light shall be oriented to be visible to trailing vehicles and shine generally parallel to the ground.

⚠ The path between the reverse light and the trailing vehicle must always remain unobstructed. The use of transparent materials in this pathway is strictly prohibited.

B.10.4.3 Reverse Alarm

Vehicles with a reverse gear shall be equipped with an audible reverse alarm. The reverse alarm shall sound when the vehicle is shifted to reverse gear and silenced when the vehicle is shifted out of reverse gear.

B.10.4.3.1 Specification

Required reverse alarms shall be rated to meet the SAE standard J1741 or J994. Indian OEM reverse alarms are also permitted along with the SAE Rated Reverse alarm. Reverse alarm compliant and approved as per AIS are also permitted.

B.10.4.3.2 Location

Required reverse alarms shall be mounted to the vehicle frame aft of the plane of the RRH.

B.10.5 Instrumentation

Vehicles may be equipped with instrumentation to provide operational or performance information to the driver. All vehicle instrumentation must be included in the cost report.

B.10.6 Data Acquisition

Vehicles may be equipped with data acquisition (data logging) systems. Data acquisition systems providing feedback to the driver must be included in the cost report. Data acquisition systems not providing data to the driver may be excluded from the cost report.

B.10.7 Communication Systems

Teams are permitted to use radio-frequency (RF) communications systems. Any team using RF systems shall comply with federal, state, and local regulations based on the location of the event. At no point a team's RF systems is capable to cause harmful interference to the voice or data systems in service of competition officials or emergency responders.

B.10.7.1 Voice

Vehicles are permitted to use RF voice communications systems. RF Voice communication systems and equipment may be excluded from the cost report.

B.10.7.2 Data

Vehicles are permitted to use RF data communications systems. All RF data communications systems and associated hardware shall be included in the cost report.

ARTICLE B.11 TOW POINTS

B.11.1 General Requirements

Each vehicle must have towing hitch points at the front and rear, along its longitudinal centreline. These hitch points are used both for dynamic events and for vehicle recovery. Tow points must be attached to the vehicle frame and must allow for transmission of both longitudinal and lateral towing loads. Towing loads will be imparted to the tow point by way of hook or clevis. Tow points shall have sufficient strength to serve as a vertical lift point for the vehicle.

B.11.2 Front Tow Point

Front tow points shall be constructed of tubular steel, not to exceed 31.75 mm (1.25 in.) and not less than 25.4 mm (1.0 in.) in diameter. Tubing thickness shall not be less than 0.89 mm (0.035 in.).

Front tow points shall be mounted no higher than the vehicle's SIM and not below the vehicle's LFS.

The front tow point shall be able to freely pass a gauge measuring 50.8 mm tall, 50.8 mm deep, and 203.2 mm wide (2.0 in. x 2.0 in. x 8.0 in.) behind the front tow point tube. See Figure B-59 for further information.

Front numbers may not interfere with the tow point.

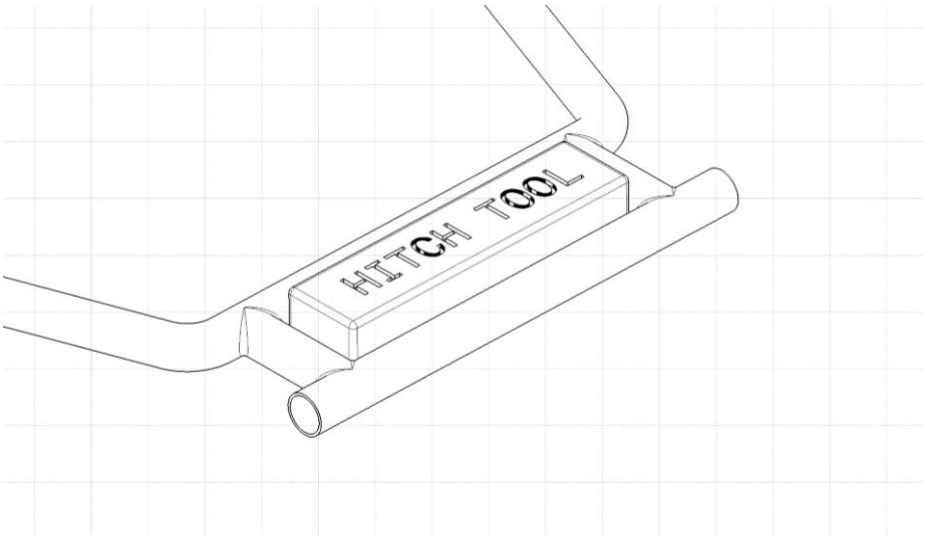

Figure B-59: Tow Point, Inspection Tool Fitment

B.11.3 Rear Tow Point

Rear tow points shall be constructed from steel and meet the following dimensional requirements. No lightening features or cutouts other than the hole are permitted. See Figure B-61 for further information.

Dimension	Symbol	Minimum	Maximum
Tab Thickness	None	6 mm (0.236 in)	9.5mm (0.375 in.)
Hole Diameter	D	25.4 mm (1.0 in.)	31.75 mm (1.25 in.)
Hole-to-Tube Offset	X	19.0 mm (0.75 in.)	25.4 mm (1.0 in.)
Edge distance	R	15.9 mm (0.625 in.)	25.4 mm (1.0 in.)
Width at Frame Connection	Y	76.2 mm (3.0 in.)	Unrestricted
Material	None	Steel 1018	

Figure B-60: Tow Point, Table of Tow Point Dimensions

Material for Tow-Hitch plate is strictly restricted to steel. Use of Aluminium is prohibited.

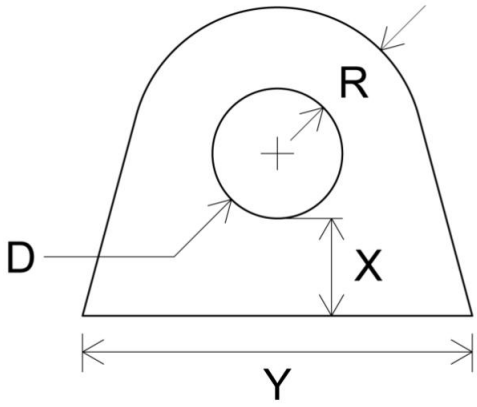

Figure B-61: Tow Point, Rear Tab Dimensions

B.11.3.1 Fixed Rear Tow Point

Rear tow point should be directly welded to the roll cage tube. Fixed rear tow point shall be fully welded to the vehicle frame along the base line, dimension Y. The tab may be vertically or horizontally oriented.

B.11.3.2 Swivel Rear Tow Point

Swivel Rear Tow Point are not allowed.

ARTICLE B.12 FASTENERS AND ATTACHMENTS

B.12.1 Fasteners

Fasteners in the following vehicle systems shall meet the requirements of this article.

- Driver Harness
- Fuel System
- Fire Extinguisher
- Engine Kill Switches
- Steering, Suspension, and Brake System
- Battery and Powertrain mounts
- Transponder

B.12.1.1 Captive Fasteners

Fasteners shall be made captive by the use of the following:

- Nylon Locknuts
- Cotter Pins
- Safety Wire (for blind hole applications)

⚠ Welding of nylon lock nuts and/or lock washers is strictly prohibited. Usage of thread sealants is not permitted.

B.12.1.2 Thread Projection

To provide for proper thread engagement in the lock nut, threaded fasteners shall have at least two (2) threads projecting beyond the end of the nut.

B.12.1.3 Grade

Threaded fasteners shall meet or exceed one or more of the following strength grades:

- SAE Grade 5
- Metric Grade 8.8
- AN/MS specifications

Figure B-62 below depicts bolt markings.

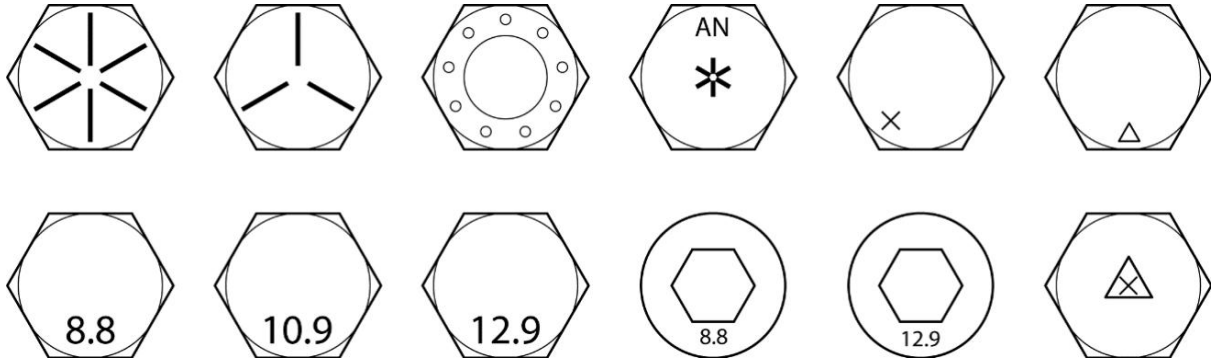

Figure B-62: Fasteners, acceptable markings

B.12.1.4 Proof of Grade

For fasteners without markings as described above, proper documentation shall be supplied which requires a purchase receipt and manufacturer's specification (including markings) indicating the fastener strength exceeds or is equivalent to the requirements of B.12.1.3 - Grade.

Teams using fasteners with readily visible grade markings will reduce their time in technical inspection.

B.12.1.5 Unmarked or Custom Fasteners

Any threaded fastener (threaded rod, eye bolts, titanium bolts, etc.) that is unmarked, or does not have any markings as listed, must be documented by one or both of the following:

- A purchase receipt and manufacturer's documentation indicating the fastener meets or exceeds Grade 5 standards for that size.
- Equivalency calculations with a purchase receipt or test data showing that the fastener exceeds the strength for a Grade 5 fastener of the same size.

B.12.1.6 Modified Fasteners

Fasteners which have been modified in any way other than: drilling for safety wire or shortening of the shank (threads) shall be proven to the TEJ to meet the requirements of this article.

B.12.2 Required Attachment Tabs

Tabs for attaching components in B.4.2 - Driver Harness, B.8.8 - Fire Extinguisher, and B.4.5 - Seats shall meet the requirements of this section.

B.12.2.1 Dimensions

Threaded fasteners used with required tabs shall match the nominal diameter of the mounting holes in the mounting bracket. For example, if a lap belt mounting tab is drilled for a 13 mm (0.5 in.) hole, the fastener and the frame lap belt tab shall be 13 mm (0.5 in.) in diameter.

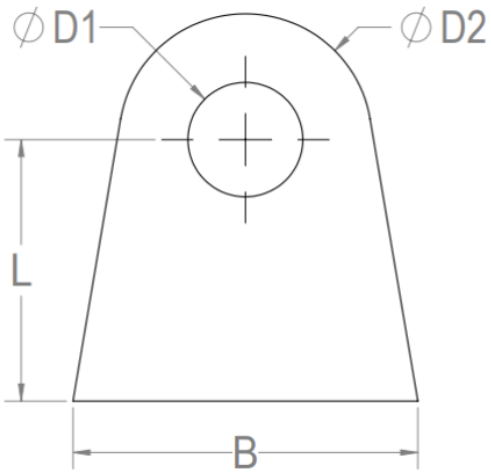

Figure B-63: Required Tab Drawing

Application	Nominal Bolt Size	Edge Diameter	Base Width	Length	Thickness	Arrangement	Weld
	D1, min.	**D2, min.**	**B, min.**	**L, max.**	**t, min.**		
Lap Belt	Check bracket	2.2 * D1	3 * D1	50 mm	2.3 mm	Double Shear	One Side
Anti Sub. Belt	Check bracket	2.2 * D1	3 * D1	50 mm	2.3 mm	Double Shear	One Side
Fire Extinguisher	Check bracket	2.2 * D1	3 * D1	76 mm	3 mm	Single Shear	Both Sides
Seat	M6	2.2 * D1	3 * D1	50 mm	3 mm	Single Shear	Both Sides

Figure B-64: Tab Requirements

B.12.2.2 Construction

Tabs shall be constructed such that they do not visibly deform when loaded. Tabs shall be welded completely along the base line. Welding on one or both sides of the tab is indicated by Figure B-64: Tab Requirements. The base line may be contoured to fit the surface the tab, to which it is welded. Tab length will be evaluated as the distance between the mid-point of the base line and the hole centre. No cutouts or other weight saving features may be applied to the required tabs.

ARTICLE B.13 VEHICLE IDENTIFICATION AND MARKINGS

B.13.1 Vehicle Number Assignment

Vehicle numbers shall be assigned as part of the final list of registered teams after the closure of the registrations. Assigned numbers shall be released on BAJA SAEINDIA Forum.

B.13.2 Transponders

For all BAJA SAEINDIA® competitions, a transponder system is used for timing and scoring. All teams participating in the BAJA SAEINDIA® competition are required to have two transponders mounted on their vehicle throughout the event. Vehicles must carry two functional, properly mounted, and fully charged transponders of the specified type. Vehicles without specified transponders will not be allowed to compete in any event for which a transponder is used for timing.

Teams must register and mount two transponders on their vehicles so that in case of failure of one transponder data recorded by the other(functional) transponder can be used. The two transponders should be separated by a minimum distance of 300 mm between them. Teams must ensure that the path between the transponder (or transponders) and the ground is unobstructed.

Teams are allowed to use two same/different models of transponders provided they meet clause B.13.2.1. It is the team's responsibility to get an active transponder subscription and charge the transponders adequately for them to last the entire duration of the Endurance event (for 4 hours).

B.13.2.1 Required Transponder

All vehicles must be equipped with at least two MYLAPS rechargeable transponders. The only acceptable transponder types are:

- Classic MX
- Flex MX
- X2 MX
- TR2 MX

Subscriptions for Flex MX or X2 MX transponders must be up-to-date and all Flex MX and X2 MX transponders must have been activated prior to Transponder Check at Technical Inspection. The timing system is capable of recording two transponder identifications per vehicle.

Refer to the table or visit http://www.mylaps.com for more information.

	Allowed Transponders				
Transponder Name	MX Classic	MX Flex	X2 MX Rechargeable	X2 MX Direct Power	TR2 MX
Picture					
Price Model	One Time Purchase	1, 2 or 5 Year Subscription	1, 2 or 5 Year Subscription	1, 2 or 5 Year Subscription	1, 2 or 5 Year Subscription
Sales Availability	No Longer Available	No Longer Available	No Longer Available	Currently Available	Currently Available
Renewal Availability	-- NA --	1, 2 or 5 Year	1, 2 or 5 Year	1, 2 or 5 Year	1, 2 or 5 Year
MyLaps' End of Support	1-6-2017	1-6-2017	12-1-2021	Ongoing	Ongoing
MyLaps' End of Service	1-6-2019	1-6-2019	12-1-2023	Ongoing	Ongoing
Insurance Included	No	Yes, With Subscription	Yes, With Subscription	Yes, With Subscription	Yes, With Subscription
Warranty Included	3-year Limited Warranty	Unlimited warranty	Unlimited warranty	Unlimited warranty	Unlimited warranty
Mounting Type	Classic Quick Release Clip	Classic Quick Release Clip	X2 Quick Release Clip	Direct Mount + Cable Harness	TR2 Quick Release Clip
Power Source / Time on Battery	Rechargeable / 4 Days	Rechargeable / 5 Days	Rechargeable / 5 Days	Direct Power (12V) With Built in Battery Backup	Rechargeable / 5 Days
Time Needed to Charge	16 Hours	16 Hours	4 Hours	-- NA --	5 Hours
Charger Type	Black 12V Cradle	White 5V USB Cradle	5V USB X2 RaceKey	-- NA --	5V USB TR2 Cradle

Figure B-65: Table of transponder information

B.13.2.2 Purchase

All teams are responsible for purchasing their transponder(s) directly through MyLaps. http://www.mylaps.com

B.13.2.3 Mounting

All vehicle transponders shall be mounted in the proper location, correctly oriented, and using sufficient fastening methods.

B.13.2.3.1 Orientation

The transponder shall be installed vertical to the frame in the orientation shown in figure B-66. The transponder shall also be oriented in such a way that the number can be read "right-side up. Additionally, transponders must be installed such that their beam is oriented perpendicular to the direction of vehicle movement.

Figure B-66: Transponder Orientation

B.13.2.3.2 Location

The transponder shall be mounted on the right side of the vehicle, forward of the seat, in the area marked YELLOW (refer Figure B-67) and preferably within the lower horizontal plane of the front suspension marked in GREEN (refer Figure B-67). The transponder shall be no more than 61 cm (24 in) above ground level.

The transponder shall have an open, unobstructed path between the antenna on the bottom of the transponder and the ground.

- ⚠ Please note that metal and carbon fibre may interrupt the transponder signal.
- ☑ **The transponder signal will normally transmit through fibreglass and plastic. However, team is fully responsible for transmission of signal (or loss of signal) from transponder to timing equipment.**

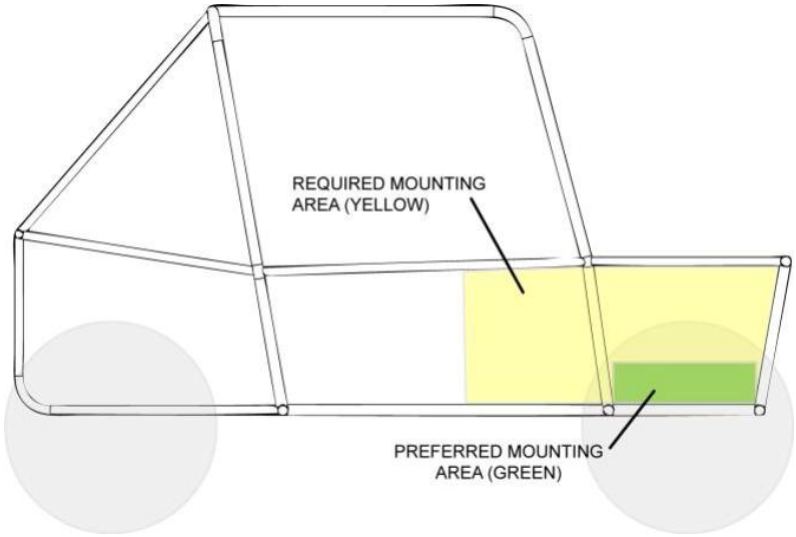

Figure B-67: Transponder, Mounting Location

B.13.2.3.3 Fastening

Each transponder is supplied with a mounting bracket. Teams are advised to weld a small plate to their frame to attach the transponder mounting bracket for each transponder. Hardware used to secure the bracket to the vehicle frame shall meet all requirements of Article 12, Fasteners.

