

**2022 ERA Series**



**Technical Regulations**

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## **ARTICLE 1: DEFINITIONS**

### **1.1. ERA car:**

The ERA vehicle, race ready, including ERA Chassis, Powertrain and RESS as delivered to the Sports Class team for the current season.

### **1.2. Bodywork:**

All entirely sprung parts of the car in contact with the external air stream, except the rollover structures and the parts definitely associated with the mechanical functioning of the powertrain, ESS, transmission, suspension and running gear.

### **1.3. Wheel:**

Flange and rim. Complete wheel: flange, rim and tyre.

### **1.4. Event:**

An event shall consist of all official practice, qualifying and race sessions.

### **1.5. Driver Weight**

The weight of any driver, wearing his/her complete racing apparel, when measured in scrutineering before each event.

### **1.6. Main Structure:**

The fully sprung structure of the vehicle to which the suspension and/or spring loads are transmitted, extending longitudinally from the foremost front suspension on the chassis to the rearmost one at the rear.

### **1.7. Cockpit:**

The volume which accommodates the driver.

### **1.8. Cockpit padding:**

Non-structural parts placed within the cockpit for the sole purpose of improving driver comfort and safety. All such material must be quickly removable without the use of tools.

### **1.9. Powertrain:**

The electric motor(s) and associated torque transmission systems, up to but not including the drive shafts.

### **1.10. Energy Storage System (ESS):**

All parts electrically connected to the motor(s) storing and releasing energy within the high voltage system, including BMS.

### **1.11. Telemetry:**

The transmission of data between a moving car and anyone connected with the entry of that car.

### **1.12. Mandatory components:**

Are those components specified by ERA, which must be used and remain unmodified.

**1.13. Mounting plate:**

The mounting plate is the structure provided within the subchassis for the teams to build the EV system onto.

**1.14. The ERA e-kit:**

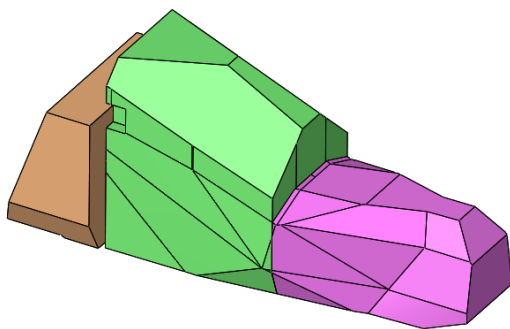
The entire system added by ERA that comprises the powertrain, including the RESS, inverter and MGU

**1.15. User Manual:**

Where the term User Manual is referred to in these regulations it refers to the latest ERA released User Manual

**1.16. RESS and Powertrain Envelope Volumes:**

The area available to add the RESS, powertrain and LVS.



**1.17. Electric motor:**

An electric motor or MGU is a rotating electromechanical power converter with one stationary element (stator) and one rotating element (rotor). It transforms electric power into mechanical power and vice-versa. An MGU is for power conversion and not energy storage.

Definitions according to FIA Appendix J article 251:

**1.18. Capacitors**

Definition according to Appendix J - Article 251-3.1.7.2

**1.19. Battery pack**

Definition according to Appendix J - Article 251-3.1.7.4

**1.20. Battery module**

Definition according to Appendix J - Article 251-3.1.7.5

**1.21. Battery cell**

Definition according to Appendix J - Article 251-3.1.7.6

**1.22. Battery Management System (BMS)**

Definition according to Appendix J - Article 251-3.1.7.8

**1.23. Electric Shock**

Definition according to Appendix J - Article 251-3.1.8

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Definition according to Appendix J - Article 251-3.1.15.1
- 1.40. Live part**  
Definition according to Appendix J - Article 251-3.1.16
- 1.41. Conductive part**  
Definition according to Appendix J - Article 251-3.1.17
- 1.42. Exposed conductive part**  
Definition according to Appendix J - Article 251-3.1.18
- 1.43. Auxiliary battery and circuit weight**  
Definition according to Appendix J - Article 251-3.1.19.1  
The Auxiliary Circuit (Network) consists of all parts of the electrical equipment used for signalling, lighting, the BMS, ECU, sensors, fire extinguishing system or communication. This system can also be charged by the traction battery.
- 1.44. Auxiliary ground**  
Definition according to Appendix J - Article 251-3.1.19.2
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Definition according to Appendix J - Article 251-3.1.20
- 1.46. Safety indications**  
Definition according to Appendix J - Article 251-3.1.21

## **ARTICLE 2: GENERAL PRINCIPLES**

### **2.1. Safety requirements:**

2.1.1 It is the responsibility of the competitors to ensure that the car is safe in its design and running in safe conditions.

