

2024 FORMULA 2 TECHNICAL REGULATIONS

Issue 2

Convention:

Black text: Baseline Text.

Pink text: Modifications to Issue 2 wording.

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ARTICLE 1: GENERAL PRINCIPLES

1.1 Formula 2 Championship

- 1.1.1 The FIA is the international governing body for motorsport with authority over all safety, sporting, technical and disciplinary matters relating to the FIA Formula 2 Championship (the **Championship**). FIA has appointed the Promoter to organise and promote the Championship and has granted to the Promoter the commercial rights to do so. The Championship consists of the Formula 2 races which are included in the Formula 2 calendar. All the participating parties (FIA, ASNs, organisers, competitors and circuits) undertake to apply as well as observe the rules governing the Championship and must hold the required FIA licences which are issued to drivers, competitors, officials, organisers and circuits.
- 1.1.2 The Championship and each of its Competitions are governed by the FIA in accordance with the Regulations.
- 1.1.3 In the sense of the Regulations, terms referring to natural persons are applicable to any gender.

1.2 Regulatory Framework

- 1.2.1 The Regulations applicable to the Championship are the International Sporting Code (the “Code”), the Formula 2 Technical Regulations (the “Technical Regulations”) and the Formula 2 Sporting Regulations (the “Sporting Regulations”), together referred to as the “Regulations”.
- 1.2.2 The Technical Regulations are applicable primarily to the Competitors for the operation of the car during Competitions and Tests.
- 1.2.3 These Regulations are issued by the FIA and apply to the whole calendar year referred to in the title and to the Championship taking place within that calendar year. Any changes made by the FIA for safety reasons may come into effect without notice or delay.
- 1.2.4 The definitive text of the Technical Regulations shall be the English version which will be used should any dispute arise as to their interpretation. Headings in this document are for ease of reference only and do not affect the meaning of the Technical Regulations.

1.3 Dangerous construction

The stewards may prohibit the participation of a vehicle whose construction is deemed to be dangerous. Should the relevant information become apparent during a session, such a decision may apply with immediate effect.

1.4 Compliance with the regulations

Formula 2 Cars must comply with the Technical Regulations in their entirety at all times during each Competition, and during each Test specified in the FIA Formula 2 Sporting Regulations.

1.5 Car Specification and Eligibility

1.5.1 The only cars that are permitted are Formula 2 Cars manufactured by the car supplier, power unit supplier and gearbox supplier to the specification defined by these suppliers for the Formula 2 Championship year of these regulations.

1.5.2 Once supplied to the competitor, no parts may be modified in any way whatsoever except where specifically permitted by these Technical Regulations, a Technical Bulletin, the car supplier user manual, the power unit supplier user manual, the gearbox supplier user manual, the system user manual and the spare parts catalogue.

The action of adding / applying a surface treatment (i.e. shot peening, anodisation, any kind of plasma coating, or superfinishing) other than painting or adhesive film to a genuine component is considered as a modification of the component itself.

1.5.3 Unless permitted under these Technical Regulations or by a Technical Bulletin, no additional components may be added, and no components removed from the car as defined by the specification supplied by the car, gearbox and power unit suppliers for the Formula 2 Championship year of these regulations. For the avoidance of doubt the original design and construction of the car must be preserved at all times.

1.5.4 Any components of the car that need to be replaced must be provided by the car, power unit or gearbox supplier, or by the F2 Promoter and must be listed in one of the supplier's spare parts catalogues applicable for the Formula 2 Championship year of these regulations, unless specifically authorised elsewhere in the Technical Regulations or by a Technical Bulletin.

1.5.5 Should there be a dispute as to the eligibility and/or compliance of a car with the Regulations, the F2 Promoter may supply any component or information deemed necessary for the purpose of scrutineering the car in order that it may be compared to the car supplier's specification, the Technical Regulations.

1.6 Car Operation

1.6.1 All cars must be built and operated in accordance with the car supplier user manual, the power unit supplier user manual, the gearbox supplier user manual and the system user manual.