- ☑ **Attaching the bracket with 4 mm (0. 16 in.) pan- head or flat- head bolts with lock nuts or lock- wire is suggested.**

B.13.2.3.4 Interference

RF systems transmitting voice and/or data can cause harmful interference with the signal transmitted by the transponder. Care should be taken when designing, fabricating, or maintaining RF systems near the transponder.

☑ **The transponder equipment operates at a frequency of 3.59 MHz.**

B.13.3 Vehicle Numbers

Vehicle numbers are critical for the organizers and officials to positively identify team vehicles. Teams must design numbers to be visible in all race conditions or keep them clean and conspicuous. Numbers shall not be obscured by any other portion of the vehicle.

⚠ Numbers that are not easily read may be black flagged and might not be scored during the Endurance event.

B.13.3.1 Required Numbers

Three sets of primary numbers are required to be securely affixed to the car. The vehicle's number shall be readily visible from the left side, right side, and the front of the vehicle. Colour for the numbers must be strongly in contrast with the background colour. The use of adhesive to stick the numbers to the body panels is prohibited.

B.13.3.2 Required Font

Vehicle numbers shall be displayed in either the "Highway Gothic Regular" font or "Century Gothic Bold" font. No other fonts are permitted. Examples of both fonts are given below.

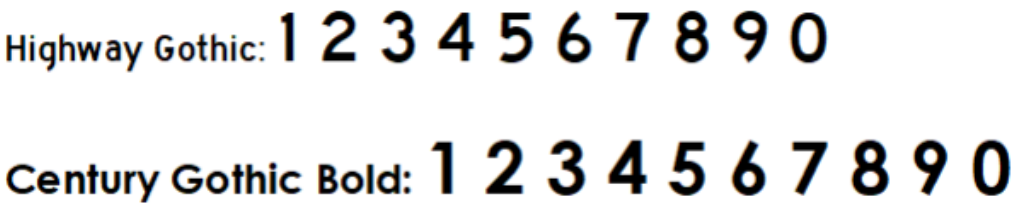

Figure B-68: Approved vehicle number font examples.

B.13.3.3 Location

B.13.3.3.1 Side Numbers

Side numbers, mounted to the left and the right sides of the vehicle, shall be mounted above the SIM and aft of the plane of the RRH. Side numbers shall not be visually obstructed by any part of the vehicle.

B.13.3.3.2 Front Number

Front facing numbers can be affixed to the vehicle above the SIM. The angle of the front number shall be less than 45 degrees from vertical.

Or,

The angle of the plane of the front numbers, when affixed to the vehicle below the SIM, shall be less than or equal to 15 deg. from vertical.

B.13.3.4 Orientation

Numerals shall be aligned along a common horizontal line, and the entire number panels shall be mounted in a horizontal orientation (+/- 3.0-degree tolerance) to facilitate fast vehicle identification. The number panels shall have a minimum of 25.4 mm (1.0 in.) and a maximum of 51 mm (2.0 in) spacing between numerals, dimension "S" in Figure B-69.

B.13.3.5 Number Size

The primary cutout numbers must be at least 152 mm (6.0 in) high, dimension "H" in Figure B-69. The primary cutout numbers shall have a stroke width in proper proportion to the font design for the given character height. The primary cutout numbers shall be mounted such that the projecting face is a minimum of 13 mm (0.5 in) and a maximum of 39 mm (1.5 in) from the background panel.

☑ **Avoid sharp edges or points on the inner and outer edges of the cutout numbers. Sharp edges should be trimmed off irrespective of font design.**

B.13.3.6 Backing Panel

Each number on the vehicle shall have a highly contrasting background to facilitate easy reading. The edges of the backing panel shall be no less than 25.4 mm (1.0 in.) from the edge of the numbers (dimension "C" in Figure B-69). Numbers may be outlined to provide enhanced contrast. Number backing panels must be securely fastened to the vehicle frame.

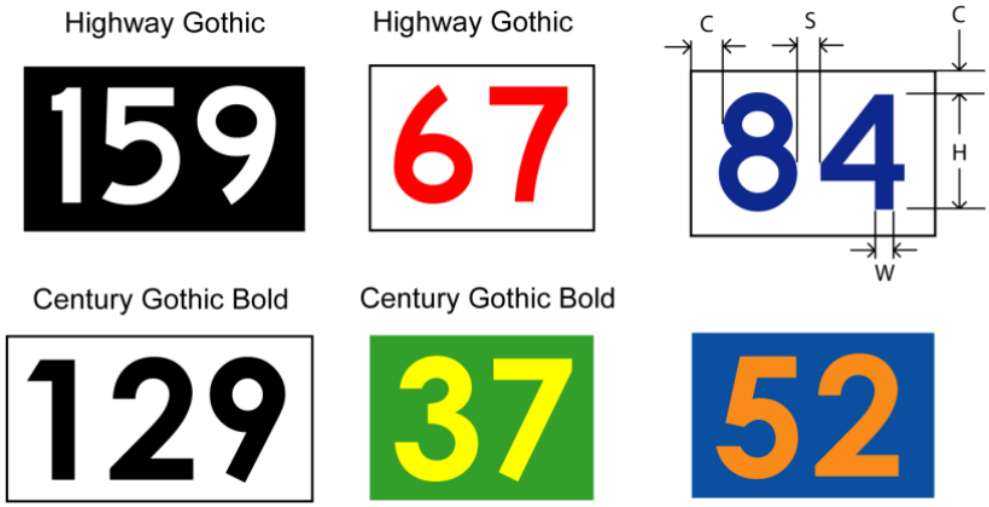

Figure B-69: Vehicle Numbers, Example

B.13.3.7 Number Colour

Teams are free to choose colours for number and backing panel. Number colours must be a bright colour against a highly contrasting background and facilitated fast vehicle identification. All the number backing panels shall be of single colour. See Figure B-69.

B.13.4 SAEINDIA Logo

One (1) SAEINDIA logo must be displayed on the vehicle in prominent location. Sticker will be distributed during registration at the competition.

B.13.5 Sponsor Identification

Teams may display advertising of their vehicle sponsors, provided it is in good taste and does not conflict with the vehicle's number. SAEINDIA may require all entrants to display advertising from the competition sponsors for which logos will be distributed during event to be displayed at specified locations.

- **Teams must keep sufficient space (approximately 10 X 10 inches) unoccupied on the firewall, on the left side of the driver (refer to the yellow highlighted region in Figure B-70). This region will be used for putting stickers as part of the Technical Evaluation (three stickers) and weighment check (one sticker).**

Figure B- 70: Portion for Technical Evaluation and Weighment Stickers (Highlighted in Yellow)

ARTICLE B.14 ERGONOMIC REQUIREMENTS FOR DRIVER SAFETY

B.14.1 Roll cage Requirements

- Teams are advised to design the Driver's cockpit, giving maximum safety to the driver. Reducing weight/compact roll cage can be a secondary part of it.
- Brackets or mountings welded to the roll cage must have filleted edges to eliminate sharp corners and reduce the risk of injury to team members or the driver.
- Ensure Good visibility for the driver through FBM.
- Additional gussets should be incorporated in areas where additional structural strength is required.

B.14.2 Sub-System Requirements

B.14.2.1 Steering Wheel Clearances

There must be a minimum clearance (RA) of 220mm between the driver's chest, upper body/torso, helmet, and the steering wheel at all possible rotations of the steering wheel, as illustrated in Figure B-71. Also, there must be a minimum clearance of 70 mm between the steering wheel and knees of the driver.

Teams must ensure that their vehicle meets B14.2. Teams that do not meet this criterion will be marked as 'not cleared safety scrutiny'.

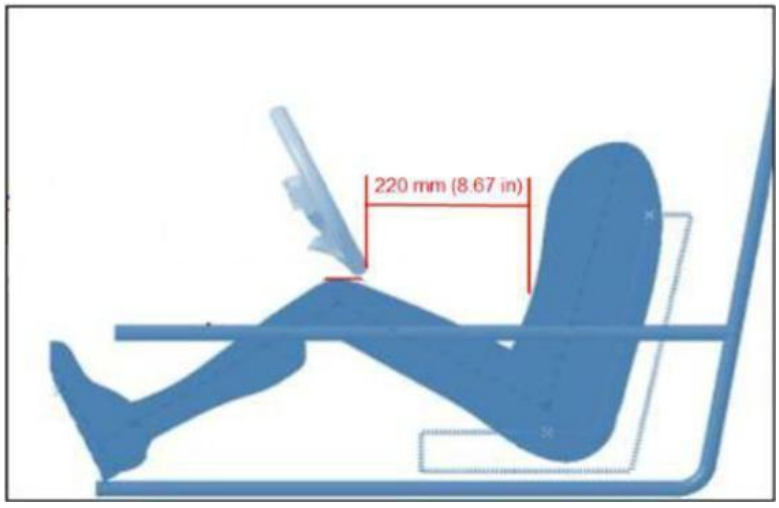

Figure B- 71: Driver's Chest Clearance

B.14.3 Driver Knee Safety Requirements

This requirement deals with the safety requirements to be followed to ensure the driver's knees are not coming out of the roll cage. The maximum height of the knees that can be allowed above the SIM member when viewed from the side is 76mm (3in) as shown in Figure B-72. The check will be done when the driver's foot is kept on the pedals, hands on the steering wheel, and with the comfortable pedal operating position.

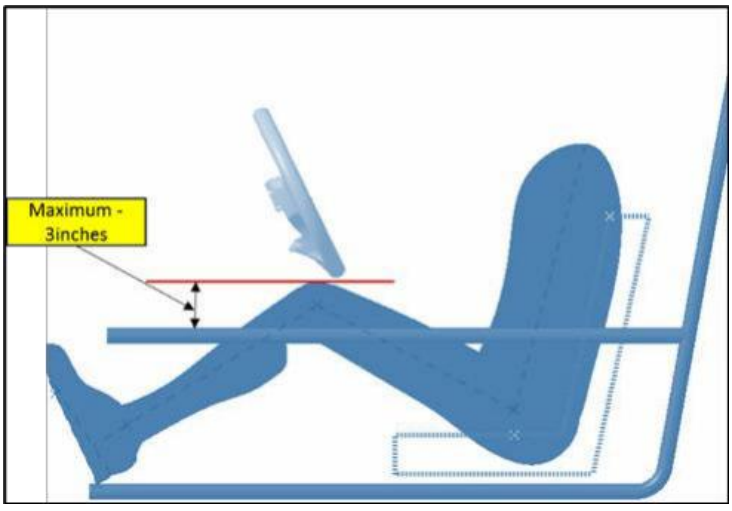

Figure B- 72: Driver Knee Safety Requirement

In line with the above rule, teams are required to meet the lateral clearance requirement of the knees. This is also measured when the driver's feet are on the pedals and hands on the steering wheel. The dimension "A" mentioned in figure B-73 should be a minimum of 76mm (3 in.) w.r.t SIM member inner surface.

- **Teams must ensure that their vehicle meets both the clearances mentioned under B.14.3(as per Figure B-72 and Figure B-73), both the limits should be met simultaneously. Teams that do not meet these criteria will be marked as 'not cleared at safety scrutiny'.**

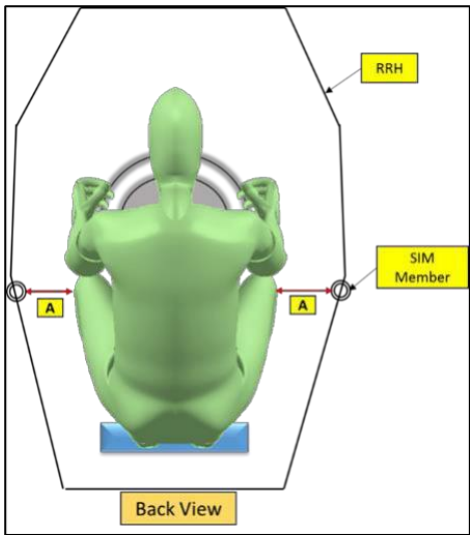

Figure B- 73: Driver Knee Safety Lateral Clearance

PART C ELECTRICAL POWERTRAIN AND SYSTEMS (eBAJA only)

Please note that Tractive System Voltage allowed from eBAJA SAEINDIA 2027 event may be only 72V.

ARTICLE C.1 ELECTRICAL SYSTEM DEFINITIONS

1. **HIGH VOLTAGE (HV)**: In automotive engineering, "High Voltage" is defined as a voltage greater than 30 V_{AC} root mean square (RMS) value or 60 V_{DC}.
2. **ELECTRIC MOTOR**: An Electric Motor is an Electrical Machine that converts Electrical Energy into Mechanical Energy.

☑ **The definitions below are only for eBAJA Vehicles.**

3. **TRACTIVE SYSTEM**: The tractive system of the vehicle is defined as a complete electrical system of every part that is electrically connected to the motor(s) and tractive system Accumulator(s).
4. There will be two categories of voltage systems for eBAJA SAEINDIA 2026, Vehicles with both the systems will be running together throughout the competition.
    A. **TRACTIVE SYSTEM CATEGORY I**: The maximum voltage between any two terminals of the tractive system should be <= 60V.
    B. **TRACTIVE SYSTEM CATEGORY II**: The maximum voltage between any two terminals of the tractive system should be > 60V and <= 84V. Nominal voltage should be 72±2 V.
5. **TRACTIVE SYSTEM ACCUMULATOR**: The Tractive System Accumulator(s) is defined as complete assembly / pack of all the battery cells that store the electrical energy to be used by the tractive system along with the corresponding AIR, fuse and BMS.
6. **TRACTIVE SYSTEM ACCUMULATOR CONTAINER**: It is an enclosure/housing for the Tractive System Accumulator.
7. **HV RATED CUT-OFF SWITCH**: The HV rated cut-off switch shall operate on Tractive system voltage. When turned off, the Tractive System Accumulator shall not power the DC-DC Converter. The HV rated cut-off switch must be mounted behind the firewall.
8. **ACCUMULATOR ISOLATION RELAY (AIR)**: The Accumulator isolation relay should isolate the Accumulator from the tractive system.
9. **LOW VOLTAGE**: The low voltage (LV) system of the vehicle is defined as a complete electrical system of every part that is not part of the tractive system. The Voltage between any two terminals of the Low Voltage system in the vehicle shall not exceed 15V DC in any condition.
10. **IGNITION/MASTER SWITCH**: The Ignition switch shall operate on Low Voltage. When turned off, the LV Power source should not power any LV components.
11. **FNR SWITCH**: FNR stands for Forward, Neutral and Reverse. The Forward, Neutral and Reverse (as applicable) modes must be controlled using a single switch.
12. **START-STOP BUTTON**: Start-stop button must be a Push button type (non – latching), operating on Low Voltage.
13. **KILL SWITCH**: The Kill switch shall operate on Low Voltage, when it's pushed, must de-energize the Tractive system, AIR, TSAL, reverse light and reverse alarm. But shall not de-energize the Brake Light.
14. **TRACTIVE SYSTEM ACTIVE LIGHT (TSAL)**: The TSAL shall operate on Low Voltage. TSAL should be continuously flashing/blinking with a frequency of 2Hz to 5Hz when the vehicle is in Ready to drive Mode.
15. **BRAKE LIGHT**: The Brake Light shall operate on Low Voltage. Brake Light must glow continuously whenever the Brake pedal is pressed.
16. **REVERSE LIGHT**: The Reverse Light shall operate on Low Voltage. Reverse Light must glow continuously when the gear/FNR switch is in reverse mode.
17. **REVERSE ALARM**: The Reverse Alarm shall operate on Low Voltage. Reverse Alarm must turn on continuously when the gear/FNR switch is in reverse mode.

ARTICLE C.2 LOW VOLTAGE (LV) ELECTRICAL SYSTEM (<=15V DC)

The LV system must include at least two kill switches, a LV ignition/master switch, a brake light, TSAL, and RTDS. If the vehicle is equipped with reverse mode feature, then a reverse light and reverse alarm is mandatory and would need to be on the LV system only.

C.2.1 LV POWER SOURCE

For Tractive system Category I:

Teams may use either an auxiliary battery or step-down DC-DC converter connected to Tractive system accumulator. Usage of both DC-DC Converter & Auxiliary battery simultaneously is strictly prohibited. Teams may use a separate DC-DC converter (<=9V) or separate auxiliary battery (<=9V) to power telemetry and logging/driving data equipment.

For Tractive system Category II:

Teams are allowed to use an auxiliary battery (<=15V) only as an LV power source. Teams may use a separate auxiliary battery (<=9V) or a separate DC-DC converter (15V to <=9V) to power telemetry and logging/driving data equipment.

- ☑ **In both categories I & II, the use of an ignition key/master switch is mandatory.**
- ☑ **In both categories I & II, if an LV power source is required for motor controller activation, teams may use a separate LV Power source (<=15V) apart from the vehicle LV system power source (according to C.2.1) for the same.**

C.2.1.1 AUXILIARY BATTERY (For both Tractive system Category I & II)

1. An auxiliary battery used as LV Power Source shall not power any component in the tractive system (except to activate/trigger the AIR(s)).
2. Auxiliary Batteries shall not be recharged by traction Motor(s)/ alternator.
3. The batteries should be spill or leak proof and in the case of lead acid chemistries - factory sealed (incapable of being opened or serviced) and should not leak in the event of a rollover.
4. Auxiliary batteries must be mounted securely to the frame and shall be mounted with sound engineering practices and not become loose during normal operation, a collision, or rollover. The battery must be safely placed and concealed. Battery terminals shall be insulated and protected against an electrical short circuit. If the battery is inside a box, it must be secured with proper mounting practices inside the box.
5. Auxiliary battery being used by the teams, shall incorporate an interlock system ensuring that the vehicle doesn't enter in "Ready to Drive" mode when the Tractive system accumulator is disconnected.
6. Should the auxiliary battery feature lithium chemistry, then it must also include a dedicated BMS.
7. The auxiliary battery shall have an appropriate rating of fuse as defined in section C.7: – Fuse.