2.1.3 The Championship participants may only use ERA supplied vehicles.

2.1.4 The delivered vehicle may not be altered in any way unless clearly specified in any of the applicable rules

2.1.5 The Championship Chief Scrutineer will maintain a list of ERA chassis and parts registered to compete in the championship. No entrant may enter the championship with more than three vehicles unless agreed in writing by the organisers.

2.1.6 Spare cars are not permitted. However, any part of the car (excluding the survival cell) may be changed at any time during the Meeting. No driver may use more than one car at the same Meeting.

2.1.7 The survival cell may be changed if the Championship Chief Scrutineer is satisfied that a change is necessary following accident damage. Any replacement survival cell must be presented to the Championship Chief Scrutineer.

2.1.9 The Championship has the right to record and retain any data gathered by the Championship Officials from each car's onboard data recorders during each meeting and Official Test session and retains the right to use this data howsoever it chooses.

2.1.10 Competitors agree that the selected channels of data and video can be used by instructors appointed by the Championship at the service of drivers' tutoring.

### **2.2. Dangerous construction:**

The technical delegates may exclude a vehicle whose construction is deemed to be dangerous.

### **2.3. Modifications to the car design:**

#### **2.3.1. General**

No Alterations or modifications are permitted to any part of the vehicle, unless explicitly permitted in the regulations.

The car is divided into three types of components and sub-assemblies.

- *Type 1:* Parts compulsory to be supplied by ERA and must be used in the exact unmodified form in which they are supplied. Repairs are not allowed by the competitors and spares/replacements or repairs can only be provided by ERA.

- *Type 2:* Parts compulsory to be supplied by ERA, but minor modifications and potential repairs as specified in the respective regulations are allowed by the competitors.
- *Type 3:* Unregulated parts free to be selected and sourced by the competitors. Only restriction is that their function and technical purpose should remain the same as the equivalent standard car parts provided by the standard ERA car specification.

Cosmetic additions, like livery related adhesive films are generally allowed without restrictions, provided they only serve cosmetic purposes and do not cover any safety related parts of the vehicle. In the case of livery, the design must comply with ERA's brand guidelines.

As a general rule, seeing as the championship is a 1-make, centrally run championship. The entire vehicle is considered to be classified as Type 1.

### **2.3.2. Proprietary Parts:**

Proprietary, or standard, or "off the shelf " parts, such as screws, nuts, bolts, washers and lock washers, are considered as Type 3 parts, unless specifically mentioned in the regulations.

They may be replaced with equivalent or superior standard parts.

The thread type, size, length and pitch must remain the same.

Some sort of mechanical thread safety locking should be used. Examples include safety locking nuts and locking wire.

Thread-lock adhesive is not considered an appropriate safety locking method, unless used in the case of studs.

Any type of standard mounting part which has an influence on the car set-up, is considered as a Type 1 part, unless specifically mentioned in the regulations.

Only Type 3 washers may be removed.

Washers may be added only for facilitating and improving mechanical installation. They may influence the set-up of the car only when specifically mentioned in the regulations.

### **2.3.3. Protective Elements:**

Heat protections, mechanical protections (such as abrasion protection or tape) and protections for driver comfort may be added, provided that their sole function is the protection of the relevant element/area.

## **2.4. Speed limit:**

The speed limit of any vehicle participating is 210 km/h unless otherwise stated in the most current sporting regulations.

## **2.5 General Technical Requirements & Exceptions**

### 2.5.1 Bodywork

The bodywork may not be adjusted from the original parts unless otherwise specified.

### 2.5.2 Motor & Inverter

The motor & inverter must not be altered in any way. Doing so will mean the vehicle is not eligible to participate in the Meeting.

The only motors and inverters allowed in the Championship are those delivered by the Championship. If the Championship organizers cannot determine the origin of the motor and inverter they cannot be used.

There is no limit on the number of motors & inverters used throughout the season.

### 2.5.3 Software

The BMS and ECU software may be altered within the specifications specified in the ERA vehicle manual.

### 2.5.4 Suspension

Only original ERA parts are allowed.

### 2.5.5 Transmission

Only original ERA parts are allowed.

### 2.5.6 Electric including BMS and RESS

Only original ERA parts are allowed.

### 2.5.7 Brakes

Only original ERA parts are allowed.

### 2.5.8 Wheels & Steering

Only original ERA parts are allowed.

### 2.5.9 Monocoque

Only original ERA parts are allowed.

### 2.5.10 On board low voltage system

Only original ERA parts are allowed.