1.6.2 All cars must be serviced according to the service schedules provided to the competitor for the car, the power unit, the gearbox and the systems. Competitors may be requested to demonstrate that they have appropriate parts tracking and lifing systems in place to ensure service intervals are respected.

1.7 Regulation Clarifications

1.7.1 competitors are entitled to seek written clarification on the interpretation of the Technical Regulations from the F2 Promoter Technical Director. If appropriate, an F2 Technical Directive will be issued. This Technical Directive will be signed by the F2 Promoter Technical Director and will be countersigned by the FIA. All such clarifications will be circulated to all competitors and will be considered the official understanding of the relevant Technical Regulation and will therefore be used by scrutineers when assessing compliance with the Technical Regulations. The document will be published on the FIA F2 Team Documentation SFTP Area.

1.7.2 In exceptional circumstances, the F2 Promoter Technical Director may issue Technical Bulletins that temporarily modify and/or supplement the Technical Regulations to apply at a single Competition or Official Test, or at two consecutive Events or Official Tests taking place not more than one week apart. Each such Technical Bulletin will be signed by the F2 Promoter Technical Director and will be countersigned by the FIA. The document will be published on the FIA F2 Team Documentation SFTP Area.

1.8 Duty of Competitor

It is the duty of each Competitor to satisfy the FIA technical delegate and the stewards that his Formula 2 Car complies with these regulations in their entirety at all times during a Competition.

The car, its components and systems shall, with the exception of safety features, demonstrate their compliance with these regulations by means of physical inspection of hardware or materials. Unless explicitly requested by an Article, no mechanical design may rely upon software inspection as a means of ensuring its compliance.

Due to their nature, the compliance of electronic systems may be assessed by means of inspection of hardware, software and data.

Each competitor must ensure that all relevant personnel (whether employee, consultant, contractor, secondee or any other type of permanent or temporary personnel) associated with its participation in the Championship are appropriately informed with respect to the ways in which their areas of responsibility may impact the competitor's compliance with the Regulations.

Each competitor must ensure that the FIA ethics and compliance hotline with respect to the Regulations is clearly communicated to all these individuals.

ARTICLE 2: DEFINITIONS

2.1 Formula 2 Car

An automobile (the car) designed solely for speed races on circuits or closed courses that is propelled by its own means, moving by constantly taking real support on the ground, of which the propulsion and steering are under the direct control of a driver aboard the vehicle. It runs on four non-aligned complete wheels, with wheel centres that are arranged symmetrically about the car centre plane, when in the straight-ahead position, to form the front and rear axles.

2.2 Car Supplier

The manufacturer and supplier of the car for the Formula 2 Championship appointed by WMSC.

2.3 Power unit Supplier

The manufacturer and supplier of the power unit for the Formula 2 Championship appointed by WMSC.

2.4 Gearbox Supplier

The manufacturer and supplier of the gearbox for the Formula 2 Championship appointed by the F2 Promoter.

2.5 Competition

As defined in the Sporting Regulations

2.6 Component classification categories

The terms Type 1, Type 2 and Type 3 defined in Article 17 and used throughout the Regulations, refer to the classification of the car's components in terms of their Design and Manufacture.

2.7 Car mass

Is the mass of the car with the driver, wearing his complete racing apparel, at all times during the Competition.

2.8 Sprung mass

All parts of the car that are entirely supported by the sprung suspension.

2.9 Unsprung mass

All parts of the car composing the sprung suspension external to the sprung mass and/or not entirely supported by the sprung suspension. For the purpose of this definition the boundary between sprung and unsprung mass will be at the suspension members' inboard attachments.