- ☑ **Auxiliary batteries should be mounted behind the firewall irrespective of its chemistry.**

C.2.1.2 ISOLATED DC-DC CONVERTER (For Tractive system Category I)

1. Teams shall use an Isolated DC-DC Converter with a circuit designed with over voltage and under voltage protection, overload and short circuit protection. The DC-DC Converter shall have sufficient rating to supply power consumption requirements of all the LV components.
2. The DC-DC Converter shall have an appropriate rating of fuse as defined in section C.7: – Fuse.
3. The DC-DC Converter should be treated as a tractive system component and accordingly must meet the requirements as specified in sections C.5.1 and C.5.3 It must be attached securely to the frame behind the firewall and shall be mounted with sound engineering practices, so that it does not become loose during normal operation, a collision, or rollover.
4. Installing the DC-DC Converter in the cockpit is prohibited.

- ☑ **HV rated cut-off switch is mandatory when DC-DC converter is used as LV Power source.**

C.2.2 Kill Switch

1. Kill Switch shall be a Push Button E-Stop type as per ISO 13850 or IEC 60947. The said switch shall work as a HVIL (High Voltage Interlock), with the LV system triggering the Accumulator(s) relay to De-

energize the Tractive system. It is mandatory for both the Kill Switches to be "PUSH TO KILL" & ROTATE TO ENERGIZE" type.

2. Each vehicle shall be equipped with a minimum of two (2) kill switches to deactivate the Tractive System.

Refer to Article B.10.3.3 for Location of kill switches and Article B.10.3.4 for Mounting.

C.2.3 LV System Specific Requirements

1. All LV components and their wiring harness must be neatly arranged, put into conduits, and mounted with fasteners as specified in ARTICLE B.12: - Fasteners. LV components that have open leads or that may be sensitive to moisture and dirt (e.g.: micro controllers, non-IP rated displays, etc.) must be housed in appropriately rated enclosures as defined in section C.5.3, with appropriate tool-less connectors and seals.
2. In the case of LV harness, teams should use proper terminals, connectors, lugs or ferrules so that there are no exposed wires at the terminal point. Use of jumper wires are strictly prohibited.
3. All LV components should be mounted rigidly with fasteners, usage of any kind of glue/tape for mounting is not allowed.
4. All Low Voltage (LV) enclosures must be made from materials compliant with UL94-V0 or FAR25 (or their equivalents), and must be designed to prevent the ingress of dust and water.
5. All electrical connections in the current path that rely on screwed connections must have a rigid locking mechanism as specified in ARTICLE B.12: - Fasteners.
6. If developmental boards are used for PCBs, it should have mounting points.

Teams are recommended to design printed circuit boards (PCB) for the LV system so that all the control circuits will be rigid and robust rather than using traditional wires. Usage of breadboards for any kind of circuit is not permitted in the vehicle.

C.2.4 SIGNALING

C.2.4.1 Brake Light

Refer to Article B.10.4.1 & B.10.3 for Brake Light requirements, specification, fastening and locations.

C.2.4.2 Reverse Light

Refer to Article B.10.4.2 for Reverse Light requirements, specification and locations.

C.2.4.3 Reverse Alarm

Refer to Article B.10.4.3 for Reverse Alarm requirements, specification and locations.

C.2.5 Instrumentation

Refer to Article B.10.5.

C.2.6 Data Acquisition

Refer to Article B.10.6.

C.2.7 Communication System

Refer to Article B.10.7.

ARTICLE C.3 TRACTIVE SYSTEM – POWERTRAIN

C.3.1 E-KIT REQUIREMENTS

1. The e-kit comprises all major aggregates of electric powertrain such as Tractive System Accumulator, BMS, Motor/s, Motor Controller and Tractive System Accumulator Charger etc.
2. The traction motor or motors may be of any topology and used in any configuration.

3. **For Tractive system category I**, tractive System Accumulator chemistry will be limited to Lithium Ion based chemistries. Capacity shall not exceed 120 Ah irrespective of the number of packs or modules used at a time on the vehicle. The peak voltage (at 100% SoC) of the battery or batteries shall not exceed 60 VDC. Similarly, the Charging system shall not have a charging voltage exceeding 60 VDC.
For Tractive system category II, tractive System Accumulator chemistry will be limited to Lithium Ion based chemistries. Capacity shall not exceed 80 Ah irrespective of the number of packs or modules used at a time on the vehicle. The peak voltage (at 100% SoC) of the battery or batteries shall be <= 84V VDC. Similarly, the Charging system shall not have a charging voltage exceeding 84 VDC.

☑ **The Accumulator must be designed for the defined peak voltage, limiting the peak voltage through the BMS or any external method solely to comply with the rulebook is not allowed.**

4. All the e-kit components (excluding charger) shall compulsorily follow International Electro- Technical Commission (IEC) 60529 IP67 standards (related to dust and water entry) to achieve the required protection from failures when the tractive system comes in contact with water.
5. Regeneration is allowed and encouraged.

☑ **BAJA SAEINDIA is not responsible for providing any e-kit for any (new/old) eBAJA teams. It is teams' responsibility to choose and purchase components from market/vendors compliant with the BAJA SAEINDIA 2026 Rulebook.**

☑ **If any of the e-kit components (excluding charger) are/is not certified for compliance with International Electro-Technical Commission (IEC) 60529 IP67, teams are solely responsible for making it IP67 compliant. Videos of testing in accordance with the standards and declaration of the same (from the college) shall be submitted to Electrical Technical Team of BAJA SAEINDIA.**

C.3.2 POWER AND VOLTAGE LIMITATION

1. The maximum voltage in the tractive system for category I & category II must not exceed the 60V & 84V respectively, violating these values will lead to disqualification for the entire event.
2. The maximum power in the tractive system must not exceed 9kW at any instant as measured between the terminals of the battery / batteries or at the cumulative junction going to the Motor Controller Unit(s). Violating these limits will lead to disqualification for the entire event.
3. Power limits shall be enforced by means of an EV grade Instant Fuse/DC MCB with a DC Voltage rating greater than or equal to the tractive system voltage and current rating should be selected such that the maximum power at nominal voltage does not go beyond the maximum permissible power limit.

For example 1: Nominal voltage = 48 V

Maximum power limit <= 9 kW

Current rating of fuse <= (maximum power/nominal voltage)

Current rating of fuse <= 9kW/48V

Current rating of fuse <= 187.5A

Example 2: Nominal voltage = 72 V

Maximum power limit <= 9 kW

Current rating of fuse <= (maximum power/nominal voltage)

Current rating of fuse <= 9kW/72V

Current rating of fuse <= 125A

C.3.3 ACCELERATOR PEDAL

1. The accelerator must be a right-foot-operated foot pedal. The Traction Motor controller must be actuated by a foot pedal.
2. The foot pedal must return to its original position when released. The foot pedal must have positive stops at both ends of its travel.
3. Directly tapping accelerator pedal wires and using it for start-up sequence or any other application is prohibited.

ARTICLE C.4 TRACTIVE SYSTEM - ENERGY STORAGE and CHARGING

C.4.1 BATTERY SPECIFICATIONS

For battery specifications, Refer to C.3.1.3

C.4.2 TRACTIVE SYSTEM ACCUMULATOR(S) – GENERAL REQUIREMENTS

1. All Accumulators shall comply with AIS 156. The battery pack that stores the tractive system energy will be built into Accumulator(s) (segments), and must be enclosed in an electrically insulated Accumulator(s) container(s).

☑ **The below tests are mandatory to be performed on the Accumulators for eBAJA if AIS 156 compliance authentic Certification is unavailable:**

i. **Physical verification of battery pack including BMS safety features.**
ii. **Vibration test.**
iii. **Overcharge protection.**
iv. **Over Temperature Protection.**

2. The Accumulator(s) container(s) should be located behind the firewall and should be easily accessible anytime during the entire event for inspection or rectification of defects.
3. The Tractive System shall include at least one AIR and one Fuse, which will open the circuit and disconnect the energy flow from Accumulator(s) to the remaining tractive system whenever a fault is detected/Occurred.

☑ **Should the Battery Pack(s) / Accumulator(s) be modified or reworked after its certification, its certification will thereby be deemed revoked, and considered null and void.**

C.4.3 TRACTIVE SYSTEM ACCUMULATOR(S) CONTAINER - ELECTRICAL CONFIGURATION

1. The tractive system Accumulator(s) container (from outside and inside) must be made from an insulating material. If the container is made from an electrically conductive material, then the Accumulator(s) container along with the mounting structure must be electrically insulated in all directions using suitable material which also complies with UL 94-V0/FAR 25 or equivalent grade for the container to prevent arc flashes caused by contact with any other parts and tools. Air gaps provided will not be considered as a suitable insulation material. Care must be taken to ensure conductive penetrations of any type.

☑ **Wood/Rubber is not permitted to be used for building the Accumulator(s) Containers or as a structural member.**

2. Interconnecting the two individual cells by soldering in the high current path is strictly prohibited.
3. Soldering of wires to cells for obtaining the voltage monitoring inputs to the BMS is allowed since these wires are not part of the high current path.
4. Every wire used in an Accumulator(s) container must be rated to the maximum tractive system voltage, irrespective of those wires being part of LV system or tractive system.

C.4.4 TRACTIVE SYSTEM ACCUMULATOR(S) CONTAINER - MECHANICAL CONFIGURATION

1. All Accumulator(s) containers must be rugged and rigidly mounted to the chassis to restrict their motion in all directions. Usage of sponge or similar material as a filler to provide rigid mounting to the Accumulator is not allowed. If fasteners are used for mounting an Accumulator(s) container, they must comply with ARTICLE B.12: - Fasteners.

Figure C-1: Accumulator(s) Container Mounting

2. Accumulator(s) containers must be placed strictly behind the firewall. Usage of any type of Belts/Ropes to support or hold the Accumulator(s) container is prohibited. Accumulator(s) container mounting positions that are strictly prohibited is shown in the picture below:

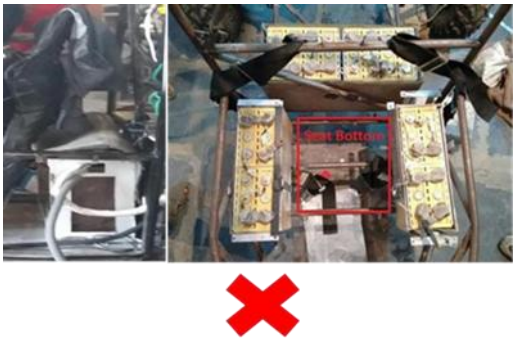

Figure C-2: Prohibited Accumulator(s) container Positions

3. All Accumulator(s) containers must be protected from the side or rear impact collisions, by providing equivalent structure as defined in B.3.2.
4. The Accumulator(s) container must be built from a mechanically robust material. The container material must be fire resistant.
5. Holes (both internal and external) in the container are permitted for the wiring-harness, ventilation & fasteners. External holes must be thoroughly sealed.

C.4.5 ACCUMULATOR(S) ISOLATION RELAY(S) (AIR)

1. The Accumulator(s) isolation relays should be provided to isolate the Accumulator(s) from the Tractive system and must be “Normally Open Type”.
2. The fuse for protecting the Accumulator(s) and tractive system circuit must have lower rating than the peak current of the isolation relays.

Teams are advised to use 12V actuated accumulator isolation relay (AIR) in order to avoid complexity in the circuits

C.4.6 BATTERY MANAGEMENT SYSTEM (BMS)

1. The BMS shall be powered by the Tractive System Accumulator to continuously monitor the individual cells and battery pack with regard to all the parameters such as current drawn, Temperature, Voltage etc., such that BMS should be able to trigger a shutdown in the event of any abnormal behavior.
2. The BMS must feature Overvoltage, Under Voltage, overcurrent protection and short circuit protection at every cell. If individual cells are directly connected in parallel, only one voltage measurement is needed.
3. All LV connections to the BMS must run through a separate conduit, including any connections to external devices such as laptops.
4. The temperature of the cells should be monitored and if the temperature exceeds the permissible battery temperature specification, BMS should shut down the entire tractive system.
5. Should the BMS fail or loss of power is detected, the entire tractive system should be de-energized.

6. If the Accumulator is having different ports for charge and discharge, BMS shall cut off the discharge port during charging.
7. Teams shall take necessary care to ensure that Tractive system Accumulator(s) does not get discharged fully during idle/non-operational conditions.
8. BMS must be rigidly fastened to sustain vibrations in dynamic conditions.

☑ **Teams will have to submit technical specifications of the BMS being used as well as wiring diagrams, and its images.**

C.4.7 Insulation Monitoring Device (IMD) – Optional

☑ **Teams are encouraged to use an appropriate Insulation Monitoring Device to enhance vehicle safety and performance. Following guidelines must be adhered.**

1. BMS must be capable of monitoring the Isolation Resistance (IR) such that it gives a signal if the value goes ≤ 100 Ω/V for vehicles with Off board charging or ≤ 500 Ω/V for vehicles with On board charging to deactivate the tractive system.
2. If the BMS is not capable of performing isolation resistance measurement, the vehicle must have an Insulation Monitoring Device (IMD) installed in the Tractive system.
3. The IMD must be an approved one for automotive use.
4. The teams are also encouraged to develop their own IMD that comparable the behaviour of commercially available IMDs and complies with the rules mentioned below.

☑ **Circuit diagram, working demo of the device must be submitted to Electrical Technical team of BAJA SAEINDIA for the approval, the teams can install the device in the vehicle post approval from the BAJA Electrical Technical team.**

5. The response value of the IMD must be set to ≥100 Ω /V if the vehicle has Off board charging or ≥500 Ω /V if the vehicle has On board charging.
6. The response value must not be changed after Electrical Technical Inspection.
7. The IMD must be connected in series with the AIR and shall start measuring IR once the AIR is energized.
8. In case of an insulation failure or an IMD failure, the IMD must send signal to deactivate the tractive system.
9. A red indicator light in the cockpit that is easily visible from inside and outside the cockpit even in bright sunlight and clearly marked with the lettering "IMD" must light up if the IMD detects a failure. It must stay illuminated until the error has been resolved and IR is within the limit in the system.

C.4.8 CHARGERS

1. The charger shall not exceed a charging voltage of 60V & 84V for category I & category II tractive systems respectively.
2. Chargers presented and sealed by the Electrical TEJ at Electrical Tech. Inspections are permitted for usage at the event site. All connections of the charger(s) must be isolated and covered. No open connections are allowed.
3. All chargers including those built by the team, must be built to high standards and conform to all electrical requirements for the vehicle tractive system.
4. The charger must incorporate an interlock such that the connectors become live only if it is correctly connected to the Accumulator.
5. Tractive System Accumulator charging leads must be in orange colour.
6. During the process of charging the Accumulator, the BMS must be live and able to turn off the charger, if a fault is detected.
7. For charging the accumulator externally, Use only static equipment.

☑ **Teams are allowed to charge the Battery Pack using standard AC Power socket of rating 230V, 16A provided within the pit.**

ARTICLE C.5 TRACTIVE SYSTEM – GENERAL REQUIREMENTS and HANDLING

C.5.1 POSITIONING OF TRACTIVE SYSTEM PARTS

1. All parts belonging to the tractive system, including cables and wiring must be contained within the envelope of the frame and/or an additional envelope of tubing which meets the minimum specification defined in B.3.2 or equivalent, such that they are protected against being damaged in case of a crash or roll-over situation.
2. If tractive system parts are mounted in a position where damage could occur from a rear/side impact or have clearance from ground < 350mm, then it has to be protected by a fully triangulated structure with tubes of a minimum outer diameter of 25.4 mm and a minimum wall thickness of 1.25 mm or equivalent as defined in B.3.2.
3. When observed from the side view or front view, any part of the tractive system should not be projected below the bottom surface of the frame.

C.5.2 TRACTIVE SYSTEM FIREWALL

1. The tractive system firewall must comply with the main firewall regulations as defined in B.8.3. Firewall must separate the driver compartment from all tractive system components.
2. The firewall should be completely covered by UL94-V0/FAR25, or equivalent grade material on all sides.
3. The firewall must provide electrical insulation on all sides.

C.5.3 TRACTIVE SYSTEM ENCLOSURES (For both category I & category II)

1. All enclosures used must be constructed out of UL94-V0/FAR25 equivalent grade material.
2. There must be no conductive path or electrical connection between the frame of the vehicle (or any other conductive surface that might be inadvertently touched by a crew member or spectator) or any part of any electrical component and the tractive system component/enclosure, may it be via its fasteners, mounting brackets or other means. Insulating coatings of the conductive fastener surfaces will not be considered a suitable means of isolation.
3. Connectors and seals used must ensure Ingress protection.
4. If fasteners are used for mounting, they must comply with ARTICLE B.12:- Fasteners.
5. All housings or enclosures containing parts of the tractive system must be labelled with a 50.8 mm x 50.8 mm sized sticker(s) with a red or black lightning bolt on a yellow background or a red lightning bolt on white background. The sticker must also contain the text “High Voltage”.

Figure C-3: High Voltage Indication Sticker

☑ **This sticker is to be used for identifying the Tractive system voltage and to caution users and bystanders.**

C.5.4 TRACTIVE SYSTEM SPECIFIC REQUIREMENTS

1. All cables operating on voltage greater than LV specified voltage must be multi-stranded copper, single core cables with HV class insulation. High-temperature silicone wires are highly recommended.
2. All tractive system connections must be designed to use intentional current paths (through conductors such as copper or aluminium). Metal bolts should not be used as the primary conductor. Lugs must be directly and firmly seated on each other with the use of metallic washers and spring washers to ensure sufficient contact pressure. All electrical connections in the high current path of the tractive system that rely on screwed connections must have a rigid locking mechanism as defined in ARTICLE B.12:- Fasteners. The connections must not include soft compressible material (such as plastic and rubber spring washers in the stack-up).