All tyres, when under the control of a team, must remain visible within the team's designated garage area at all times during circuit-open hours of a meeting.

## **2.6 Driver safety**

### 2.6.1. Crash Helmets

Only Crash Helmets compliant with one of the following FIA standards and conform to FIA Appendix L – Chapter III may be used:

FIA standard 8859-2015

~~FIA standard 8860-2004~~

FIA standard 8860-2010



FIA standard 8860-2018

FIA standard 8860-2018-ABP

### 2.6.2. Frontal

Head

Restraint

The use of a Frontal Head Restraint device is mandatory and must be compliant with FIA Appendix L – Chapter III and one of the following FIA standards:

FIA Standard 8858-2002

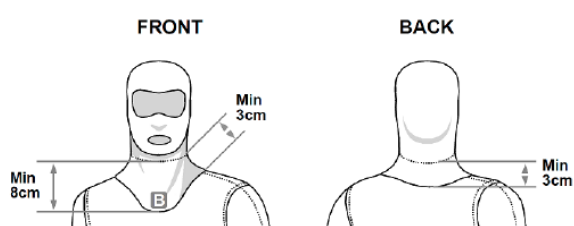
FIA Standard 8858-2010

### 2.6.3. Flame

Resistant

Clothing

Drivers must wear flame resistant clothing in accordance with FIA Standard 8856-2000 or FIA Standard 8856-2018 and FIA Appendix L to the International Sporting Code. This includes flame resistant under-clothing.



Minimum overlapping at the neck area mandatory as indicated on above figure.

### 2.6.4. Seat Belts

Seat belts must be compliant with the ERA Vehicle parts list, latest version and used in accordance with FIA prescriptions. Check with the Championship Chief Scrutineer if in doubt.

### 2.6.5 Biometric or Physiological Monitoring Device

Any biometric or physiological monitoring device worn by a competitor must comply with all current safety and FIA regulations and be declared to the Championship Eligibility Scrutineer who will make the final decision about its use. Any data recorded must be shared in full with the Championship Eligibility Scrutineer and Medical Directors upon request.

## 2.7.6 Tyres

2.7.6.1 Only the Championship provided Goodyear tyres are allowed to be used, distributed by the local appointed supplier.

2.7.6.2 The amount of tyres allowed to use are described in the sporting regulations.

2.7.6.2 Each new tyre used must be to the specification as supplied by Goodyear. Any modification or treatment including cutting, grooving, the application of water, solvents or softeners, the use of heat retaining (and/or cooling) devices or pre-heating/cooling is prohibited. This applies to both wet-weather and dry-weather tyres. Only tyres supplied by the championship supplier may be used during all Official Testing, qualifying and race sessions for each meeting.

2.7.6.3 For the whole duration of the meeting, no artificial warming of the wheel, tyre, or other component of the inflated wheel assembly is permitted. Any tyre protection cover used during transit of the car within the confines of the circuit must be a loose fit onto the tyre, they must not be of a temporary construction and must be capable of being reused many times. No

cleaning or removal of rubber pick-up from the tread area of the tyres is permitted using any form of other mechanical aid.

## **2.8 Permanent Compliance with Regulations:**

Cars must comply with these regulations in their entirety at all times during an event. Changes made for safety or clarification reasons may come into force without notice. In this case the administrator may authorise and/or remove and/or modify specific technical regulations at any time during the Championship.

## **ARTICLE 3: BODYWORK**

### **3.1. Dimensions:**

Cars must conform with both overall and bodywork specific dimensions at any time throughout an event.

### **3.2. Permitted changes to original supplied bodywork:**

- 3.2.1. There are absolutely no physical changes allowed to the ERA supplied bodywork parts, except any stickers/paint for livery purposes so long as they do not cover any safety related equipment or markings and they comply with ERA brand guidelines.
- 3.2.2. The wings flap angle adjustment is permitted within the range and only using the prespecified adjustment positions, as described in the User Manual.
- 3.2.3. Minimal repairs in case of damage/wear are allowed after consulting the event's technical delegates/scrutineers, only if they are not aiming in altering/enhancing the aerodynamic performance of the respective bodywork element.
- 3.2.4. The addition of stoneguard mesh in the sidepods inlet is allowed.
- 3.2.5. Thermal insulation or rubbing protection additions are allowed only if applied on internal surfaces of the sidepods or the powertrain cover.
- 3.2.6. Replacement of damaged parts is only allowed with certified ERA parts, available via the ERA Championship organisation. Parts excluded from this article are the parts mentioned in article 3.2.1.1.