2.10 Power unit

As defined in Article 5.1.2

2.11 Power train

As defined in Article 5.1.1

2.12 Geometrical planes

- 2.12.1 Reference plane:** a nominally horizontal plane sitting at the bottom of the sprung part of the car, with the exception of the plank assembly defined in Article 3.2.2. It is the plane passing through the three contact points between the top surface of scrutineering platform pads and the surfaces inside the periphery of the three designated holes described in Article 3.2.2.f after any permitted filler or shims have been applied to the surfaces inside these holes.
- 2.12.2 Centre plane:** a vertical plane, which is perpendicular to the reference plane and aligned with the direction of motion of the car. The centre plane is the nominal plane of symmetry of the car.
- 2.12.3 Plane A-A** (also referred to as "A-A"): a plane which is perpendicular to both the reference and centre planes, which lies on the front bulkhead of the survival cell that is defined in Article 12.
- 2.12.4 Plane C-C** (also referred to as "C-C"): the plane at $X_A = 1900$

2.13 Coordinate System and Measurements

- 2.13.1** A righthanded Cartesian (X, Y, Z) coordinate system will be used in these regulations, defined in the following way:
- The X axis is in the rearwards longitudinal direction and is parallel to the reference and car centre planes. $X_A=0\text{mm}$ is defined to be on plane AA defined in Article 2.12.3.
 - The Y axis is normal to the X axis, parallel to the reference plane, and pointing to the right hand side of the car. $Y=0\text{mm}$ is defined to be on the car centre plane.
 - The Z axis is normal to the reference plane and points upwards. $Z=0\text{mm}$ is defined to be on the reference plane
- 2.13.2** Unless otherwise specified any measurements and references will be with the wheels in the straight-ahead position (the wheel rotation axis lying within an X plane) and will be made while the car is stationary on a flat horizontal surface.

2.14 Precision of Numerical Values

Any numerical values specified in these Regulations as limits (maxima or minima), will be considered to be the limits regardless of the decimals quoted.

ARTICLE 3: AERODYNAMIC COMPONENTS

3.1 General Principles and Legality Checking

3.1.1 Aerodynamic Influence

With the exception of the driver adjustable bodywork (DRS) described in Article 3.5.1 (in addition to minimal parts solely associated with its actuation) and any flexible seals specifically permitted, all aerodynamic components or bodywork influencing the car's aerodynamic performance must be rigidly secured and immobile with respect to their frame of reference. Furthermore, these components must produce a uniform, solid, hard, continuous, impervious surface under all circumstances.

Any device or construction that is designed to bridge the gap between the sprung part of the car and the ground is prohibited under all circumstances.

With the exception of the parts necessary for the adjustment of the DRS, or any incidental movement due to the steering system, any car system, device or procedure which uses driver movement as a means of altering the aerodynamic characteristics of the car is prohibited.

The Aerodynamic influence of any component of the car not considered to be bodywork must be incidental to its main function. Any design which aims to maximise such an aerodynamic influence is prohibited.

3.1.2 Physical legality checking

The cars may be measured during a Competition in order to check their conformance to the Technical Regulations.

3.2 Component Definition

3.2.1 Bodywork which is part of the sprung mass of the car

The frame of reference for every part of the car classified as Sprung Mass Bodywork is the coordinate system defined in Article 2.13.1.

3.2.2 Plank Assembly

Below the central surfaces of the Floor Body, the plank assembly must be fitted, consisting of the plank, and the mountings. The requirements of this article must be satisfied when considering both sides of the car.

The following provisions apply to the plank assembly:

- a. The upper surface of the plank assembly must lie at $Z=0$, so that no air can pass between it and the Floor Body or Bib lower surfaces.
- b. The plank assembly must be symmetrically arranged about $Y=0$.
- c. The forward edge of the plank assembly must lie at $X_F=480$.
- d. The rearmost edge of the plank assembly must lie at $X_R=-434$.
- e. The thickness of the plank assembly, when new and unused, measured normal to the lower surface must be $5\text{mm} \pm 0.2\text{mm}$.
- f. The plank assembly must have:
 - i. Three designated through-holes of diameter $80\text{mm} \pm 0.15\text{mm}$, which when viewed from below show the reference plane surface. These holes will be used to support the car on the reference plane for physical legality checking. Two of these holes are at $X_F=1080$ $Y=90$, and one at $X_F=2580$ $Y=0$.
 - ii. Four designated through-holes of diameter $50\text{mm} \pm 0.15\text{mm}$, which when viewed from below show the reference plane surface. These holes will be used to measure the plank thickness for physical plank wear measurements. One of these holes is at $X_F=630$ $Y=0$, two holes are at $X_F=1830$ $Y=100$, and one at $X_F=2310$ $Y=0$.