- **Extension of Tractive System cables is not allowed. Only continuous, single-length cables shall be used, without any intermediate junctions, splices, or extensions.**

C.5.5 ACTIVATING THE TRACTIVE SYSTEM

1. Ready-to-Drive-Mode: In this mode, Motor(s) will respond to the input of the torque encoder/accelerator pedal.
2. The driver must be able to (re-)activate or reset the tractive system without the assistance of any other person, except for situations in which the BMS has shut down the tractive system and a non-cockpit kill switch is engaged (in off position).
3. Sequence of activating the tractive system: Click here.

- **After the kill switch has been engaged, the vehicle should exit the Ready-to-Drive-Mode. To activate/enter into Ready-to-Drive-Mode above process shall be followed.**

C.5.6 TRACTIVE-SYSTEM-ACTIVE LIGHT (TSAL)

1. TSAL should be continuously flashing/blinking (when the vehicle is in "Ready to Drive Mode"). The TSAL must be a round beacon type and an amber flashing light (> 350 Lumens per unit) with a frequency of 2Hz-5Hz. It must be clearly visible in all directions to a person standing up to 20 meters away from the vehicle even in very bright sunlight. Refer below image for some of the allowed and not allowed TSAL.

Figure C-4: Tractive System Active Lights

2. TSAL should contain an optical grade reflector inside for increased visibility. Refer below image for reflector inside the TSAL.

TSAL-A *TSAL-B*

Figure C-5: TSAL-A with reflector (Allowed) and TSAL-B without reflector (Not Allowed)

3. The TSAL must be fitted on top of the BLC to ensure visibility from all directions.

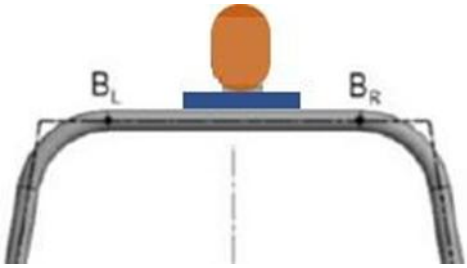

Figure C-6: TSAL Position in Front/Rear View

4. A metal plate (min. 6 mm thickness) needs to be welded on top of the BLC member as shown in the figure below. The TSAL should be securely mounted to this welded base plate using screws/bolts.

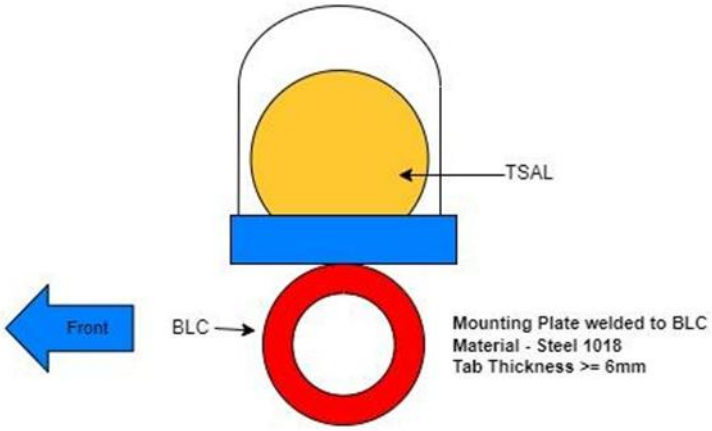

Figure C-7: TSAL Position in side View

5. The TSAL must be protected on all sides by a cage to lend it protection in case of a roll-over. The cage needs to be designed such that it allows for the replacement of the TSAL if a need arises.
6. It is prohibited to mount/place other lights/objects/stickers within 100 mm proximity of the TSAL.
7. An indicator needs to be placed in the cockpit within the driver's peripheral vision to make him/her aware of the "ready to drive" status of the vehicle. It must always mimic the status of the TSAL. Teams are free to choose the size and intensity of the light, but it must always be visible to the driver even in bright sunlight.

In case of any malfunction or improper visibility of the TSAL on any dynamic event tracks, the vehicle will be black-flagged and sent back to the pit until the problem is resolved.

C.5.7 READY-TO-DRIVE-SOUND (RTDS)

1. The vehicle must make a characteristic sound, to be maintained at a minimum level of 70dB (fast weighting) with the complete assembly of the vehicle's body panels and in a radius of 2 meters around the vehicle. This sound is to be made only once but not continuously (for at least 1 second and a maximum of 3 seconds) immediately afterward vehicle is set in ready-to-drive mode every time.
2. RTDS should be a continuous sound (with 100% duty cycle ON in the specified duration of minimum 1 second to maximum 3 seconds). Triggering RTDS with On or Off pulses within specified time duration is not allowed.
3. The sound (Buzzer) type used by the team must be easily recognizable. Animal voices, song parts, and offensive sounds are not permitted.

C.5.8 DRIVER DISPLAY

1. Tractive System Accumulator Voltage, Temperature, and State of Charge (SOC in %) shall be displayed on the driver display (Usage of Mobile phone as driver display is not allowed). Any other information displayed to the driver, by using the Data Acquisition system is up to the team's choice. Any system that provides data/information to the driver or the team, for tracking must be included in the Cost Report. Additionally, any batteries used to power the Auxiliary/accessories must comply with the battery rules in Section C.2.1.
2. The driver display must work on Low Voltage and should turn ON/OFF with Ignition key.

- **Teams are advised to opt for password based wireless connections to the Tractive system Accumulator in order to avoid any anonymous tampering.**

3. The vehicle must also have an indication to the driver, regarding the state of the LV and Tractive System (when the vehicle is in ready to drive mode). This indication may be either via a series of light indicators or messages in the driver display. Additional indicative systems that can help diagnose and detect operational states/status are allowed and encouraged.

Light Indicator	Colour
Tractive system Indicator	Orange / Amber / Yellow
LV Indicator	Blue

Table C-1: LV & Tractive system Light indicators

4. Teams shall have the proper labelling for all the switches and indicators that are present on the dashboard.
5. Teams are encouraged to log parameters such as current, voltage (RMS and dc), temperatures, throttle position, brake applications, motor speed, vehicle speed etc., to understand its importance, for carrying out analysis and to improve system efficiency and design performance in subsequent events. There is a large scope for fine-tuning and race-driving strategy.

- **Teams should be able to show the real time data of the BMS through external devices. (Showing BMS monitoring documentation/declaration is not sufficient).**
- **Parameters displayed on the driver display should match with the real-time data of BMS.**
- **Teams should ensure that they are communicating with BMS of every Accumulator irrespective of the number of accumulators the team is using.**

C.5.9 TRACTIVE SYSTEM HANDLING and WORKING

The recommendations below are to be followed while the team members are working at their institute or during their presence at the event site for the eBAJA competition:

1. The Electrical head will be responsible for all electrical work carried out on the vehicle and must accompany the vehicle during all times at the event site.
2. Activities on the Tractive System must be carried out in the pit only (for any measurements or testing purposes). The following steps must be followed:
    i. Anyone not involved in the work must remain away from the vehicle.
    ii. The vehicle must be jacked up.
    iii. One team member must be ready/prepared to push a Kill Switch at any time.
    iv. The Tractive System must be activated only for the time period, as long as necessary.
    v. Appropriate PPE and tools must be worn/used by those involved in the work.
    vi. No other work on the vehicle is permitted when the Tractive system is in active mode.
3. 1000V VDE (Verband Deutscher Electrotechniker), IEC 60900 standard insulated tools be used whenever work is being carried out on the Accumulator(s) or the tractive system.
4. Safety glasses with side shields and CLASS 00 or better HV safety gloves (meets or exceeds ASTM D120 or EN 60903 standard) must be worn by all participating team members when:
    i. Parts of the tractive system are exposed while it is active
    ii. Work is being done on the Accumulator(s).
5. Teams should not use expired safety equipment.

ARTICLE C.6 GENERAL REQUIREMENTS

1. All LV and Tractive systems, especially live wires, contacts, etc. of the tractive system need to be isolated by non-conductive materials or covers to protect each of them from being touched by any other live wire/body of the vehicle/team member
2. Usage of metal clamps for securing wires is strictly prohibited.
3. The LV and Tractive System Accumulator terminals along with the other Tractive system contact points shall be properly insulated against metal parts with the best engineering practices possible.
4. LV and Tractive system components must be protected from moisture, rain or water splashes by using properly insulated harnesses, connectors, enclosures and insulating caps.

5. Duct tape and bubble wrap will not be accepted as means of IP protection for any of the Tractive System components.
6. All wires, terminals and conductors must be sized appropriately for the continuous current flow.
7. All wires used in the vehicle irrespective of LV and Tractive system must be of automotive grade.
8. Both LV and Tractive system circuits must be isolated from vehicle chassis/Rollcage at all times.
9. Limit switches should have proper mounting.
10. Components inside enclosures/IP boxes must be mounted rigidly with support, the lid of the box shall not be considered as support.
11. The wires must be marked with wire gauge, temperature rating and insulation voltage rating. Alternatively, a data sheet based on specified wire characteristics for a particular serial number of wires printed on the wire should be demonstrated.

☑ **For sizing of the conductors, the 'maximum continuous current' that is designed to flow should be considered.**

12. The use of zip ties is only allowed for appropriate segregation of wiring harnesses. All wiring must be done as per professional standards with appropriately sized conductors, lugs and connectors with adequate strain relief and protection from loosening due to vibration, etc. Wiring shall be routed away from sources of excessive heat, abrasion, chafing and possible short circuit.
13. Usage of insulation tape or rubber-like paint (or similar coating products) for insulation purposes is prohibited for both LV and Tractive System components and their associated wiring harness, fasteners, and mountings.
14. All connections must terminate with corrosion-proof ring lugs made of copper/aluminium. Teams are strongly recommended to procure a Lug Crimping kit that can meet all the sizes and diameters required. Once the lug is crimped, the cable should be soundly held and the exposed metal should be insulated using appropriately coloured heat shrink sleeves of suitable thickness and quality. Exposed conductive fasteners and washers must then be insulated with rubber caps. Insulation coating of the conductive fastener surfaces will not be accepted as suitable means of isolation.
15. All cables operating on voltage greater than LV specified voltage must be in orange colour. All LV wires shall be colour coded to differentiate between positive and negative current paths. Wires in the positive current path to be colour-coded other than orange and wires in the negative path should be colour coded as black. Appropriate colour-coded shrink wrap, caps and insulation materials should be used for the respective colour of wires.
16. Any wiring harness passing through the driver's cockpit must be routed along the floor near the LFS member such that it does not interfere with or get entangled with the driver during ingress/egress. It must be enclosed in an insulating corrugated conduit.
17. A proper cooling system, if needed, should be designed to dissipate excessive heat and maintain an adequate temperature of all the components for deriving optimum performance of the vehicle.
18. All wiring must be shielded against damage from rotating or moving parts by using appropriately sized conduit.
19. All components in the tractive system must be rated for the maximum tractive system voltage.
20. The tractive system motor(s) must be connected to the Accumulator(s) through a motor controller (Traction Controller). Bypassing the control system and connecting the tractive batteries directly to the motor(s) is strictly prohibited.
21. The complete layout of the electric circuit designed by the team must be documented accurately in the ESS (Electrical System Specification Sheet), it will be shared at an appropriate time.
22. The Accumulator(s) Isolation Relays (AIRs) and the main fuse must be separated with an electrically insulated and fireproof material from the Accumulator(s) Container(s). Air (providing small gaps) is not acceptable.
23. Tractive system and LV system cables and wires must be physically segregated such that they do not run through the same conduit, except for interlock circuit connections.
24. Tractive system components and cables shall be rigidly mounted and positively restrained to maintain safe spacing. Electrical insulation and fire resistance must be ensured.
25. Belts, ropes, foam shouldn't be used for mounting the tractive system components/providing rigidity to the mounting
26. The vehicle's electrical system shall be designed and constructed by following the best engineering and electrical practices.

27. All LV components, Printed Circuit Boards (PCBs) and associated LV circuits shall be placed in a manner that they are easily accessible for inspection and verification during the Technical Inspection.

ARTICLE C.7 FUSE

1. Each of the electrical systems (both LV and Tractive system) must be protected by providing a fuse of the rating greater than the current rating. The current rating of a fuse must not be greater than the peak cut-off current rating (i.e., the fuse current defined for the component by the manufacturer) of any electrical component, for example, wire, bus bar, cell, or other conductors it is required to protect. All fuses should be instant blow /trip type with a time delay of less than 500 msec.
2. All fuses and fuse holders must be conforming to automotive standards, with suitable specifications.

Figure C-8: Fuses

3. All fuses must be DC rated for the highest voltage in the system.
4. All fuses in the Tractive system must have an interruption current rating which is higher than the theoretical short circuit current of the system.
5. If multiple Tractive accumulators or LV batteries are used, then each parallel string must be individually fused to protect all the components in that string, e.g. any conductors, wires, bus bars, cells, etc. The fuse must be appropriately sized for the total current that the individual string could transmit, or an additional fuse must be used to protect the conductors.
6. Accumulator Cells with internal over-current protection may be used (if suitably rated), without an external fuse or fusible links for individual cells, a combined fuse can be used for the accumulator.
7. DC MCBs of suitable automotive grade and resettable automotive thermal fuses may be used as long as they meet the requirements as defined in C.7.1.
8. The Tractive System Fuse / MCB must be situated behind the firewall in proximity to the Accumulator in a location that is easy to service and that is visible for inspection. Teams may use appropriate fuses that can survive the IP requirements, or house them in suitable housings with transparent lids or viewing panels.
9. Once the Tractive System Fuse / MCB is blown/tripped, teams shall be escorted off the track to the pits. Only after resetting/replacement under the supervision of a BAJA technical official, teams will be allowed to continue in the dynamic events.
10. The Tractive System Fuse / MCB shall be installed immediately after the Accumulator to ensure protection against short circuits and overcurrent conditions.

ARTICLE C.8 ACCUMULATOR(S) SWAPPING (For Endurance Race only)

C.8.1 NON-PRIMARY TRACTIVE SYSTEM ACCUMULATOR(S)

1. Teams may have spare Tractive System Accumulator(s) which will be referred as Non-Primary Tractive System Accumulator(s). The Non-Primary Tractive System Accumulator(s), if so available, will be permitted (provided it has been approved by TEJ) to be used to swap with the primary tractive system accumulator, during the Endurance event. All Accumulators are required to be presented with 100%

SOC at the time of swapping demonstration during Technical Inspection and must seek approval by demonstrating swapping process.

2. The Non-Primary Tractive System Accumulator(s) set up must be compliant with Clause / Rule no. C.3.1.3 & C.3.1.4. It should be of the same size, capacity and specification with identical cells, BMS, electrical wiring, and having identical mounting design as per the primary tractive system accumulator.
3. The Non-Primary Tractive System Accumulator(s) must be stored in an electrically insulated container made of fire- retardant material, as per Accumulator(s) Container guidelines (Refer Clause / Rule no. C.4.2, C.4.3, and C.4.4).

C.8.2 SWAPPING MECHANISM / PROCESS

1. Teams shall avail the option of Accumulator(s) Swapping as many times as they choose during the Endurance race.
2. Accumulator(s) should be easily accessible and removable from the vehicle for the team to qualify to be allowed for swapping during the Endurance race. The same shall be demonstrated by the team during the Electrical Technical Inspection. Teams should have HV insulated tools and PPE to execute the swapping activity.
3. When the swapping of Tractive System Accumulator is in progress, the removal, dismantling, or dislocation of the drivetrain (comprising of the tractive powertrain, gearbox, transmission, differentials, drive axles, wheels), suspension struts, members, and mounts is strictly prohibited. Any method/design for swapping that compromises the mechanical structure, safety, and function will not be acceptable.
4. Before swapping, the Tractive system should be de-energized by activating the kill switch. The negative terminal of the battery should be removed first and it should be insulated (if not already insulated) with caps. Only after insulation of the negative terminal has been successfully carried out, the removal of the positive terminal is permitted.
5. The Accumulator(s) setup shall be carefully removed and installed without interfering with the surrounding components at any time during the entire process.
6. Removing the Accumulator(s) setup shall be restricted to the respective plane in which the setup is mounted. Refer to figures C- 8 mentioned below,
    i. If Accumulator(s) container is placed completely below plane S-R, its removal is allowed only via a horizontal path through the side or rear of the vehicle below plane S-R (i.e., Path of removal should be such that no part for Accumulator(s) container is raised above plane S-R during the process of battery removal).
    ii. If the Accumulator(s) container is placed completely or partially above the SR plane, the path of Accumulator(s) removal should be completely above plane S-R. Path of removal can consist of motion in vertical as well as horizontal direction but vertical motion of Accumulator(s) more than 254 mm during removal process is prohibited.

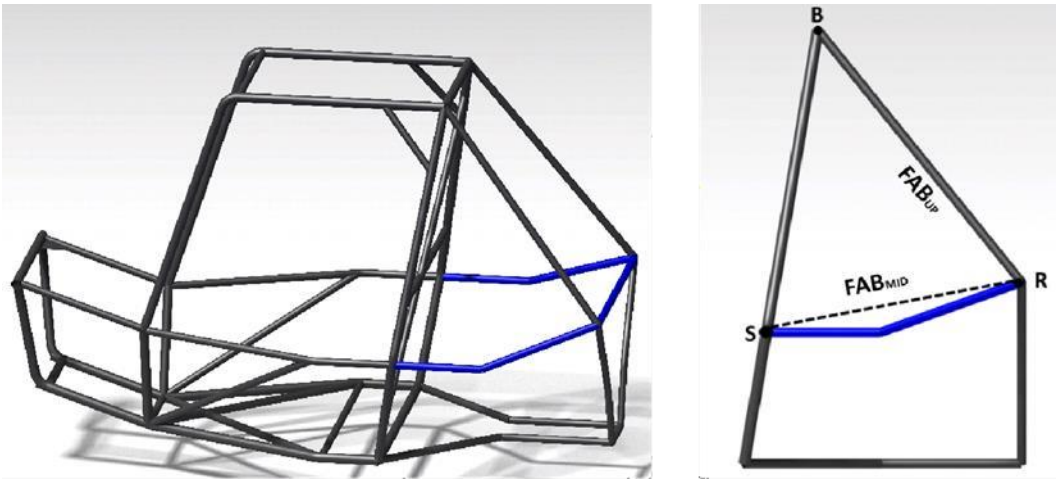

Figure C-9: Reference plane for Accumulator(s) removal

7. During the complete path of removal minimum 50.8 mm clearance is mandatory against any roll cage member or component of the vehicle (excluding Accumulator(s) mounting and removal mechanism). For ease of removal and faster Accumulator(s) Swapping process, it is allowed to use mechanism and

linkages, but it should be ensured that Accumulator(s) container should be rigidly connected and mechanically locked to arrest any motion during normal operation of a vehicle as mentioned in C.4.4.