## **ARTICLE 4: WEIGHT**

### **4.1. Car Weight:**

The Car minimum weight is 610kg without driver.

### **4.2. Driver's Weight:**

Minimum driver weight is 80kg as weighed during scrutineering before an event, including full driving equipment.

In case this measured weight is lower than 80kg, then the difference should be applied as ballast on the car.

### **4.3. Ballast:**

4.3.1. Ballast can be made from any material and provided by ERA.

4.3.2. Ballast must be placed according to the user manual.

4.3.3. Ballast must be mounted to the car rigidly and proven to be mounted strongly enough to not detach itself during any situation.

4.3.4. Ballast must be implemented in such way, that tools are required for its removal.

4.3.5. It must be ensured that scrutineers will be able to apply checking seals on ballast fixing points if they wish so.

4.3.6. If ballast may be found missing at any point during the event, it will lead to disqualification.

## **ARTICLE 5: Electric Motors / Generators**

### **5.1. Only MGUs are permitted.**

### **5.2. Amount of MGUs**

Only 1 MGU is allowed, the used MGU is the MGU supplied with the vehicle. **No modification to the supplied specification is allowed.**

### **5.3. Installation:**

MGUs must be mounted onto the provided mounting plate as stated in the User Manual.

### **5.4 Power limit**

The size and power of the MGUs is not limited, however the combined power received by the MGUs cannot exceed 130KW at any point.

### **5.5 Safety**

The Vehicle must be easily pushed and pulled when all systems are off.

### **5.6 Energy recovery**

Energy recovery systems are allowed and ~~not limited~~ **supplied by the Championship. No modification to the supplied specification is allowed.**

## **ARTICLE 6: RECHARGEABLE ENERGY STORAGE SYSTEM(S) (RESS)**

### **6.1 Design and Build**

#### **6.1.1. Definition and specification**

Definition according to Appendix J – Article 251-3.1.7

The specifications are laid down in Appendix J – Article 253 18.4.1

#### **6.1.2. Build**

The RESS used can only be the RESS supplied by ERA and fitted to the sub chassis with the supplied mounting points as stated in the user manual. The RESS is build to the Appendix J – Article 253 18.4.

**No modification to the supplied specification is allowed.**

### **6.2 RESS capacity**

#### **6.2.1. RESS Limitation**

There is no limit to the RESS storage capacity. The provided energy meter will measure the combined amount of energy used by the MGUs.

Energy used is limited to:

- No limit during practice.
- 24 kWh for both qualification sessions.
- 24 kWh for each race.

Braking regeneration will be added to the allowed energy used based on a factor of 0.75 to take account of losses (1kW regen = 0.75 kW extra useable)

The maximum total power going to the MGUs is limited to 130KW.

#### **6.2.2. Voltage**

Maximum voltage allowed is 900V

### **6.3 Charging**

6.3.1 Charging is only allowed with ERA officials present in the specified area at each event.

6.3.2 The team must at all times comply with sporting regulations regarding team personnel guidelines.

6.3.3 Charging system **used** can only be the system supplied by ERA.

#### **6.4 Clearance and creepage distance**

Definition according to Appendix J – Article 251-3.1.12 / 3.1.13. The specifications are laid down in Appendix J – Article 253 18.4.2

#### **6.5 Battery Management System (BMS)**

Definition according to Appendix J – Article 251-3.1.7.8 Specifications are laid down in Appendix J – Article 253 18.4.4.2 except for 18.4.4.2.g). Temperature control must be considered within the battery management system to prevent thermal runaway during overload or battery failure and must operate as soon as the car is powered.

#### **6.6 Liquid cooling**

If a RESS liquid cooling system is used, it is mandatory to use a dielectric fluid without water.

#### **6.7 Conditioners**

Conditioners are allowed only for battery, e-motor, DC-DC, VCU, inverter as supplied by ERA.

#### **6.8 Battery Chemistry**

The chemistry used in the battery cells need to be approved by the ERA technical team.

Pre-approved chemistries are:

- Lithium-Ion: cells using NCA, NMC or LFP cathodes, and graphite, silicon/graphite, or LTO anodes.
- Nickel metal hydride cells

Nickel-cadmium cells and lithium-ion cells with LCO cathodes will NOT be approved.

Lithium-sulphur, solid-state lithium, metal-air and sodium-ion cells will be approved on a case-by-case basis since, at the time of writing, these are not commercially available for automotive applications. Other cell chemistries will be considered by the ERA Technical team and need to be requested within the system conformity document (article 15)

#### **6.9 Extinguishing system**

An automated on-board RESS extinguishing system is mandatory and triggered by either the BMS or switches as described in article 8.5.