The following provisions apply to the plank mountings. The plank must be fixed to the car using fasteners which:

- j. Are no smaller than M6 and are made from grade 12.9 or 10.9 steel.
- k. May use a load spreading washer if required.

The total area of the fasteners and any load spreading washers employed with them when viewed from below must be less than 22,000mm². The area of any single fastener plus its load-spreading washer may not exceed 750mm².

No part of any fastener or load-spreading washer may be more than 3mm below the reference plane.

3.2.3 Wheel Bodywork

The frame of reference for every part of the car classified as Wheel Bodywork is the corresponding upright structure.

3.2.4 Suspension Fairings

The frame of reference of any suspension fairing is the structural suspension member that it is attached to.

3.3 Eligible Bodywork

3.3.1 Bodywork must comply with the requirements of a Formula 2 Car as detailed in Article 1.5

3.3.2 Permitted changes to the bodywork:

- a. The front wing assembly configuration may be changed, but only from one of the configurations described in the car supplier user manual.
- b. The rear wing assembly configuration may be changed, but only from one of the configurations described in the car supplier user manual.
- c. The side pod air ducts may be partially covered with adhesive tape on the stone guard or with tape or a flat plate on the forward face of the radiators for the sole purpose of optimising power unit temperature.
- d. Apart from during the Monaco Event, the HDF rear wing assembly configuration cannot be used during the Race.
- e. Front and rear brake ducts may be partially or fully covered with tape for the sole purpose of optimising brake temperatures.
- f. Tape may be applied to fasteners or any component surface, but in all cases, it must be clear that the tape has no function other than securing the fixings, colouring for presentation or protecting the parts to which it is attached. However, apart from securing fasteners or unless expressly authorised in these Technical Regulations, Technical bulletins, car supplier user manual, power unit supplier user manual, gearbox supplier user manual, system manual, it is not permitted to apply tape to cover a junction between components, holes or cavities.
- g. Any component inside the bodywork can be covered with thermal insulation material and/or wear protection material and/or electromagnetic protection material providing this insulation and/or wear protection material and/or electromagnetic protection material has no other function than protecting components against heat and/or chafing and/or electromagnetic perturbations.
- h. Minimal material removal on Type 2 and Type 3 components is permitted for the sole purpose of preventing chafing.
- i. Internal cooling ducts may be added as defined in the car supplier user manual. Additional internal cooling ducts are permitted if they are of the minimum required size, and are for the sole purpose of ensuring the reliable operation of mechanical or electrical

components. Written details must be provided to and approved by the F2 Promoter Technical Director and the FIA Technical Delegate prior to use.

- k. Modifications that are necessary to install a radio communication system may be made provided they have been approved by the F2 Promoter Technical Director and the FIA.
- l. Providing their purpose is the protection of the retaining wheel cables or brake lines, it is permitted to add covers to the leading edge or trailing edges of the wishbones. Such covers can only be made by trimming components available from the car supplier.
- m. Glue and filler may be added provided they are to the specification defined in the car supplier user manual.

3.4 Dimensions

3.4.1 Bodywork dimensions

- a. Compliance with bodywork dimensional regulations will be assessed on the scrutineering platform in accordance with the measurement procedure specified in the FIA F2 Team Documentation SFTP Area.
- b. All height measurements will be taken normal to and from the reference plane defined in Article 2.13.1.
- c. These measurements will be taken whilst a mass of 20kg is placed simultaneously on the underfloor on each side of the car, as specified in the FIA F2 Team Documentation SFTP Area.