8. Teams should follow the process for installing the Non-Primary Tractive System Accumulator(s) as same as the process while removing the setup.
9. After the Non-Primary Tractive System Accumulator(s) is installed, the positive terminal is connected first followed by the negative terminal. One team member must be in a ready position holding an extra/spare fire extinguisher apart from the one in the vehicle while the Accumulator(s) Swapping process is going on.
10. Only four (4) people from the team are allowed to perform swapping during the TI and Endurance event.
11. The time spent on swapping the Battery pack is considered as a continuation/part of the Endurance Race. The Driver must exit the vehicle but is not allowed to remove any safety gear while the Accumulator(s) Swapping process is in progress.

C.8.2.1 Driving in the Swapping Area

All cars must operate at a walking speed while in the Swapping Area and when entering/exiting the area. Any team found speeding in the swapping area will be penalised appropriately.

☑ **Pushing the car into the Swapping Area (SA) without a driver is strictly prohibited.**

C.8.2.2 ACCUMULATOR HAND CART

1. Teams shall use a hand cart for transporting the Non-Primary Tractive System Accumulator(s) around the competition site.
2. The hand cart must sport stubby terrain tires with a minimum diameter of 203.2 mm. The Wheels should have a locking mechanism to prevent it from sliding on slope, if it has no anchor point.
3. The hand cart must have a mechanism or anchor to restrict the motion of the accumulator in all directions, even in the event of the hand cart tipping / rolling over.
4. Internal surfaces of the hand cart must be constructed out of UL94-V0/FAR25 equivalent materials. Similarly, the handle of the cart must also be insulated.

☑ **Wood is not an acceptable material.**

5. The cart must have an enclosed compartment in which the accumulator is housed and protected from dust, mist and debris.
6. The team must ensure that members handling the cart and performing swapping must wear proper gloves and shoes as defined in C.5.9.

PART D VIRTUAL ROUND – 50 POINTS

The Virtual Round of BAJA SAEINDIA 2026 will be a non-elimination round. The objectives of the Virtual Round of the BAJA SAEINDIA 2026 event are as follows:

1. To acquaint teams with the technical guidelines and limits for the design of the BAJA vehicle as per the latest BAJA SAEINDIA Rulebook.
2. To strengthen the fundamental knowledge of Automotive Engineering aspects like Chassis, Suspension, Steering, Brakes, Engine, Transmission, Electricals, Electronics, etc. and Design Criteria, Manufacturing Criteria, Material Selection, Calculations, CAD/CAE Analysis, Vehicle Dynamics, Ergonomics, DFMEA/PFMEA, Performance Testing, Validation & Certification for the above components/ systems and vehicle as a whole.
3. To study various concepts and lay down complete technical specifications of the proposed vehicle along with a CAD model, CAE Analysis, selection of subsystems, and execution of team plans.
4. To understand Make or Buy Decisions based on confidence & facilities available and perform estimated Cost Analysis, Weight Analysis, Team building, Project Planning, etc.

Teams must prepare for the following sub-events –

1. **Presentation Round -** The Presentation Round will require teams to present their vehicle concept design, which will be evaluated based on a set of criteria as mentioned in the guidelines.
2. **Quiz Round -** The quiz round will consist of questions from General Engineering/Automotive Engineering and the BAJA SAEINDIA 2026 Rulebook.

The detailed guidelines of the virtual round will be released on BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

PART E STATIC EVENTS – 325 POINTS

ARTICLE E.1 : SCORING

	Description	Points
Physical Round Static Events	Engineering Design Event	100
	Cost Event	50
	Sales Event	50
	Sustainability Event	25
	Manufacturing Excellence	50
	CAE Event	NA
	Innovation Event	NA
	*Mathwork Simulation	NA
Total Marks		325

**Note 1: Mathwork Excellence Evaluation is a bonus event only for the eBAJA category.*

Any change in scoring pattern shall be informed to the teams through BAJA SAEINDIA Forum.

ARTICLE E.2 : ENGINEERING DESIGN EVENT – 100 POINTS

E.2.1 E.2.1 Engineering Design Event Overview and Objective

The objective of the engineering design event is to evaluate the engineering effort that went into the design of the vehicle, how the engineering meets the intent of the market, and simulate real-world engineering design projects and their related challenges.

The vehicle that illustrates the best use of engineering to meet the design goals and the best understanding of the design by the team members will win the design evaluation event.

E.2.2 Format for Document Submission

Sr	Document	Submission	File Type
1	Design Report	Compulsory	.pdf
2	Design Specification Sheet	Compulsory	.xlsx
3	Design Comparison Sheet	Only for Returning Teams	.pdf
4	DVP&R and DFMEA	Compulsory	.xlsx

E.2.3 Judging Process

Students will be judged on the creation of design specifications and the ability to meet those specifications, computer-aided drawing, analysis, testing and development, manufacturability, serviceability, system integration, and how the vehicle works together as a whole. Each of these parts of the engineering product development cycle will be judged within the following subsystems: Vehicle Overview and Integration, Roll cage & Ergonomics, Powertrain, Suspension, Steering & Brakes.

The actual format, process and judging criteria of the engineering design event may change from year to year as determined by the organizing body. The engineering design event guidelines shall be released on BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

ARTICLE E.3 :COST EVENT- 50 POINTS

E.3.1 Cost Event Overview and Objective

Cost is one of the most critical aspects of any commercial entity but the event here is to not only report the most optimum cost of the component in the prototype or production stage but instead focus on how well the team understands what has gone into their part and applying their learning of procurement and manufacturing techniques to optimize the cost, labour, time, material wastage and various overhead costs.

Cost Event consists of two related sections -

1. **Cost Report** - The cost report provides all the background information to verify the vehicle's actual cost and also if the teams want to present any design features or fabrication processes that are innovative or are expected to result in significant cost savings.
2. **Prototype Vehicle Cost** - The prototype vehicle cost is the actual cost gone in fabrication of the vehicle and the points related thereto.

E.3.2 Format for Document Submission

Sr	Document	File Type
1	Cost Report Template	.xlsx
2	Cost Overview & Documentation	.pdf
3	Engineering Drawing	.pdf

E.3.3 Judging Process

The cost event judges will evaluate the team's total cost and effort taken to optimise the cost of the vehicle using appropriate pricing for various components of the vehicle.

The actual format, process, and judging criteria of the Cost Event may change from year to year as determined by the organising body. The cost event guidelines shall be released on the BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

ARTICLE E.4 : SALES EVENT - 50 POINTS

E.4.1 Sales Event Overview and Objective

The Sales Presentation Event gives students the opportunity to gain real-world experience in taking a concept proposal and presenting it for support, whether funding or otherwise. This is a crucial skill because all students will eventually need to present their ideas to the boardroom and compete with other organisations.

The objective of the Sales Presentation is for the "Company" to convince the "Investors" of an investment firm to invest in the company's BAJA SAEINDIA vehicle design to put it into production at the rate of 4000 units per year. Here, the "Company" is the team seeking funds from investors; the "Investors" are the judges.

E.4.2 Format for Document Submission

Sr	Document	File Type
1	Sales Report	.pdf

E.4.3 Judging Process

The presentation event will be scored based on the following five categories:

- Establishing the current scenario of the company and its current status.
- Understanding the market and customer requirements, positioning the product accordingly.
- Showcasing company financials, the current assets, liabilities, revenue, profit & losses, RoI, RoCE
- Establishing core USPs of the product using various tools, including market research, SWOT, PESTEL, etc.
- Marketing strategy to promote the product.
- Project timelines, execution strategies, readiness for worst-case scenarios, etc.

The team that makes the best presentation will receive the highest score, regardless of the finished quality of their actual vehicle.

The actual format, process, and judging criteria of the sales event may change from year to year as determined by the organising body. The sales evaluation guidelines shall be released on the BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

ARTICLE E.5 : SUSTAINABILITY EVENT – 25 POINTS

The mobility industry is actively navigating the complexities of transitioning towards propulsion systems powered by renewable energy sources. However, the concept of sustainability extends far beyond the adoption of alternative fuels. Engineers must possess a comprehensive understanding of the entire lifecycle of their designs to make conscientious design decisions by considering the environmental impact of the materials they choose. There is a growing demand for sustainable design practices, which has prompted BAJA SAEINDIA to incorporate the fundamental principles of sustainable engineering into the Sustainability Event.

For mBAJA -

The objective is to encourage teams to reduce exhaust emissions using different technologies and to incorporate sustainable design principles into their vehicle development.

For eBAJA -

The objective is to encourage teams to build efficient vehicles by applying sustainable design principles, focusing on optimising battery performance to achieve greater range with minimal energy consumption.

Further details regarding the evaluation criteria and methodology will be communicated at a later stage of the event.

The actual format and process of the sustainability event may change from year to year as determined by the organizing body. The sustainability event guidelines shall be released on BAJA SAEINDIA Forum.

ARTICLE E.6 : CAE EVENT – NA POINTS

E.6.1 CAE Event Overview and Objective

The aim of this event is to evaluate the team's depth of knowledge in CAE Analysis, optimization study, and its application to build a light and durable vehicle. The CAE report should contain details of each analysis such as the objective, methodology used, modelling, pre-processing parameters, constraint, boundary conditions, solver setting, and result outcome with contours, diagrams, plots, graphs, etc. Teams will be awarded based on the Report Evaluation and Final Presentation.

E.6.2 Format for Document Submission

Sr	Document	File Type
1	CAE Report	.pdf

E.6.3 Judging Process

Evaluation will be based on the below criteria:

- Roll Cage Analysis
- Static Analysis
- Dynamic Analysis
- Torsional & Bending Analysis
- CFD Analysis
- Multibody Dynamic Analysis
- Thermal Analysis
- Fatigue Analysis
- Fatigue Analysis Custom Vehicle Component/ System Analysis
- Overall CAE Fundamentals and Knowledge

The actual format, process, and judging criteria of the CAE Event may change from year to year as determined by the organising body. The CAE event guidelines shall be released on the BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

ARTICLE E.7 : INNOVATION EVENT – NA POINTS

E.7.1 Innovation Event Overview and Objective

The Innovation Event is conducted in BAJA SAEINIA with the sole purpose of driving students towards new developments, idea generation and incubating a positive problem-solving attitude by harnessing their engineering abilities. BAJA SAEINDIA consistently encourages teams to push the boundaries of innovation, not only in vehicle design but also in refining manufacturing processes and implementing cost-effective techniques.

The primary objective of this event is to challenge teams to brainstorm and devise innovative solutions and apply them to real-world problems. The solution must be presented as a tangible Proof of Concept at the main event site.

E.7.2 Format for Document Submission

Sr	Document	File Type
1	Abstract	.pdf

E.7.3 Judging Process

The abstract submitted by the teams will be evaluated based on the following criteria -

1. **Comprehension of the Problem Statement** - The extent to which the team demonstrates a clear understanding of the stated problem.
2. **Simplicity and Usage Convenience of the Proposed Solution** -The simplicity and ease of use of the proposed solution ensure it is user-friendly and straightforward.
3. **Innovative Advantages** - Evaluation of the proposal's advantages concerning existing or similar products in the market, emphasising innovation and distinctiveness.
4. **Potential Cost Reduction** - Assessment of the proposal's potential to reduce production costs, thereby enhancing cost-efficiency in implementation.

The actual format, process, and judging criteria of the Innovation Event may change from year to year as determined by the organising body. The innovation event guidelines shall be released on the BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

ARTICLE E.8 : HIGH VOLTAGE SYSTEM EVALUATION (eBAJA only) – 20 POINTS

E.8.1 High Voltage System Evaluation Overview and Objective

To accommodate the inclusion of a higher voltage architecture in eBAJA vehicles, BAJA SAEINDIA is introducing a new static event titled High Voltage System Evaluation starting from the 2026 season. This is a bonus static event, and the scores earned will be added to the team's final overall score.

Only those teams that have implemented a 72V electrical system in their vehicle are eligible for Bonus. All Teams who clear Technical Inspection(including Rain Test) & Brake test will be awarded Bonus Point.

Further details, including the evaluation criteria and specific requirements, shall be released on the BAJA SAEINDIA Forum.

ARTICLE E.9 : DRONACHARYA EVENT – NA POINTS

E.9.1 Dronacharya Event Overview and Objective

The Dronacharya Event is a dedicated event in BAJASAEINDIA for the team's faculty advisor, designed to evaluate and honour the exceptional mentorship and guidance provided by the faculty advisor. This event recognises the crucial role of faculty advisors in shaping the skills and knowledge of their student teams.

E.9.2 Format

The Dronacharya Event is conducted into 3 parts mostly - QnA Session, Group Discussion and Personal Interview but may change from year to year as determined by the organizing body. The Dronacharya event details will be shared to faculty advisors via their registered email address.

Please note both the official faculty advisors can appear, provided they have virtual presence in Phase I and physical presence in Phase II.

The actual format, process, and judging criteria of the Dronacharya Event may change from year to year as determined by the organising body. The Dronacharya Event guidelines shall be released on the BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

ADDITIONAL EVENT: MANUFACTURING EXCELLENCE EVENT – 50 POINTS

Manufacturing Excellence event is aimed in bring out students' capabilities to use best industry manufacturing practices during the Overall Buggy Development Process. By focusing on reducing waste, optimizing resource utilization, enhancing process reliability, and empowering employees, teams' can deliver consistent value and stay competitive in the Event.

As a result BAJA SAEINDIA from 2026 has decided to gauge the same through a part of a Event.

The actual format, process, and judging criteria of the Manufacturing Excellence Event may change from year to year as determined by the organising body. The Manufacturing Excellence Event guidelines shall be released on the BAJA SAEINDIA Forum. Previous event guidelines are available on the BAJA SAEINDIA Website.

PART F TECHNICAL EVALUATION

ARTICLE F.1 Technical Evaluation - Pass/Fail

All BAJA SAEINDIA® vehicles must pass the technical inspection before they are permitted to operate for Dynamic events under its own power.

1. The evaluation will determine if the vehicle satisfies the requirements and restrictions of the BAJA SAEINDIA® rules.
2. If vehicles are not complete in all aspect for technical evaluation when they arrive for the inspection, they will be sent back.
3. Any vehicle may be re-inspected at any time during the competition and correction of any non-compliance recommended by any of the authorised TEJ or Dynamic Team or Organising Committee Members will have to be carried out before further participation in the event.
4. Technical Evaluation Timings for Day 1 & Day 2 will start at 9.30 A.M. and will be closed at 6.00 P.M. For Day 3 TI start at 9.30 A.M. and will be closed at 3.00 P.M. Day 3 TI timings may be reduced without notice. It is recommended that all teams make their 1st attempt of TI (for both Mechanical and Electrical safety scrutiny) on the Day 1 itself.

ARTICLE F.2 Technical Evaluation Procedure

Technical inspection will consist of three (3) separate stages– Engine check (for mBAJA vehicles) / eKIT check and Rainstorm test (for eBAJA vehicles), Safety Scrutiny, and Panic Braking. One sticker will be issued for completing each of these critical stages (i.e., a total of three stickers to be issued for clearing all three stages of technical evaluation). The Technical Inspection check sheet which consists of all the check points will be issued to all teams before the Physical dynamic event. Teams are supposed to evaluate/verify all the check points and must carry the self-evaluated Technical Inspections check sheet for evaluation by the BAJA technical inspection Judges. Two attempts will be given for every team to clear each stage.

- **Only after attempting all the sub-stages, the attempt will be considered as first attempt.**
- **Teams will get respective stage sticker only after clearing all the sub-stages/check points which are mentioned in that stage.**

F.2.1 Weight measurement

The tare weight of the vehicle will be measured and recorded.

F.2.2 Engine Inspection and Governor setting- Governor Setting Check (mBAJA only)

Honda Technical Representatives will check/set the governors of all vehicles. Vehicles must be presented for governor setting with the engine output shaft bare, the drivetrain disconnected, and the throttle cable disconnected from the engine and working kill switches. Each vehicle engine will be confirmed by Honda technical team, that will include:

(1) Confirm its compliance with the rules and

(2) Set the governor to the specified rpm.

Honda team will provide an “Engine OK” sticker on confirmation. Thereafter, teams are not allowed to make any changes in engine governor settings. If any team is found with altered/tempered engine settings, it will be disqualified.

F.2.3 eKIT Check and Rainstorm test (eBAJA only)

F.2.3.1 eKIT Check

All the Electrical Systems of an eBAJA vehicle shall be inspected for safety & compliance according to PART C: ELECTRICAL POWERTRAIN AND SYSTEMS (eBAJA only). eKit check will happen in two sub-stages.

1. Tractive system & its components: In this stage all the Tractive System components rating, working, compliance for certifications as mentioned in this rulebook, wiring and mountings will be verified.

- **Teams will have to bring all the necessary documents and tools for verification during eKit Check.**

2. LV System: In this stage all the LV components rating, working, wiring, mountings, sequence of activating the tractive system shall be verified.