#### **6.10 Other RESS systems**

Any other zero-emissions energy storage systems deviating from article 6 will be considered on a case-by-case basis.

## **ARTICLE 7: LUBRICATION AND COOLING SYSTEMS**

### **7.1 Lubrication system location:**

Any lubrication system devices must either be integral part of the powertrain or be located inside the RESS and Powertrain Envelope Volumes.

In case oil carrying elements are placed in the sidepods or anywhere outside the ESS and Powertrain Envelope Volumes, it must be proven that they are sufficiently protected in case of crash.

Measures must be taken to ensure that no oil can leak from any lubrication system.

### **7.2 Cooling Fluids:**

Any type of cooling fluid and cooling systems/layout is permitted unless otherwise stated.

### **7.3 Coolers/Radiators:**

Radiators using water or any non-oil based fluid can be placed anywhere on the car.

Radiators using oil must be placed according to article 7.1.

### **7.4 External cooling devices:**

During Free Practice, Official Qualifying and the Races it is permitted to cool the radiators and brakes of a car, when it is stationary, using an integral battery powered hand carrier (by one person) portable fan(s) with ducting. These may be used in the podium Parc Ferme upon request of the Championship Eligibility Scrutineer. It is permitted to temporarily mount these on the car.



## **ARTICLE 8: ELECTRICAL EQUIPMENT AND SAFETY PROVISIONS**

### **8.1. General electrical safety**

Specifications are laid down in Appendix J – Article 253-18.1. except for 18.1.f)

### **8.2. Electronic Control Unit**

The ECU must be designed to run from a car supply system provided by an auxiliary battery.

The BMS must be powered by the same auxiliary battery as the ECU.

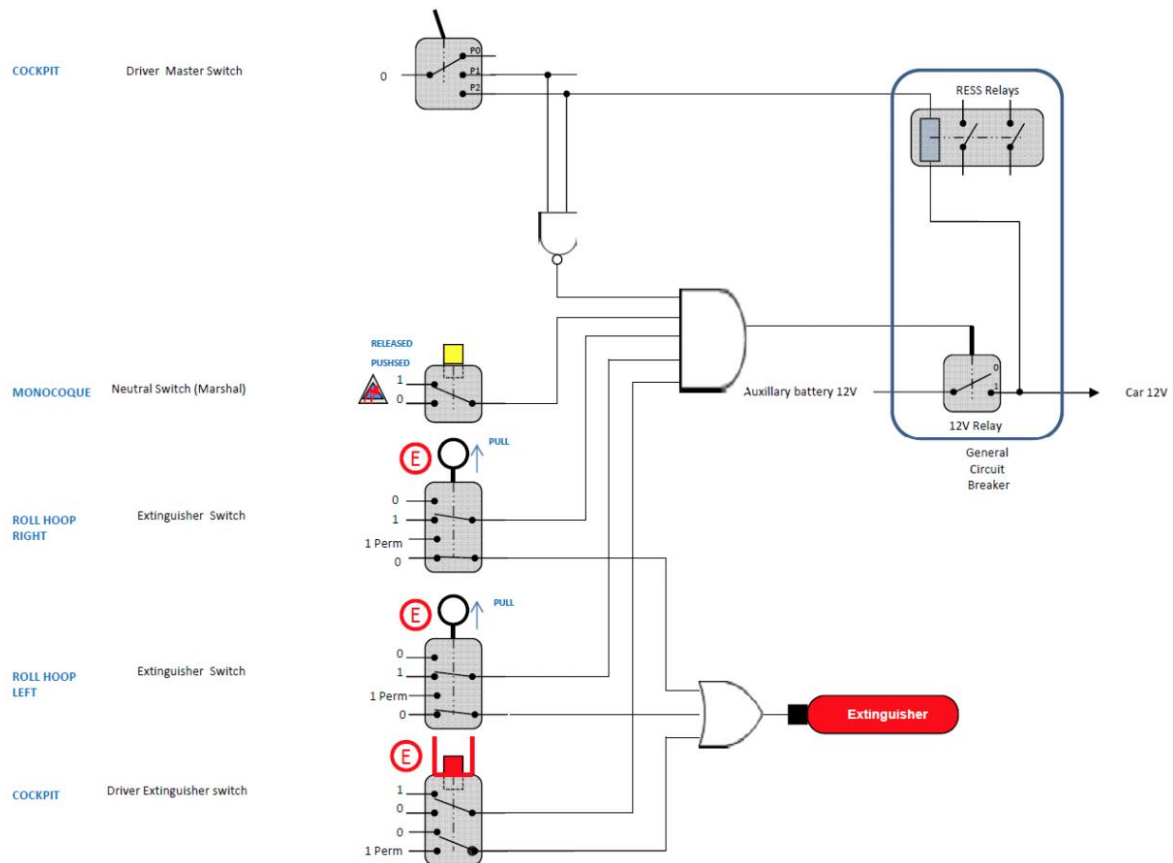
### **8.3. Power Electronics**

Specifications are laid down in Appendix J – Article 253-18.5.