3.4.2 Physical Legality Checking

The cars may be measured during a Competition in order to check their conformance to the geometries and component positional requirements specified by the car supplier.

- a. A positional tolerance of $\pm 5\text{mm}$ will be accepted from the car supplier's specification for the Front Wing Bodywork, Rear Wing Bodywork, and Floor Bodywork behind $X_R=0$.
- b. A tolerance of $Z=\pm 5\text{mm}$ will be accepted for parts of the car lying on the $Z=0$ plane, with $375 \leq Y \leq 375$ and ahead of $X_R=0$.
- c. All other bodywork dimensions must be as specified by the car supplier to a tolerance of $\pm 5\text{mm}$ unless otherwise specified and may be checked at the discretion of the FIA Technical Delegate.
- e. Minimal discrepancies from the car supplier's specified surfaces will also be accepted in the following cases:
 - i. Minimal repairs on type 2 parts carried out according to the relevant user manual.
 - ii. Tape, provided it does not achieve an aerodynamic effect otherwise not permitted by Article 3
 - iii. Junctions between bodywork panels
 - iv. Local bodywork fixing details

3.4.3 Plank dimensions

The plank assembly must have a nominal thickness when new of 5mm, as defined in Article 3.2.2.

A minimum thickness of 4mm will be accepted due to wear, and conformity to this provision will only be checked at the peripheries of the four designated diameter 50mm holes detailed in Article 3.2.2.f, where at least one position on the periphery must achieve the minimum thickness.

3.5 Aerodynamic Component Flexibility

3.5.1 Introduction of load/deflection tests

In order to ensure that the requirements of Article 3.1.2 are respected, and that the aerodynamic component flexibility is as specified by the car supplier, the FIA reserves the right to introduce load/deflection tests on any part of the bodywork which appears to be (or is suspected of), moving whilst the car is in motion.

3.5.2 Load/deflection linearity

All load deflection tests must have a nominally linear elastic relationship unless otherwise stated.

ARTICLE 4: MASS

4.1 Minimum mass

The mass of the car, without fuel, must not be less than 788kg at all times during the Competition and Official Test.

This mass will be provisional until all drivers and cars have been weighed during the first Official Test, after which it may be adjusted and if approved by the Steering Committee a revised minimum mass will be published before the first Competition.

If, when required for checking, a car is not already fitted with dryweather tyres, its mass will be determined using a set of dryweather tyres selected by the FIA technical delegate.

4.2 Ballast

Ballast can be used provided it is secured in such a way that tools are required for its removal and that it remains immobile with respect to the sprung mass in its entirety. It must only be fitted in the locations specified by the car supplier. It must be possible to fix seals if deemed necessary by the FIA technical delegate.

4.3 Adding during the race

With the exception of compressed gases, no substance may be added to the car during each race. If it becomes necessary to replace any part of the car during the race, the mass of the new part must not be more than that of the original part.

ARTICLE 5: POWER UNIT

5.1 Definitions

5.1.1 Power train

The power unit and associated torque transmission systems, up to but not including the drive shafts.

5.1.2 Power unit (PU)

The internal combustion engine and turbocharger, complete with its ancillaries, and all actuation systems and PUControl electronics necessary to make them function at all times.

5.1.3 Engine (ICE)

The internal combustion engine including ancillaries and actuator systems necessary for its proper function.

5.1.4 Turbocharger (TC)

The assembly of a compressor used for pressure charging of the engine, a turbine connected to the engine exhaust system used to drive the compressor, the drive system between the compressor and the turbine and their respective housings and bearings.

5.2 General Principles

5.2.1 The only Power Unit that can be used is one that complies with the requirements of a Formula 2 Car as detailed in Article 1.5.

5.2.2 Once supplied, the PU is considered as a Type 1 part and may not be modified in any way whatsoever except where specifically permitted by a Technical Bulletin.