- **If the team has a plan to opt for swapping during Endurance, they need to demonstrate the Swapping process during the TI.**

F.2.3.2 Rainstorm Test

This test setup is intended to simulate a rainstorm. All surfaces with normally open parts shall be exposed (to rain water storm conditions) for specific duration (around 30 seconds). Once the test is performed on the vehicle. It will be checked for compliance with the isolation resistance test of atleast 100 Ω/V of nominal voltage, while keeping all the equipments connected to the Tractive system Accumulator i.e., vehicle should be in Ready to drive mode, and before rainstorm test isolation resistance should be atleast 500 Ω/V of nominal voltage.

- **The 'Rainstorm Test' is a mandatory requirement for all the teams (Category I & II) as part of the Electrical Technical Inspection (TI). Electrical TI clearance will be granted upon the successful completion of this test only.**
- **Teams are requested to place the controller at easily accessible location for required measurements.**
- **Timing may be subjected to change at the time of actual test.**

1. Electrical Isolation (Ri) :

If V1 ≥ V2

Ri (in ohms) = Ro*(Vb/V1' – Vb/V1)

Else

Ri (in ohms) = Ro*(Vb/V2' – Vb/V2)

Where, Ro = standard known resistance in ohms

Vb = Tractive system Accumulator Voltage in volts

V1 = Voltage between the negative side of the Tractive system Accumulator and the chassis in volts

V2 = Voltage between the positive side of the Tractive system Accumulator and the chassis in volts

V1' = Voltage between the negative side of the Tractive system Accumulator and the chassis, with Ro installed in volts

V2' = Voltage between the positive side of the Tractive system Accumulator and the chassis, with Ro installed in volts

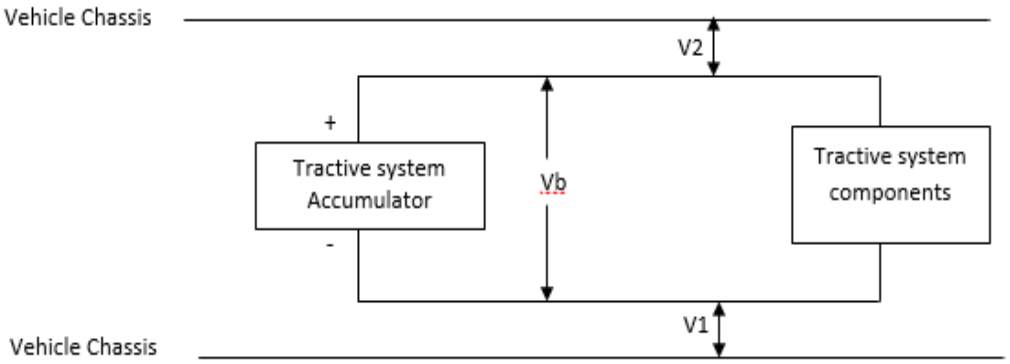

*Figure F-1: Block di*agram without Ro installed

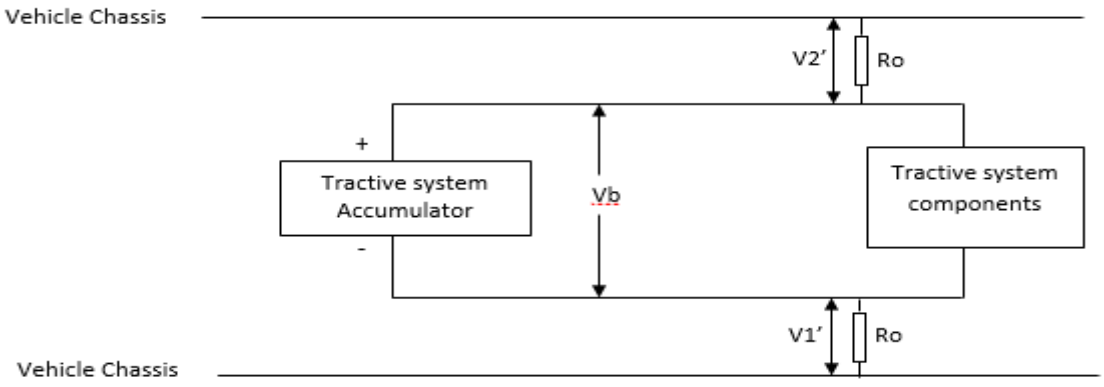

*Figure F-2: Block di*agram with Ro installed

2. Isolation Resistance(IR) :

Isolation Resistance (in Ω/V) = Ri/V

Where Ri = Electrical isolation in ohms

V = Nominal voltage of the Accumulator in volts

F.2.4 Technical Safety Scrutiny

Each vehicle will be inspected to determine if it complies with the requirements and restrictions of the BAJA SAEINDIA® rules. This inspection will include an examination of the driver's equipment including helmet and arm restraints, a test of driver exit time and to ensure that all drivers meet the requirements of the rules. Each team must bring the following items for inspection.

A. Frame Material Documentation: Receipts documenting all the material purchased, or otherwise acquired, and used to build the frame. Note that material certificate from the supplier as well as certificate of MATERIAL COMPOSITION and MECHANICAL PROPERTIES CONFIRMATORY TEST AT AUTHORIZED LABORATORY ARE MANDATORY. Roll cage tube material suppliers' test reports and Local Test Reports need to be submitted.
B. Roll Cage Specification Sheet: A completed copy of the Roll Cage Specification Sheet. In case a higher grade of Steel is used then the supportive calculations should prove that cross-section is adequate and bending stiffness and strength are achieved.
C. Technical Inspection check sheet: At the college level, **Self-Technical Inspection check sheet** compliance is expected and the same should be submitted while technical evaluation is being done.
D. Drivers Present: Both drivers must be present at technical inspection with a valid license and complete safety gear.

The safety scrutiny will also check for electrical systems, kill switch, lighting, reverse lamp, Buzzer (if installed), horn, wiring, and their mountings, etc. Both the external and cockpit kill switches will be tested for functionality. The system should pass the test.

All hardware fasteners and their mountings should comply with basic requirements.

☑ **Any major rework suggested during the technical inspection must be carried out in respective vehicle pits and not in any other place (Refer to Part H: Miscellaneous Topics – Article 1).**

F.2.5 Dynamic/panic brake test

The objective of this test is to ensure the vehicle is safe for driving, while it goes up to the speed of 60 kmph during the dynamic events. The Brake test requires the vehicle must attain a minimum speed of 40 kmph within 200 ft. distance thereafter it should be capable of stopping with all four wheels locked (within the distance of 26 ft or 8 m).

☑ **All four tyres must be marked with a white radial strip of 25 mm (1.0 in) width (on the outer side of tyres) for wheel lock check. The markings should be done by the teams. Refer to the region highlighted within the red box in Figure F-3.**

Figure F- 3: Tyre Markings for Wheel Lock Check

Every team should demonstrate that all four-wheel brakes are effective for high-speed braking. Each vehicle must come to rest in an approximately straight line specified by the inspectors. If a vehicle fails to pass any part of the inspection, it must be corrected/modified and brought into compliance with the rules before it is permitted to operate.

Only two attempts are permitted for the Brake test.

On successful completion of brake test, the vehicle is considered as 'Technical Evaluation OK' and then 3rd sticker will be pasted on the vehicle. Log Sheet to be submitted to brakes, technical evaluator.

Brake test also follows the same timings as technical evaluation. For Day 3, the Brake test track will be closed at 6.00 PM. Timings will be adhered strictly.

- **FOR IN-BOARD BRAKES: Since teams are using inboard brakes which are mounted on the shaft, the other side of the shaft is connected with UJ, or the CV joint creates play while the brake is in action. This results in a delay in brakes being applied on one of the rear wheels and further rotation in it.**
- **In such a case only half turn rotation (max 180 degrees) will be considered. Brake effectiveness will be allowed only if the rotation of all 4 wheels stops, and the vehicle comes to stop at a place instantly.**
- **Juddering of wheels due to reactive forces on rotor and brake caliper will be considered ineffective braking. Generally, two-wheeler brake systems show this characteristic. Therefore, it is not recommended to be used for BAJA SAEINDIA® vehicles.**

ARTICLE F.3 Inspection Stickers

1. A multi-part inspection sticker will be issued in sections to each vehicle as each of the three parts of the technical evaluation is completed. The inspectors will place the inspection sticker on the right side of the firewall above the driver's shoulder. The inspection sticker must remain on the vehicle throughout the competition.
2. Any or all parts of the inspection sticker may be removed from any vehicle that has been damaged or which is reasonably believed to not comply with the rules.

PART G VALIDATION EVENT – 50 POINTS

ARTICLE G.1 OVERVIEW

The Virtual Dynamic Events commenced in 2021, Further BAJA SAEINDIA® introduced the Validation Event in 2022 for student teams to wield simulation tools and fortify vehicle design, by gauging the results of the virtual vehicle run in tandem with the physical vehicle run. Thus, BAJA SAEINDIA® has decided to continue validation event. Under the partnership with a virtual automotive testing software provider (to be finalized at a later stage of the event) for the 2026 season, BAJA SAEINDIA will provide a **fixed number of software licenses to all the registered teams**. Extensive training will also be provided to the teams to help model their vehicle, build off-road terrains, and simulate the vehicle in race conditions on the software. This value addition of vehicle optimization using a virtual automotive testing solution shall aid the teams to design and build a vehicle at par with professional racing teams.

ARTICLE G.2 OBJECTIVE

The objective of the Validation Event is to authenticate a system-level coherence of the Virtual Vehicle with the Physical Vehicle built by the teams participating in Physical round of the BAJA SAEINDIA® event.

The Validation Event guidelines will be released on BAJA SAEINDIA Forum.

- **Teams are required to visit the BAJA SAEINDIA Forum for the rules and updates about the set of guidelines for Virtual Dynamic Events.**

PART H DYNAMIC EVENTS – 675 POINTS

The dynamic events are intended to determine how the BAJA SAEINDIA® vehicles perform under a variety of conditions. Note that the organizers may modify the dynamic events to address local conditions, weather, or resources.

ARTICLE H.1SCORING SUMMARY

DESCRIPTION	POINTS
Acceleration	50
Sledge Pull / Hill Climb	50
Maneuverability	75
Specialty Event	100
Endurance	400
Total Marks	**675**

Figure H-1: Dynamic Events, Table of Points

Any change in the scoring pattern shall be informed to the teams through the BAJA SAEINDIA Forum.

ARTICLE H.2 PRACTICE

H.2.1 Objective

Organizers may or may not provide a practice track to teams. A practice track allows teams to test or tune their vehicle within the limits of the rules.

H.2.2 Course

If the organizer provides a practice track, the course length and features are at the organizer's discretion.

H.2.3 Procedure

After a safety check, vehicles are signaled to enter the practice track. After a predetermined time set by the track worker, the vehicle is signaled to exit the practice track.

H.2.4 Penalties

Teams may be signaled to exit the practice track or barred from using the practice track if the track worker or competition officials observe unsafe conditions or behaviors.

H.2.5 Signals and Signage

See H.8.9 - Signals and Signage.

H.2.6 Scoring

There is no score awarded for practice.

ARTICLE H.3 ACCELERATION – 50 POINTS

H.3.1 Objective

The Acceleration Event is designed to measure each vehicle's ability to come up to speed quickly from a standing start.

H.3.2 Course

Acceleration is measured as the time to complete a 30.48 m (100 ft.) or 45.72 m (150 ft.) flat, straight course from a standing start. The course surface may vary from pavement to loose dirt. The choice of course length and surface is at the organizer's discretion.

H.3.3 Procedure

After a safety check, vehicles are positioned at the start line of the course. The track worker will check that the driver is ready to begin. Once the driver is ready, the track worker will signal the driver to proceed down the course. After completing the run on the course, the vehicle will be directed to the course exit.

Each vehicle may make two (2) runs on the course.

H.3.4 Penalties

Stall At Start – Run DQ
False Start – Run DQ
Driving off Course – Run DQ

The organizer may modify the penalties imposed for different violations to account for differences in the length or design of specific event courses.

H.3.5 Signals and Signage

See H.8.9 - Signals and Signage.

H.3.6 Scoring

The maximum number of available points for the acceleration event is 50 points.

Scoring will be based on the better of the two attempts. Timing will be performed with an electronic timing system.

The following equation will be used for the acceleration score (Sac):

$$S_{ac} = 50 \text{ X } \frac{t_{max} - t_{run}}{t_{max} - t_{min}}$$

Where:

tmin is the lowest (fastest) time by any vehicle.

trun is the time recorded for a vehicle's run to be scored.

tmax is the minimum of the following:

- The longest (slowest) time by any vehicle, or
- 1.5 times tmin

Vehicles with acceleration times that are more than 1.5 times that of the fastest vehicle will not receive a score for this event. Teams attempting the event but exceeding the time limit will be classified as "Excess Time."

ARTICLE H.4 TRACTION EVENT – 50 POINTS

H.4.1 Objective

This event tests the vehicle's relative ability to climb an incline from a standing start or pull a designated object, e.g., progressive weight skid, vehicle, or chain along a flat surface.

H.4.2 Course

The traction event may take place on a straight or curved course. The organizer will determine the hill elevation (height), hill inclination (grade), and hill surface or object to be pulled.

H.4.3 Procedure

After a safety check, vehicles are positioned at the start line of the course. The track worker will check that the driver is ready to begin. Once the driver is ready, the track worker will signal the driver to proceed down the course. After completing the run on the course, the vehicle will be directed to the course exit.

Vehicles may not continue the attempt after they have stopped on the course.

H.4.4 Penalties

Driving Off Course – Score as maximum progress at the point of exiting the course.

H.4.5 Signals and Signage

See H.8.9 - Signals and Signage.

H.4.6 Scoring

The maximum number of available points for the traction event is 50 points. Scoring will be based on the better of the two attempts. Timing will be performed with an electronic timing system. If a vehicle cannot complete the course and get a time, it will be scored on the distance that it travels before stopping. Once the vehicle stops moving forward the attempt is over and the attempt is scored for distance at that point.

H.4.6.1 Method 1 (Different Distances)

If none of the vehicles are able to complete the course, then: The following equation will be used for the traction score (Str):

$$S_{tr} = 50 \text{ X } \frac{d_{run} - d_{min}}{d_{max} - d_{min}}$$

Where:

d_{min} is the shortest distance by any vehicle.

d_{run} is the distance traveled for the vehicle to be scored. d_{max} is the longest distance by any vehicle.

H.4.6.2 Method 2 (Fixed Distance, All Succeed)

If there is (a) a set maximum distance and (b) all teams succeed in completing a full distance hill or pull, then the score will be based on the time for the full distance.

The following equation will be used for the traction score (Str):

$$S_{tr} = 50 \text{ X } \frac{t_{max} - t_{run}}{t_{max} - t_{min}}$$

Where:

t_{min} is the lowest (fastest) time by any vehicle.

t_{run} is the time recorded for a vehicle's run to be scored. t_{max} is the minimum of the following:

- The longest (slowest) time by any vehicle, or
- 2.5 times t_{min}

H.4.6.3 Method 3 (Fixed Distance, Some Succeed)

If there is (a) a set maximum distance and (b) at least one team climbs the hill or makes a full pull and others do not, then the vehicles going the full distance (Group I) will be scored based on time and the vehicles that fail to climb the hill or make a full pull (Group II) will be scored based on distance.

Group 1

Where:

t_{min} is the lowest (fastest) time by any vehicle.

t_{run} is the time recorded for a vehicle's run to be scored.

$$S_{tr1} = 50 \text{ X } \frac{t_{min}}{t_{run}}$$

Group 2

$$S_{tr2} = \min(S_{tr1}) \times \frac{d_{run}}{d_{course}}$$

Where:

d_{run} is the distance recorded for a vehicle to be scored.

d_{course} is the full length of the course to be run by the vehicle.

ARTICLE H.5 MANEUVERABILITY – 75 POINTS

H.5.1 Objective

Maneuverability is designed to assess each vehicle's agility and handling ability over off-road terrain. Teams will attempt to maneuver through the course with a minimum time.

H.5.2 Course

The course may consist of a variety of challenges at the organizer's option, possibly including tight turns, pylon maneuvers, ruts, bumps, drop-offs, sand, rocks, gullies, logs, and inclines.

H.5.3 Procedure

After a safety check, vehicles are positioned at the start line of the course. The track worker will check that the driver is ready to begin. Once the driver is ready, the track worker will signal the driver to proceed down the course. After completing the run on the course, the vehicle will be directed to the course exit.

Each vehicle may make two (2) attempts at the course.

H.5.4 Signals and Signage

See H.8.9 - Signals and signage.

H.5.5 Penalties

The organizer will select penalty types imposed for different violations to account for differences in the length or design of specific event courses. Penalties are time added to the total time a vehicle took to complete the course for a given run. The organizer will announce penalties on their event website or at a mandatory team meeting.

Example Penalties:

Pylon or Obstacle Moved -	2 seconds
Missed Gate* -	10 seconds
Excessive Driving Off Course** -	Run DNF
False Start -	First- Rerun at the end of the line Second- Run DNS

***Note 1:** Missed gate is when 2 or more wheels are outside the course.*

****Note 2:** Excessive driving off course is when any one wheel of the vehicle is outside the boundary line of the course over a considerable distance. The distance is discretionary and will be determined by the course captain.*

H.5.6 Scoring

The maximum number of available points for the maneuverability event is 50 points.

Scoring will be based on the best of the two attempts. Only vehicles that complete the maneuverability course within a time not exceeding 2.5 times that of the fastest vehicle will receive a score. If a vehicle is on the course for a time that exceeds 2.5 times the fastest time recorded to that point, then the attempt may be declared over, and the vehicle may be removed from the course and scored as "Excess Time."

Maneuverability scoring is based on the vehicle's time to complete the course. Penalties are added to the vehicle's time for a given run.

The following equation will be used for the maneuverability score (Sman):

$$S_{ma} = 75 \text{ X } \frac{t_{max} - t_{run}}{t_{max} - t_{min}}$$

Where:

tmin is the lowest (fastest) time by any vehicle.

trun is the time recorded for a vehicle's run to be scored. tmax is the minimum of the following:

- The longest (slowest) time by any vehicle, or
- times tmin

ARTICLE H.6 SPECIALITY EVENTS – 100 POINTS

Specialty events are designed to test the vehicle under unique off-road conditions that might be unique or specific to a particular BAJA SAEINDIA ® competition site.