### **8.4. General Circuit Breaker**

Specifications are laid down in Appendix J – Article 253 18.18.17

See Below Drawing for the general switching diagram.



All vehicles must be equipped with a general circuit breaker, of a sufficient capacity and which can be operated easily by a trigger button from the driver's seat when the driver is seated in a normal and upright position, with the safety belts fastened and the steering wheel in place, and from the outside, to cut off all electric transmission devices.

Care must be taken, however, that the installation of the circuit breaker does not result in the main electrical circuit being located close to the driver or the external switches.

### 8.5. Extinguisher switches

Car must be equipped with an extinguisher system conform to FIA Appendix J Article 253-7 and 253-18.23

There must also be two exterior horizontal handles which are capable of being operated from a distance by a hook. These handles must be situated at the base of the main rollover structure on both sides of the car.

Furthermore, a means of triggering from the outside must be combined with the general circuit breaker switches described above. They must be marked with a letter "E" in red at least 80 mm high, with a line thickness of at least 8 mm, inside a white circle of at least 100 mm diameter with a red edge with a line thickness of at least 4 mm. It is prohibited to cover either of these means in any way whatsoever.

### 8.6. Neutral switches

So that the driver or a marshal can isolate the RESS from the power bus in less than five seconds, a switch or button which operates the general circuit breaker must:

- face upwards and be inside the cockpit no more than 150 mm from the car centre line;
- be designed in order that a marshal is unable to accidentally re-energise the power circuit;
- be inside the cockpit opening, behind the steering wheel, with the highest part of the switch in line with the highest part of the outside of the survival cell.

The button must be marked with a red spark in a white-edged blue triangle with a base of at least 12 cm on the corresponding position on the survival cell clearly visible to a marshal.

It is prohibited to cover this switch/button in any way whatsoever.

In a crash, all energy sources of the Power Circuit must be switched off automatically by electric switches or contactors and the full RESS must be isolated. Those arrangements must be validated by the failure mode analysis submitted by the homologation. General specifications are laid down in Appendix J – Article 251-3.1.14.1.c and Article 253-18.18.

### **8.7. Driver Master Switch (DMS)**

All vehicles must be equipped with a driver master switch specified in Appendix J – Article 253-18.16. Except the "creep" control.

### **8.8. Driver radio**

Any voice radio communication system between car and pits is allowed.

### **8.9. Cables, lines, electrical equipment**

The specifications laid down in Appendix J – Article 253 18.2.a are not applicable.

Brake lines, electrical cables and electrical equipment must be protected against any risk of damage (stones, corrosion, mechanical failure, etc.) when fitted outside the survival cell, and against any risk of fire and electrical shock when fitted inside the bodywork.

All electrical cables working with a voltage over 60 V must stay inside the X/Y plan above the Z0 reference plan of the survival cell and sub-chassis.

### **8.9. Protection against electrical shock**

Protection must be guaranteed according to Appendix J – Article 253-18.7, except Article 253 18.7.e

### **8.10. Equipotential bonding**

To mitigate the failure mode where a high voltage is AC coupled onto the car's low voltage system, it is mandatory that all major conductive parts of the body are equipotentially bonded to the car chassis with wires or conductive parts of an appropriate dimension. See Appendix J – Article 253-18.8.

### **8.11. Isolation resistance requirements**

All electrically live parts must be protected against accidental contact as laid down in Appendix J – Article 253-18.9.

### **8.12. Additional protection measures for the AC circuit**

Additional protection measures are laid down in Appendix J – Article 253-18.9.1.

### **8.13. Power circuit**

Power circuit specifications are laid down in Appendix J – Article 253-18.11.

### **8.14. Power bus**

Specifications are laid down in Appendix J – Article 253- 18.12.

### **8.15. Power circuit wiring**

The power circuit comprises the RESS, the converter (chopper) for the drive motor(s), the contactor(s) of the general circuit breaker, fuses, the generator(s) and the drive motor(s). All cable and wire specifications are laid down in Appendix J – Article 253-18.13.