5.2.3 Any revision, repair or change to the power unit can only be carried out by the power unit supplier.

5.2.4 The power unit will be delivered with security seals in place and it is the responsibility of each competitor to ensure that these seals remain intact until the power unit is returned to the power unit supplier for revision or repair.

5.2.5 In the event of a power unit being required by the Stewards during the course of a Competition in order to determine compliance with these Technical Regulations, the relevant competitor must surrender the power unit to the scrutineers as soon as such notification is given. Under these circumstances, the F2 Promoter will be obliged to deliver another power unit to the competitor concerned until the original is returned. The use of the replacement power unit will be at no cost to the competitor provided it is returned with its official seals intact.

5.2.6 For safety reasons, if the car's rear tyres are in contact with the ground, the power unit can only be started if a person is seated in the cockpit and able to control the car.

5.3 Power unit torque demand

5.3.1 The only means by which the driver may control acceleration torque to the driven wheels is via a single foot (accelerator) pedal mounted inside the survival cell.

5.3.2 Designs which allow specific points along the accelerator pedal travel range to be identified by the driver or assist him to hold a position are not permitted.

ARTICLE 6: FUEL SYSTEM

6.1 Fuel tanks

- 6.1.1 No fuel bladders shall be used after the expiry date issued by the manufacture.
- 6.1.2 The tank must be fitted with a fully operational pressure relief valve to prevent overpressure.

6.2 Refuelling

- 6.2.1 The use of any device, whether fitted to the car or remote, to decrease the temperature of the fuel below the ambient temperature is forbidden.
- 6.2.2 Any storage of fuel on board the car at a temperature more than ten degrees centigrade below the ambient temperature is forbidden.
- 6.2.3 Any device, system or procedure (except for driving of the car, and storing the fuel in ambient conditions) the purpose and/or effect of which is to heat or cool the fuel is prohibited.
- 6.2.4 Any refuelling procedure must respect the provisions of the Sporting Regulations.

6.3 Fuel draining and sampling

- 6.3.1 Competitors must ensure that a 0.8kg sample of fuel may be taken from the car for analysis at any time during the Competition or Official Test.

After a practice session, sprint session, and race, if a car has not been driven back to the pits under its own power, it will be required to supply the above mentioned sample plus the amount of fuel that would have been consumed to drive back to the pits. The additional amount of fuel will be determined by the FIA.

ARTICLE 7: OIL AND COOLANT SYSTEMS AND CHARGE AIR COOLING

7.1 Modifications

With the exception of the installation of quick release couplings on the gearbox oil cooling flexible hoses, no modification of the oil and water systems are permitted.

7.2 Non-liquid cooling

Non-liquid cooling agents which use latent heat of evaporation, such as dry-ice, may be used, but must only be added inside the left-hand radiator duct between the radiator screen and the front face of the radiator itself. Any design or construction the purpose of which is to hold non-liquid cooling agents anywhere else on the car is forbidden.

Non-liquid cooling agents within external devices which are attached to the car for cooling purposes only when it is stationary are permissible.

It is the Competitors responsibility to ensure that non-liquid cooling agents are contained within the above defined position when the car is running on track.

ARTICLE 8: ELECTRICAL SYSTEMS

8.1 Definitions

8.1.1 Electronically controlled

Any command system or process that utilises semi-conductor or thermionic technology.

8.1.2 Control

A sensor, actuator, wiring loom or unit will be referred to as “Control” if it is used by any on-board strategy other than input handling, input failure detection or functions used for logging only.

It includes for example units, sensors, actuators, wiring looms used in control loops, protections or driver information.

8.1.3 Electronic Control Unit (ECU)

A programmable embedded system that controls one or more car sub-systems.

8.1.4 FIA Accident Data Recorder (FIA ADR)

An ECU manufactured by an FIA designated supplier to a specification determined by the FIA.