Examples of specialty events are Rock Crawl, Mud Bog, and Suspension.

The dynamic events at competitions differ. Teams should check the websites of the specific competitions they are planning to enter and consider any unique requirements that might affect the design and fabrication of their vehicle.

H.6.1 Objective

Specialty events may require the vehicle to complete a course in a minimum time or proceed a maximum distance. The objective of specialty events is at the discretion of the event head.

H.6.2 Course

The course of specialty events is at the discretion of the event head.

H.6.3 Procedure

After a safety check, vehicles are positioned at the start line of the course. The track worker will check that the driver is ready to begin. Once the driver is ready, the track worker will signal the driver to proceed down the course. After completing the run on the course, the vehicle will be directed to the course exit.

Each vehicle may make two (2) attempts at the course.

H.6.4 Penalties

Penalties for specialty events are at the discretion of the event head.

H.6.5 Signals and Signage

See H.8.9 - Signals and Signage.

H.6.6 Scoring

The scoring system and penalties employed by the event head must adhere to one of the options defined for either (a) the Maneuverability event, or (b) the Traction event. The maximum number of available points for the Specialty Event is 100 points.

ARTICLE H.7 ENDURANCE – 400 POINTS

H.7.1 Objective

The Endurance event assesses each vehicle's ability to operate continuously and at speed over rough terrain with obstacles in potentially adverse weather conditions (rain, snow, etc.). The Endurance event may be run for time or distance. The default is four (4) hours, and the vehicle with the most laps (orbits) around the course is declared the winner.

H.7.2 Course

The Endurance course is a closed loop measuring approximately 1.0 km to 4.0 km. The Endurance course may feature different surfaces (e.g., dirt, grass, sand, mud, gravel, stone, and asphalt). The Endurance course will feature various obstacles and terrain to test the vehicle's Endurance, traction, and speed.

H.7.3 Procedure

H.7.3.1 Pre-Gridding

Teams will pre-grid before the Endurance event and be placed into starting positions based on each team's performance in a previous dynamic event, or set of dynamic events, to be determined by the organizer. Pre-gridding will close at a pre-determined time by the organizer. Teams late to pre-grid will be gathered in the pit exit lane and released to the track after the race has started.

H.7.3.2 Compliance Check

During pre-gridding, or after pre-gridding closes, for mBAJA vehicles, engines will be started, and eBAJA vehicles should be kept in "Ready to Drive" mode, and the Technical Inspector will perform a compliance check. During compliance checks and gridding, the driver and vehicle may only have one team member accompany them. The compliance check includes, but is not limited to, inspection of the following:

- Helmet Certification
- Helmet Fitment and Securement
- Safety Harness
- Driver Equipment
- Driver Wrist Band
- Fire Extinguisher
- Kill Switches
- Brake System
- e-KIT including Fuse (eBAJA Only)

Unprepared drivers or out-of-compliance vehicles deemed unsafe or not ready to drive will be ordered out of the gridding line by Technical Inspectors and sent to the paddocks to make corrections. Vehicles not ready to drive must check in at the pit exit lane to be admitted to the track.

H.7.3.3 Gridding

Once the compliance check is complete, vehicles begin to form the grid and approach the start line as marshalled by track workers or Technical Inspectors.

H.7.3.4 Starting

The Endurance event may be started by a funnel start, standing staggered start, or rolling start. A funnel start is when cars are arranged in a conical formation and released all at once. A standing staggered start is used to release cars in groups of two with a delay in between groups. A rolling start allows a run-in distance to the start line. The rolling start may be performed on the course. The start type will be determined by the organizer.

All vehicles will be considered to have begun the race simultaneously at the time when the starter releases the first vehicle onto the course, regardless of their actual position on the grid.

H.7.3.5 Running

Endurance will be run as either:

- A single four (4) hour race
- A predetermined and published distance
- Elimination heats are followed by a final in which the total time of one elimination heat plus the final is 4 hours. The organizer will announce the structure of the event before the start.

Vehicles will safely navigate the course and accrue laps (orbits) to be counted and scored.

H.7.3.6 Driver Change

During the course of the Endurance race, if a driver change is necessary, the vehicle can be taken to either the race pit or fueling station (for mBAJA vehicles) or Accumulator(s) Swapping area (for eBAJA vehicles), as per instructions. Here registered the second driver can take charge and continue further in an Endurance event.

The organizer reserves the right to require at least one driver change during the Endurance event.

H.7.3.7 Refuelling (mBAJA only)

H.7.3.7.1 Location

The Fueling Zone (FZ) consists of the Fueling Area (FA), Fuel Quarantine Area (FQ), Crew Area (CA), and Harness Check Area (HC).

Only three (3) people from any given team, including drivers, are allowed within the Fueling Zone (FZ) at any one time.

Active refueling occurs in the FA. All stored fuel not in use is located in FQ. Vehicles and drivers will proceed to the HC before returning to the track.

H.7.3.7.2 Procedure

Vehicles requiring fuel will exit the track at the designated location and proceed at walking speed to the fueling area.

Before refueling, the vehicle must be stopped, the engine shut off, and the driver **completely out of the vehicle**. The driver may not be tethered in any way, by a harness, communications equipment, or clothing.

Before refueling, a team's pit crew member must have a fire extinguisher ready and pointed at the fuel transfer point on the vehicle. The exiting driver is the only team member permitted to remove the fuel tank cap.

A team refueling their vehicle before the driver is clear of the vehicle or who fails to have a fire extinguisher present and pointed at the fuel transfer point will be penalized.

The fueling area is to be clear of anyone not immediately servicing a car.

A fire extinguisher must be present and pointed at ANY transfer of fuel, including re-filling a smaller container from a larger one when a vehicle is not present.

H.7.3.7.3 Driving in the Fuel Area

All cars must operate at a walking speed while in the Fueling Area and when entering/exiting the area. Any team found speeding in the fueling area will be assessed a penalty.

Cars may not be pushed into the Fueling Area (FA) without a driver being present and prepared to drive (i.e., wearing all required safety equipment).

H.7.3.7.4 Fuel Containers

Teams are not permitted to bring fuel to the event.

Fuel will be provided by the organizers in a specially designated fuel bunk in an Indian event. Teams are not permitted to bring fuel to the event. Fueling will be done only in the designated FZ area. Any team found with fuel in the paddocks during the event will be disqualified from **participation in any event and points earned thus far will be eliminated.**

H.7.3.7.5 Repairs in Fueling Area

No work requiring a tool may be performed in the Fueling Area. Teams are allowed to make adjustments that do not require any tools. Examples include driver harness, seat position, spring-damper preload, etc.

Tools of any kind, backpacks, wagons, extra driver equipment, and coolers are specifically prohibited. Extra driver equipment may be brought to the Fueling Area for use, but extra driver equipment may not be stored in the Fueling Area.

H.7.3.8 Accumulator(s) Swapping (eBAJA only)

Please refer to Part C – Article 8: Accumulator(s) Swapping.

H.7.3.9 Service

H.7.3.9.1 Remote Pit

The organizers may elect to create a remote pit for the Endurance event. Any vehicle requiring minor repairs and adjustments can be attended to in a remote pit near the Endurance track.

H.7.3.9.2 Paddocks

Teams whose vehicle requires service and repairs may exit the track at the designated location and proceed at walking speed to their paddock. No repairs are permitted on the course at any time.

H.7.3.10 Recovery

Vehicles disabled on the Endurance course may be recovered by track workers, or by designated recovery crews. Track workers will attempt to assist disabled vehicles. It is the driver's responsibility to assist and cooperate with the course marshals in removing the vehicle. Drivers may not exit the vehicle to start the engine. Drivers must be seated and secured in the vehicle before track workers will attempt to restart the engine.

If track workers are unable to assist a disabled vehicle, a recovery crew may transport the disabled vehicle to the paddocks. Drivers being towed to the paddock are required to remain seated and secured in their vehicle with all safety equipment on.

Recovery crews are dispatched and operate on a "first-come, first-served" basis. No priority will be given to any team over another.

H.7.3.11 Finish

The Endurance event is finished when the lead car crosses the finish line after the time limit or distance has been reached. Vehicles remaining on the track will be allowed to finish their lap. Vehicles in the fuel zone or Accumulator(s) Swapping area will not be allowed to come back on track after this time.

As vehicles cross the finish line, track workers will direct vehicles to the paddocks or the impound area (if required). All post-event traffic shall be at walking speed.

H.7.3.12 Impound

The organizers reserve the right to impound and inspect any vehicle during or after the Endurance event. The Technical Inspectors will direct and instruct teams in impound on how to proceed. mBAJA Teams may be required to surrender their engine, as per H.9.8 - Surrender of Engine.

H.7.3.13 Penalties

Event captains are the only personnel permitted to call and assess penalties during the Endurance event. Event Captains are distributed throughout the Endurance course during the event. Penalties during the Endurance race will be signaled and vehicles ordered off the track from the black flag area. Event Captains may stop any vehicle at any time if they believe it no longer complies with the requirements and restrictions of the rules. All timed penalties are enforced from when the vehicle is in the black flag area, i.e., the time spent being towed back to the pits does not count towards the penalty.

H.7.4 Driver Equipment

Any driver who is not using all the approved and required drivers' equipment will be flagged.

H.7.4.1 Mechanical Faults

All cars must remain in the as-approved condition in order to compete; any condition that is deemed not to meet this requirement will be flagged to make necessary repairs or adjustments. If a vehicle is stopped by officials for a mechanical fault, the fault must be corrected before it may re-enter the event.

H.7.4.2 Vehicle Assists

Certain areas of the Endurance course have been identified as difficult obstacles. If a vehicle is assisted two times on the same obstacle, the vehicle may be black flagged, and the driver warned that one more assist will result in the removal of the vehicle for the remainder of the event.

H.7.4.3 Roll Over

If a vehicle rolls over (end over end, or over on its side) anywhere on the track two times (in any location, regardless of driver), the vehicle will be black flagged, and the driver warned that one more roll-over will result in removal of the vehicle for the remainder of the event. Rollovers will be judged at the discretion of the Event Captains. Any vehicle that rolls over must be inspected by the Technical Inspectors before returning to the track.

H.7.4.4 Endurance Penalty Table

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Penalty Type	Infraction	1st Offense	2nd Offense	3rd Offense
Fuel	Possession of fuel	DQ	-	-
Fuel	Fueling on the track	DQ	-	-
Fuel	Use of tools on the car in the fuel area	Warning	10 minutes	DQ
Fuel	More than 3 people in the fuel	Warning	10 minutes	DQ
Fuel	Fueling with the driver in the car	30 minutes	DQ	
Fuel	Fire extinguisher not ready during fueling	10 minutes	20 minutes	DQ
Fuel	Run out of fuel on the track	5 minutes	5 minutes	5 minutes
Driving	Vehicle Roll Over	-	Warning	DQ
Driving	Passing during a yellow flag	Warning	Discretionary	Discretionary
Driving	Failure to stop for the black flag when signaled	10 minutes	Discretionary	Discretionary
Driving	Leaving the course and advancing	5 minutes	Discretionary	Discretionary
Driving	Aggressive driving	10 minutes	DQ	-
Driving	Speeding in the pit or paddocks	5 minutes	20 minutes	DQ
Driving	Team member on the track	50 points/member/sighting		

Figure H-2: Endurance Event, Table of Penalties

H.7.5 H.7.5 Signals and Signage

See H.8.9 - Signals and Signage

H.7.6 H.7.6 Scoring

H.7.6.1 Points

The maximum possible points for Endurance are 400 points.

H.7.6.2 Determination of Winner

1. The team that completes the distance of the competition first or the greatest number of scored

laps in the time set for the competition will be declared the winner.

2. In competitions of a given distance, the chequered flag will be given first to the leading car, then to the other finishers as they cross the finish line.
3. In competitions of a timed length, the chequered flag will be given first to the leading car as it crosses the finish line at or after the expiration of the specified duration, then to the other finishers in the order they cross the finish line.
4. If the leading car is not running at the expiration of the time limit, the chequered flag will be given to the next highest running car in the same manner.

H.7.6.3 Scored Laps

Scored laps are the number of full laps actually completed during the Endurance event. Only full laps count; partial laps do not count for the score. A vehicle must cross the timing line under its own power for a lap to be counted.

H.7.6.4 Finish Order

The finish order is the sequence in which vehicles cross the finish line after the lap scoring period has ended. The finish order determines the ranking of teams completing the same number of laps. For example, if the top four teams finish with the same number of laps, then they will be ranked 1st to 4th based on their finish order.

H.7.6.5 Bonus Points

Bonus points are additional points awarded to the first ten (10) vehicles on the leading (winning) lap, separated by finish order as required, in part to differentiate teams finishing with the same number of scored laps. Up to 10 bonus points will be awarded in the inverse order of finish. Thus, the first vehicle to cross the finish line in the highest lap group will receive bonus points equal to the number of cars on the lead lap (max of 10); the second vehicle will receive one less bonus point, etc. Example:

Position	Lap	Bonus Points
1	48	4
2	48	3
3	48	2
4	48	1
5	47	0

Figure H-3: Endurance Event, Table of Bonus Points

H.7.6.6 Score

Endurance scoring is based on the number of laps the vehicle completes in the allowed time:

$$S_{en} = \left(400 \times \frac{l_{team} - l_{min}}{l_{max} - l_{min}}\right) + P_{bonus}$$

Where:

l_{max} is the maximum number of laps completed by any vehicle.
l_{team} is the number of laps completed by the vehicle to be scored.
l_{min} is the minimum number of laps completed by any vehicle.
P_{bonus} is the number of bonus points awarded to a qualifying vehicle.

H.7.6.7 Heat Plus Final Scoring

When Endurance is run as heats plus a final, the points for the event will be distributed between the heats and the final in proportion to the time/distance of each stage.

Thus, if Endurance is run as one (1) hour eliminations plus a three (3) hour final, the three hundred (300) total points will be allocated as seventy-five (75) points to each elimination heat plus two hundred twenty-five (225) points to the final.

ARTICLE H.8 GENERAL EVENT PROCEDURES AND REGULATIONS

H.8.1 Safety

H.8.1.1 Safety Vision

Safety is the primary consideration in the design of BAJA SAEINDIA® vehicles and the conduct of the competitions. No event or competition is so important that teams and organizers cannot take the time to work safely. All participants will strive to create a safe competition where all participants return home in the same condition in which they arrived.

H.8.1.2 First Aid / CPR / AED

While medical services are always on-site at BAJA SAEINDIA® events, teams are encouraged to be familiar with or trained in first aid, CPR, and the use of AED machines.

H.8.1.3 Approaching Others

All participants are empowered to approach others directly and respectfully if they see a hazardous or unsafe condition and notify the person in danger. Persons approached regarding a safety concern are obligated to respectfully acknowledge the situation and are encouraged to thank those who approached them for their concern.

H.8.1.4 Responsibility

At all performance events, it is the responsibility of the team to ensure both the vehicle and driver meet and follow all the requirements and restrictions of the rules.

H.8.1.5 Personal Protective Equipment

Teams are required to furnish and use their PPE, appropriate for the task being performed.

This includes, but is not limited to:

- Safety Glasses
- Gloves
- Closed Toe Shoes
- Arc Flash Protection
- Hearing Protection

H.8.1.6 Key Hazards

All participants are encouraged to pay careful attention to the following situations:

H.8.1.6.1 Ascending and Descending

Maintain 3-point contact when ascending and descending stairs, ladders, steps, or tailgates. Watch for obstructions at the beginning and end of travel.

H.8.1.6.2 Pinch Points

Stay clear of pinch points from rotating machinery, doors, and other equipment.

H.8.1.6.3 Hazardous Release of Energy

Stay clear of sparks, chips, swarf, or other high-energy material. Check circuits for live wires before working on them. Depressurize high-pressure air, oil, or water systems before working on them. Take care when

working around presses, rams, or other hydraulic equipment. Use care when jacking or lifting vehicles or other objects.

H.8.1.6.4 Vehicle Operations

Do not drive when distracted. Utilize a spotter when backing a vehicle.

H.8.1.6.5 Walking / Path of Travel

Take care to keep all walking paths clear of slip, trip, and fall hazards.

H.8.2 Rules of Conduct

H.8.2.1 Sportsmanlike Conduct

All BAJA SAEINDIA® participants can be proud of the excellent sportsmanship and cooperation among teams which are two of the hallmarks of the series. Good conduct and compliance with the rules and the official instructions are expectations and requirements for every team member.

Unsportsmanlike conduct can include arguments with officials, disobedience of official instructions, and the use of abusive or threatening language to any official or another participant. Depending on the seriousness of the infraction, the penalty for such actions can range from a deduction of up to fifty per cent (50%) of the team's points to expulsion of the entire team. Penalties of this type will only be imposed after a complete review of the incident by the organizers.

H.8.2.1.1 Prohibited Material

Alcoholic beverages, firearms, weapons of any type, and illegal materials(like drugs) are prohibited at BAJA SAEINDIA® sites. The penalty for violation of this rule is the immediate expulsion of the entire team, not just the individual(s) involved. This rule applies to team members, advisors, and any individuals working with the team on-site who may be participants as well as spectators.

H.8.2.1.2 Tobacco Products and Electronic Cigarettes

The use of all tobacco products or using e-cigarettes on-site is prohibited.

H.8.2.1.3 Footwear

All individuals on-site shall wear durable and sturdy closed-toe shoes. Open-toed shoes, slippers, chappals, etc., are explicitly prohibited.

H.8.2.1.4 Parties

Disruptive parties, either on or off-site, must be prevented by the faculty advisor or team captain.

H.8.2.1.5 Housekeeping

Clean-up of trash and debris is the responsibility of the teams. Please try to keep the paddock area clean and uncluttered. At the close of the day, each team must clean their work area.

H.8.2.1.6 Site Condition

Please help the organizers keep the site clean. The sites used for BAJA SAEINDIA® are generally private property and should be treated as such. Competitors are reminded that they are guests. All trash should be placed in the receptacles provided. Glass is not allowed on the grounds. Failure to clean the premises will result in an unsportsmanlike conduct penalty. Competitors are encouraged to clean their areas after meals.