### **8.16. Power Circuit connectors, automatic disconnection**

Power circuit connectors may not have live contacts on either the plug or the receptacle unless they are correctly mated. Specifications are laid down in Appendix J – Article 253-18.14.

Power circuit connectors environmental sealing must at least correspond to the standard:

- IP 65 in mated condition
- IP 2X in disconnected state

### **8.17. Insulation strength of cables**

All electrically live parts must be protected against accidental contact according to Appendix J – Article 253-18.15.

### **8.18. Overcurrent trip (fuses)**

Fuses and circuit breakers (but never the motor circuit breaker) count as overcurrent trips. Extra fast electronic circuit fuses and fast fuses are appropriate.

Overcurrent trips are specified in Appendix J – Article 253- 18.19.

### **8.19. Safety Indicators**

#### **8.19.1 Status Light**

All cars must be fitted with a status light which:

- Is in working order throughout the event even if the main hydraulic or pneumatic on the car have failed.
- Remains powered for at least 15 minutes after the general circuit breaker is activated.
- Is marked with a "High Voltage" symbol.
- Is an LED strip fixed to the top of the roll hoop.
- Has at least a luminous flux of 8 lumens.

Indications must be:

White: auxiliary system active, RESS deactivated

Green: RESS activated, car ready to drive

Red: System error

Yellow flashing: During charging

### **8.19.2. Rain light**

The provided rainlight (see User Manual) must be:

- Always on when the car is standing still.
- Always on when the car is on torque.
- Flashing at 2 hz, or 250ms on 250ms off, during braking and regen >15kW.

### **8.20. Auxiliary Battery**

It is mandatory to have a control on the current and voltage and to isolate all loads in case of failure of the auxiliary battery.

## **ARTICLE 9: TRANSMISSION SYSTEMS**

### **9.1. Transmission Type:**

Only the original ERA parts are allowed

### **9.2. Unmodified Parts:**

The whole rear upright assembly including the axle and reducer must remain unmodified as provided.

## **ARTICLE 10: STEERING AND SUSPENSION**

### **10.1 Geometry and Kinematics:**

Rear geometry must be run as determined and specified by ERA.

No further modifications on the brackets and/or mounting points are allowed.

Wheel angle adjustments are permitted, within the ranges using the standard shims and methods, as described in the User Manual.

### **10.2 Springs:**

Spring rates are fixed and determined to be 700Lb in the front and 900Lb in the rear.

Spring Preload is allowed be adjusted.

### **10.3 Dampers:**

Dampers must remain completely unmodified, as supplied, with no internal modifications.

Damping adjustment within the provided range is allowed, as described in the User Manual.

Nothing is allowed to be added on the damper shaft, including bump rubbers, washers etc.

### **10.4 Anti Roll Bars:**

Anti Roll Bar assemblies must remain completely unmodified, as supplied.

Adjustments using the specified anti roll bar linkage holes are allowed, as described in the User Manual.

### **10.5 Ride Height / Ground Clearance:**

Any system, other than the suspension, which is designed for modification of the ground clearance is not permitted.

No unsprung part may be less than 30mm from the ground, except rims and tyres.

The minimum ride height at any point of the car during the entirety of the race events must be 20mm.

## **ARTICLE 11: BRAKING SYSTEM**

### **11.1 Components:**

All brake components including brake discs, callipers, pads, lines, hoses must remain original as supplied and described in the User Manual.

### **11.2 Braking Distribution:**

The combination of master cylinder(s) and balance bar and/or any other method of altering the brake distribution between the front and rear axles are unregulated, providing any used parts are FIA approved.

## **ARTICLE 12: WHEELS**

### **12.1 Wheels:**

The standard wheels must be used unmodified, as supplied.

Wheel fixing must be done via the single centre nut system as supplied, unmodified.

The supplied safety locking spring must be in place through the wheel nut at all times during an event and changed with a new identical part every time the wheel is changed.



## **Article 13: Other Systems**

### **13.1 Human-Machine Interface (HMI)**

The Human-Machine interface is only allowed as a standard ERA supplied part.

### **13.2 Cockpit**

#### 13.2.1 Safety Belts:

13.2.1.1 Be fitted with a safety harness to be worn at all times by the driver during training, practice and competition. All harnesses must be currently FIA homologated and conform to FIA Appendix J – Article 27-14.4.

13.2.1.2. The safety belt fixing system to the monocoque may not be changed or modified.

#### 13.2.2 Headrests and head protection:

13.2.2.1. All cars must fit the mandatory head restraint system.

13.2.2.2. The use of a Frontal Head Restraint (FHR) device is mandatory. Any FHR device used must comply with the FIA code.