The primary purpose of the FIA ADR is to monitor, record or control the following:

- a. Data relevant to an accident or incident.
- b. The management of marshalling and safety systems.

8.1.5 Telemetry

Wireless transmission of data from remote sources.

8.2 General Principles

8.2.1 The only ECU that can be used is one that complies with the requirements of a Formula 2 Car as detailed in Article 1.5.

8.2.2 ECUs will be delivered with security seals fitted and it is the responsibility of each competitor to ensure these seals remain intact.

8.2.3 At the beginning of each Competition or Official Test, in accordance with the general timetable for the Competition or Official Test, competitors must make their cars available to F2 Promoter in order to allow the data download and the upload of the appropriate software parameters to each ECU.

8.2.4 At the end of each Competition and Official Test, all ECUs must be programmed ‘race off’ to limit the maximum engine speed to 5000 rpm.

8.2.5 If a malfunction of an ECU or GCU is suspected, specialists appointed by the F2 Promoter may work on any such unit under the supervision of the scrutineers.

8.2.6 Only clutch maps and throttle maps specified in the FIA F2 Team Documentation SFTP Area may be used. These maps must always be used according to their prescriptions.

8.2.7 ECU configuration files that must be common to all cars during a Competition or an Official Test will be listed in the FIA F2 Team Documentation SFTP Area.

8.3 Software and electronics inspection

8.3.1 All on-car software versions must be registered with the FIA and F2 Promoter before use.

8.3.2 The FIA must be able to test the operation of any compulsory electronic safety systems at any time during a Competition.

8.4 Data Acquisition

8.4.1 It is forbidden to add wireless data transmission systems other than:

- systems permitted in Article 8.13;
- the TPMS system as defined in Article 10.4.3;
- biometric devices homologated according to the FIA Standard 8868-2018;
- monitoring devices used for the management of chronic medical conditions only where the licence of driver of the car carries the relevant medical aptitude endorsement as detailed in Appendix L to the ISC.

In such cases, at the discretion of the Technical Delegate, the competitor may be required to

- a) provide documentation detailing the function of the device, specifically in relation to the wireless data transmission.
- b) demonstrate via physical inspection that the device cannot be used to transmit data other than that required for the sole intended purpose, or
- c) implement specific processes or procedures required by the Technical Delegate to ensure that the device cannot be used to transmit data other than that required for the sole intended purpose.

8.4.2 Apart from the GPS device that is part of the Marshalling system supplied by F2 Promoter, no other GPS system is permitted. During Official Tests only, a GPS system, which is connected to the onboard camera and not recorded on the original ECU/data-logger device, may be used.

8.4.3 Disconnecting or removing any sensor fitted to the car as part of the original data acquisition system and listed in the F2 system user manual is forbidden.

8.4.4 It is the responsibility of the competitor to check the permanent functionality of all the sensors fitted on board as part of the car's original data acquisition system.

8.4.5 Defective sensors connected with the original data acquisition must be replaced prior to the next session or race.

8.4.6 It is the duty of each competitor to record and retain all data from the system of each car from the first Official Test of the current season in the format described in the F2 system manual. Copies of all such data must be made available to the scrutineers if deemed necessary and may be used for scrutineering purposes. Every running day the competitors must bring copies of the entire day data to F2 Promoter assistance staff no later than one hour after the end of the last session or the car's release from parc fermé.

8.4.7 Additional sensors may be fitted to the car provided the additional sensors are only logged to the original ECU/data-logger device and provided the fittings preserve the original instruments and electrical system.

Any additional data logging device or CAN extension unit is not permitted. The only exception are biometric devices homologated according to the FIA Standard 8868-2018.

It is forbidden to connect any additional device to the CAN connection of the car other than the original car equipment (as defined in the F2 system user manual) and the audio warning system as per Article 8.13.

8.4.8 Additional sensors may only be connected to analogue input channels of the original ECU/data-logger device via the connector(s) specified in the F2 system user manual.