H.8.2.1.7 Personal Transportation

The use of motorcycles, quads, bicycles, scooters, skateboards, rollerblades, or similar person-carrying or motor-driven devices by team members and spectators in any part of the competition area, including the paddocks, is prohibited.

H.8.2.1.8 Theft or picking of spares

Any team member found stealing or taking spare parts, tools, PPE, or other items from another team without permission will result in immediate disqualification from the event.

At the end of the event, teams are only permitted to take the banner mounted on top of their pit area. The supporting frame or structure must not be removed.

H.8.2.2 Spectator Rules

H.8.2.2.1 General

The organizers typically do not have a direct line of communication with spectators other than on the spot at the competition; thus, the competitors, faculty, and volunteers are expected to help inform the spectators of the safety rules and help restrict spectators to the spectator areas.

H.8.2.2.2 Alcoholic Beverages

Spectators may not drink or possess alcoholic beverages at any competition location.

H.8.2.2.3 Access Restriction

Spectators must keep back a specified distance from the event areas as decided by the organizers and from any area where vehicles are operating under power. Motor vehicle competitions are potentially dangerous, and safety rules will be strictly enforced.

H.8.2.2.4 Children

A competition site is not a safe place for children and unsupervised young people. Spectators who fail to strictly control their children will be asked to leave the site.

H.8.2.2.5 Expulsion

The course officials and organizers have the absolute right to restrict spectator access to any parts of the site and to eject anyone who violates safety rules or ignores the instructions of officials.

H.8.2.2.6 Unsafe Conduct

All participants are required to exercise safe practices and avoid unsafe activities at all times during the competition. The event organizers have the discretionary authority to impose a just penalty for any conduct deemed unsafe. All team members will be held to this rule.

H.8.3 Paddock Rules

H.8.3.1 Refueling (mBAJA only)

Refueling is not permitted in the paddock/ pit. Before refueling, the vehicle must be stopped, the engine shut off, and the driver completely out of the vehicle. The driver may not be tethered in any way by a harness, communications equipment, or clothing.

Before refueling, a team's pit crew member must have a fire extinguisher ready and pointed at the fuel transfer point on the vehicle. The exiting driver is the only team member permitted to remove the fuel tank cap.

A team refueling their vehicle before the driver is clear of the vehicle or who fails to have a fire extinguisher present and pointed at the fuel transfer point will be penalized. For infractions occurring before the Endurance race, the penalty will be assessed during the Endurance race.

H.8.3.2 Accumulator(s) Swapping (eBAJA only)

Please refer to Part C – Article 8: Accumulator(s) Swapping.

H.8.3.3 Speed Limit

When a vehicle is driven anywhere except within the practice area or on event courses it must move at walking speed with a team member walking alongside at a normal pace. During performance events when the excitement is high, it is particularly important that vehicles move at a walking pace in the paddocks. The walking speed rule will be strictly enforced, and discretionary point penalties will be assessed for violations.

H.8.3.4 Escort Required

When a vehicle is driven anywhere except within the practice area or on event courses, it must have a team member escort the vehicle. The escort shall walk with the vehicle on the right side (to stay close to the firewall kill switch) and shall remain in the view of the driver at all times. The escort should act as a spotter to the driver, paying special attention to the vehicle's blind spots and other vehicles.

Under no circumstances can anyone other than the driver ride in or in a vehicle.

Escorts shall remain clear and not touch the vehicle when it is in motion and remain within line of sight of the driver.

H.8.3.5 Team Pit area

The team's pit area should be kept uncluttered at all times. When a team leaves their area, it must be left clean.

H.8.3.6 Team Vehicles

Only the BAJA SAEINDIA® vehicles themselves are allowed in the paddocks. Teams' support trucks and trailers must be parked outside the competition site in a specially designated area.

H.8.3.7 Access Restriction

The organizers may limit the paddocks to team members, faculty advisors, and competition officials.

H.8.3.8 Compressed Gases

Teams shall safely store compressed gas cylinders. Cylinders shall be upright and properly secured by a chain or another method, capped when not in use, and stored such that cylinder temperature is below 52 deg. C (125 deg F).

H.8.3.9 Driving Restrictions

H.8.3.9.1 Off-Site Operation

During the competition, BAJA SAEINDIA® vehicles may only be driven between the paddocks and an event site, during official practice, or in the events themselves, and only after the vehicle has passed technical inspection.

Driving off-site is explicitly prohibited. Teams found to have driven their vehicle at an off-site location during the event may be expelled from the competition.

H.8.3.9.2 Driver Equipment

Drivers not wearing the proper equipment will not be permitted to drive and may have their competition driver privileges revoked.

H.8.4 Meetings

All team members identified as captains or drivers and all faculty advisors MUST attend all meetings as designated; Attendance at meetings is mandatory. Failure to attend meetings can result in disqualification of members or the entire team.

H.8.5 Tie Breakers

H.8.5.1 Non-Endurance Events

Ties for non-Endurance dynamic events will be broken by comparing the score of the second-best time or distance for the event in question. If the tie remains, the tie stands.

H.8.5.2 Endurance Event

Ties in the Endurance race will be judged by the Endurance event judge and may remain a tie.

H.8.5.3 Overall Event

Ties for the overall winner will be broken in the following order:

1. Endurance Score
2. Total Dynamic Events Score
3. Total Static Events Score

If a tie remains after the prescribed tiebreakers, the tie stands for the overall winners.

H.8.6 Pre-Inspection Operation

Vehicles may not be started or driven before passing technical inspection, except as required as part of the inspection process itself.

H.8.7 Inspection

Any vehicle may be impounded and inspected anytime during the competition. Any vehicle found to have altered or substituted its parts or equipment since passing technical inspection or an engine in violation of the rules may receive a point deduction of 75 points each time it is found in violation.

H.8.8 Surrender of Engine (mBAJA only)

The organizers and SAEINDIA may recall the engine from any vehicle in the competition in exchange for a new Honda engine. Recalled engines will not be returned and will be inspected at Honda's facilities to confirm compliance with the rules.

H.8.9 Signals and Signage

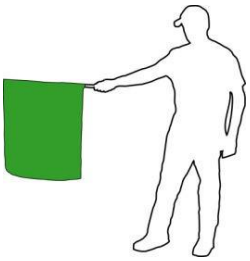
BAJA SAEINDIA® competitions may use some or all of the signals and signage presented in this section.

H.8.9.1 Endurance - Command Flags

Command flags are just that - flags that the competitor must immediately obey without question.

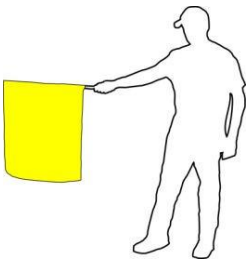
H.8.9.1.1 Green Flag -

1. When displayed at a starting line or when re-entering the course: The event has started; enter the course under the direction of the starter.
2. When running on the course: The course is clear, proceed.



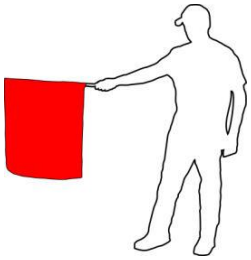
H.8.9.1.2 Yellow Flag –

When displayed, there is a dangerous situation on the track beyond the flag station. Reduce speed and be prepared to take evasive action or stop on the track. Passing is not permitted unless directed by the course workers.



H.8.9.1.3 Red Flag –

When displayed, there is a dangerous situation somewhere on the track requiring a full-course stop. Come to an immediate, safe, and controlled stop on the course. Passing is not permitted. Pull to the side of the track as much as possible to keep the course open. Follow course worker directions.

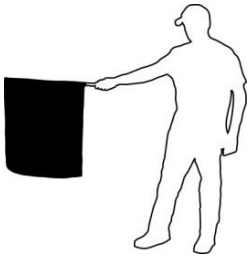


H.8.9.1.4 Black Flag (Furled and Pointed) –

Warning, the officials are watching this vehicle's driving - obey the event rules.

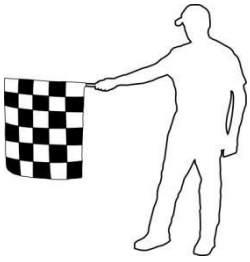
H.8.9.1.5 Flag (Displayed) –

1. Pull into the penalty box for a discussion with the Technical Inspector or other official concerning an incident. A penalty may be assessed for the incident.
2. Pull into the penalty box for a mechanical inspection of the car; a dangerous condition has been observed on the vehicle.



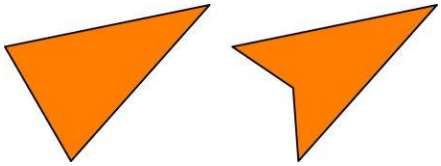
H.8.9.1.6 Chequered Flag –

The event has been completed. Exit the course as directed by event officials.



H.8.9.1.7 Arrow –

Orange triangle with a 1.5:1 height to base ratio, with or without a forked base. White or black trim is optional. The minimum base width is 6 inches.



H.8.9.1.8 Control Zone Boundary –

A

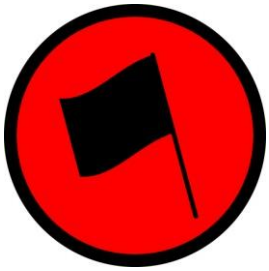
This sign denotes the beginning of the control zone around an event. Beyond this sign, the vehicle and driver must be ready to run the event. The driver must have all required equipment on, and the vehicle may not have any adjustments made. Beyond this sign, one team member is allowed to accompany the vehicle. Teams entering the control zone not ready to run or with more than one attendant may be sent to the back of the line.

B

This sign denotes the location of the time control marshal. The time control marshal will position your vehicle to start the event. At this location, a Technical Inspector may do a final compliance check on your vehicle.

H.8.9.1.9 Start Line –

This sign denotes the location of the event starting line. At this location, the driver will be given the signal from the start marshal to begin the run.



H.8.9.1.10 Finish Line –

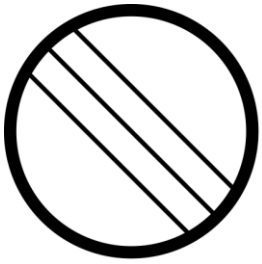
This sign denotes the end of the run, where a time or distance will be taken. Proceed through the finish line to record your score.

H.8.9.1.11 Stop Line –

All vehicles are required to stop at the stop line at the end of the run. At this location, proceed only upon the instruction of the Finish Marshal.

H.8.9.1.12 End Control Zone –

This sign denotes the end of the control zone boundary.



H.8.9.1.13 Begin Fuel Zone –

This sign indicates the beginning of the fuel zone where fueling is permitted.

H.8.9.1.14 End Fuel Zone –

This sign denotes the end of the fuel zone. Beyond this sign, fueling is not permitted unless approved by the Fuel Zone Official.

H.8.9.1.15 Begin Service –

This sign denotes the beginning of the service area (paddocks and/or hot pit). Beyond this sign, vehicle adjustments, service, and/or maintenance are permitted.

H.8.9.1.16 End Service –

This sign denotes the end of the service area (paddocks and/or hot pit). Beyond this sign, vehicle adjustments, service, and/or maintenance are not permitted.

PART I APPENDICES

ARTICLE I.1 OVERALL EVENT SCORING SUMMARY

BAJA SAEINDIA 2026
mBAJA+eBAJA Overall Scoring Pattern

Event		Description	Points	Total Points
Virtual Round		Presentation	40	50
		Preliminary Quiz	10	
Physical Round	Static Events	Design Evaluation	100	325
		Cost Evaluation	50	
		Sales Evaluation	50	
		Manufacturing Excellence	50	
		Sustainability Evaluation	25	

		Validation Event	50	
		CAE Evaluation	NA	
		Innovation Event	NA	
		*MathWorks Simulation Event	NA	
	Dynamic Events	Acceleration	50	**275**
		Traction Event	50	
		Maneuverability Event	75	
		Speciality Event	100	
		Endurance Event	400	**400**
	Bonus Event	**High Voltage System Evaluation	20***	
Grand Total			**1050 + 20**	

**Note 1: MathWorks Simulation is an additional event only for the eBAJA category.*

**Note 2: High Voltage System Evaluation is a bonus event only for the eBAJA category.*

***Note 3: The marks obtained in this bonus event will be added to the overall scores of the team.*

☑ **Any change in scoring pattern shall be informed to the teams through BAJA SAEINDIA Forum.**

ARTICLE I.2 SAE TECHNICAL STANDARDS

The SAE Technical Standards Board (TSB) has made the following SAE Technical Standards available online, at no cost, for use by Collegiate Design teams. Standards are important in all areas of engineering, and we urge you to review these documents and become familiar will their contents and use.

The technical documents listed below include both (1) standards that are identified in the rules and (2) standards that the TSB and the various rules committees believe are valuable references or which may be mentioned in future rule sets.

All Collegiate Design Series teams registered for competitions in SAEINDIA have access to all the standards listed below - including standards not specific to your competition.

I.2.1.1 SAE Technical Standards included in the CDS Rules BAJA SAE

J586 - Stop Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width J759 - Lighting Identification Code

J994 - Alarm - Backup - Electric Laboratory Tests J1741 - Discriminating Back-Up Alarm Standard

I.2.1.2 Formula Hybrid

J1318 - Gaseous Discharge Warning Lamp for Authorized Emergency, Maintenance and Service Vehicles J1673 - High Voltage Automotive Wiring Assembly Design

I.2.1.3 Formula SAE

SAE 4130 steel is referenced but no specific standard is identified SAE Grade 5 bolts are required but no specific standard is identified.

I.2.1.4 Super-mileage

J586 - Stop Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width SAE Technical Standards for Supplemental Use

I.2.1.5 Standards Relevant to BAJA SAE

J98 - Personal Protection for General Purpose Industrial Machines. Standard J183 - Engine Oil Performance and Engine Service Classification - Standard J306 - Automotive Gear Lubricant Viscosity Classification - Standard

J429 - Mechanical and Material Requirements for Externally Threaded Fasteners - Standard J512 - Automotive Tube Fittings - Standard

J517 - Hydraulic Hose - Standard

J1166 - Sound Measurement - Off-Road Self-Propelled Work Machines Operator-Work Cycle J1194 - Rollover Protective Structures (ROPS) for Wheeled Agricultural Tractors.

J1362 - Graphical Symbols for Operator Controls and Displays on Off-Road Self-Propelled Work Machines - Standard

J1614 - Wiring Distribution Systems for Construction, Agricultural and Off-Road Work Machines J1703 - Motor Vehicle Brake Fluid - Standard

J2030 - Heavy Duty Electrical Connector Performance Standard

J2402 - Road Vehicles - Symbols for Controls, Indicators and Tell-Tales - Standard

I.2.1.6 Standards Relevant to Formula SAE

J183 - Engine Oil Performance and Engine Service Classification - Standard J306 - Automotive Gear Lubricant Viscosity Classification - Standard

J429 - Mechanical and Material Requirements for Externally Threaded Fasteners - Standard

J452 - General Information - Chemical Compositions, Mechanical and Physical Properties of SAE Aluminium Casting Alloys - Information Report

J512 - Automotive Tube Fittings - Standard J517 - Hydraulic Hose - Standard

J637 - Automotive V-Belt Drives - Recommended Practice J829 - Fuel Tank Filler Cap and Cap Retainer

J1153 - Hydraulic Cylinders for Motor Vehicle Brakes - Test Procedure

J1154 - Hydraulic Master Cylinders for Motor Vehicle Brakes - Performance Requirements - Standard J1703 - Motor Vehicle Brake Fluid - Standard

J2045 - Performance Requirements for Fuel System Tubing Assemblies - Standard J2053 - Brake Master Cylinder Plastic Reservoir Assembly for Road Vehicles – Standard

ARTICLE I.3 OFFICIAL SOCIAL MEDIA HANDLES

Following are the official social media handles of BAJA SAEINDIA®:

BAJA SAEINDIA (@bajasaeindia) • Instagram photos and videos

BAJA SAE India - Home | Facebook.

BAJA SAEINDIA (@BAJASAEINDIA) / X

BAJA SAEINDIA: Overview | LinkedIn

[BAJA SAEINDIA: Overview | YouTube]

ARTICLE I.4 LIST OF ABBREVIATIONS

AED	Automatic External Defibrillator
AN/MS	Army/Navy Military Standard
CDS	Collegiate Design Series
CPR	Cardiopulmonary Resuscitation
CVT	Continuously Variable Transmission
DF	Design Finals
DQ	Disqualified
FA	Fuel Area
FEA	Finite Element Analysis
FQ	Fuel Quarantine
HV	High Voltage
LV	Low Voltage
VAC	Alternating Voltage
RMS	Root mean square
VDC	Direct Voltage
DC	Direct Current
GLV	Grounded Low Voltage
TSAL	Tractive System Active Light
RTDS	Ready to Drive Sound
BMS	Battery Management System
AIR	Accumulator Isolation Relay
HVIL	High Voltage Inter-Lock
SoC	State of Charge
DOT	Department of Transportation
ISO	International Organization for Standardization
SA	Swappable area
LED	Light Emitting Diode
MB	Megabyte
OEM	Original Equipment Manufacturer
PDF	Portable Document Format by Adobe
RF	Radio Frequency
RPM	Revolutions per minute
SAE	Society of Automotive Engineers
SFI	SEMA Foundation Inc.
XLS	Excel Spreadsheet by Microsoft
FZ	Fuel Zone
ID	Inside Diameter
MCU	Motor Controller Unit
EV	Electric Vehicle/s
MCB	Miniature Circuit Breaker
AIS	Automotive Industry Standards
UL	Underwriters Laboratories
LED	Light Emitting Diode
FAR	Federal Acquisition Regulation
ESS	Electrical Safety Sheet
FNR	Front-Neutral-Rear
ASTM	American Society for Testing and Materials
EN	European Standards
TS	Tractive System
Ms	millisecond
PPE	Personal Protective Equipment/s
IEC	International Electro-technical Commission