### 13.2.3. Seat fixing and removal:

13.2.3.1. In order that an injured driver may be removed from the car in their seat following an accident, all cars must be fitted with the supplied removable seat.

13.2.3.2. The seat must be removable without the need to cut or remove any of the seat belts.

13.2.3.3. The seat shell positioning system may only be modified in accordance to the User Manual.

13.2.3.4. Padding and minor modifications of the seat shell are allowed for drivers comfort providing all the functionality of the seat and its safety equipment is preserved

13.2.3.5. An extraction test may be requested at any time by the championship Administrators.

13.2.3.6. When seated normally with their seat belts fastened, the drivers helmet must be at least 70mm below a line drawn between the highest point of the front and rear roll structures.

13.2.3.7. The driver, seated normally with his seat belts fastened and with the steering wheel removed must be able to raise both legs together so that his knees are past the plane of the steering wheel in the rearward direction. this action must not be prevented by any part of the car

### 13.2.4 Rear View Mirrors

All cars must be equipped with 2 rear view mirrors according to FIA Appendix J Article 274-14.3

### 13.2.6 Towing Device

Each car must be equipped at the rear with a sturdy towing device which must be marked in fluorescent red.

## 13.2 ECU and Software

The software needs to be submitted and fully accessible in commonplace format to the ERA technical team for inspection.

## Article 14: Validity

### 14.1 Verification

Championship Eligibility Scrutineer is empowered to undertake any form of verification procedure necessary and may order the removal of parts from the car, incurred costs to be borne by the competitor.

### 14.2 Inspection

## **12.2 Scrutineering and vehicle approval**

12.2.1 In the pre-event bulletin the scrutineering procedure will be explained for every event.

12.2.2 Any car which has passed initial scrutineering may not be removed from the confines of the circuit during the remainder of the Meeting.

12.2.3 Any change of parts to the vehicle after initial scrutineering needs to be reported to the Chief Scrutineer, who will then approve or initiate a new scrutineering.

12.2.4 The decision whether a car has been changed or repaired will be taken by the Clerk, based upon a report by the Championship Eligibility Scrutineer.

### **12.2.5 Examination Of Vehicles**

The organisers (in addition to any other powers they may have under these Regulations) reserve the right before or after any race in the championship to designate any one or more of the competing cars for special eligibility scrutineering. Upon such election being made, the competitor shall immediately place the car under the control of the organisers and be deemed to have permitted all such scrutineering, examination and testing as the organisers may responsibly require to undertake. The organisers have the right to:

(a) Examine the car at the circuit for such period as they may reasonably require

(b) Retain the car for detailed examination at premises chosen by the organisers. If the organisers elect to retain the car, they shall make it available for collection by the competitor at least seven days prior to the qualification session for the next race in the championship unless the car is found to be in breach of these Regulations

(c) In the event that any part of the vehicle is required by the organisers in order to determine compliance with the regulations during the course of a meeting, the relevant competitor must surrender those parts to the Championship Eligibility Scrutineer as soon as such notification is given. Under these circumstances, the organisers may choose to deliver replacement parts to the competitor concerned until the original is returned. The use of these spare parts will be at no cost to the competitor provided each part is returned in its original state.

(d) Re-inspect vehicles at any time during the course of the season, should there have been a regulation infringement or circuit incident.

(e) Seal the car and its components in accordance with local ASN Regulations in such a manner as they may choose and require the competitor at their own expense to present the car at any other premises chosen by the organisers for detailed examination within a specified period and/or remove the car by transporter at no expense to the competitor to an appointed location. The competitor will be advised in writing of the time, date and location of the subsequent testing or eligibility examination.

Competitors will be personally and solely responsible for ensuring that their cars comply with their registration details and with these Regulations for each meeting at which they are entered. Failure to comply in either respect will be a breach of these Regulations. Queries concerning eligibility should be referred in writing to the Championship Eligibility Scrutineer at least seven days prior to a meeting entered, to permit a ruling in advance of any meeting at which it is intended to compete.

12.2.5 The decision if a vehicle is eligible and passed scrutineering is the sole decision of the Chief Scrutineer.

The right is reserved for a competitors vehicle to be sealed for later inspection and to be removed to a Championship-nominated location for examination. The competitor, or their agent, will be invited to witness this inspection and will be required to provide all the labour required to perform the vehicle or component strip. the Championship Administrators job is to observe and report; it is the entrants responsibility to present any component requested by the Championship Eligibility Scrutineer for inspection.

### **14.3 Comparison**

Scrutineering may consist of comparing the part to be checked against an identical new genuine ERA championship component when scrutineering involved type 1 and/or 2 components.