Each of these analogue input channels of the original ECU/data-logger device may only record one data stream generated from one single sensor. Any type of sensor and/or signal multiplexing is forbidden.

8.4.9 Sensors and acquisition systems may only be fitted for the sole purpose of passive data acquisition.

- 8.4.10 Should the installation of a sensor require a modification of a genuine part of the car, written details must be provided to and approved by the F2 Promoter Technical Director and the FIA Technical Delegate prior to use.
- 8.4.11 Apart from pitot tube and pushrod end strain gauges no sensor must protrude from the structure or the bodywork of the car in the external air flow. The volume inside the side pods and the volume inside the rims are not considered as area submitted to the external air flow.
- 8.4.12 During Official Tests, one onboard camera may be added to the car provided it is fitted in a safe position and securely mounted. Approval of the F2 Promoter Technical Director and the FIA Technical Delegate is required prior installation. With exception of the TPMS defined in Article 10.4.3, it is forbidden to add any device with the purpose of recording tyre temperatures during an Event.
- 8.4.13 The remote flash disc recorder located in the cockpit may be removed by the drivers at the end of the qualifying session and the races.
- 8.4.14 A pitot tube can only be fitted in the pitot tube position specified in the car supplier manual.
- 8.4.15 Contactless speed, slip angle sensors, known as well as “Datron”, infrared cameras fitted on the car and internal tyre carcasses temperature measurement systems (unless required by the F2 Promoter and the FIA as per Article 10.4.3) are not permitted.

8.5 Master switch

The driver, when seated normally with the safety belts fastened and the steering wheel in place, must be able to cut off the electrical circuits to the ignition, all fuel pumps and the rear light by means of a spark proof circuit breaker switch.

This switch must be located on the dashboard and must be clearly marked by a symbol showing a red spark in a white edged blue triangle.

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 roll over structure on both sides of the car and have the same function as the switch described above.

8.6 Driver radio

- 8.6.1 All cars must be fitted with a voice radio communication system.
- 8.6.2 Other than authorised connections to the ECU, any voice radio communication system between car and pits must be stand alone and must not transmit or receive other data.

8.7 Accident analysis

All cars must be equipped with an accident data recorder approved according to FIA Standard 8872-2018 (Technical list n°88) which will have to be installed according to the “Installation specification for FIA-approved 8872-2018 accident data recorder (ADR)”.

8.8 Accident data

At any time following an accident or incident Competitors must make the FIA ADR available and accessible to the FIA. A representative of the team concerned may be present when data relevant to an accident or incident is being uploaded from the recorder. A copy of the data will be made available to the team.

Any conclusions as to the cause of an accident, or any data relevant to an accident, may only be published in the form of a report which has been agreed between the team concerned and the FIA.

8.9 Marshalling system

All cars must be fitted with a marshalling system, comprising a car positioning system and a bidirectional race control to car communication system, which has been manufactured by the FIA and F2 Promoter designated supplier to a specification determined by the FIA and F2 Promoter.

No other parts which, in the opinion of the FIA are capable of performing a similar function, may be fitted to any car.

8.10 Track signal information display

All cars must be fitted with red, blue and yellow cockpit lights, supplied as part of the ECU, the purpose of which are to give drivers information concerning track signals or conditions. The lights must be fitted directly in the driver's normal line of sight.

8.11 Medical warning system

In order to give rescue crews an immediate indication of accident severity each car must be fitted with a warning light which is connected to the FIA ADR.

8.12 Timing transponders

All cars must be fitted with a timing transponder supplied by the officially appointed timekeepers. This transponder must be fitted in strict accordance with the instructions of the timekeepers. Teams must use their best endeavours to ensure that the transponders are in working order at all times.

8.13 Cameras

8.13.1 All participants will have to carry either a camera and its electronic equipment or a dummy camera and its dummy electronic equipment at all times during Competitions and Official Tests.

8.13.2 The position of the camera electronic equipment and dummy camera electronic equipment cannot be modified.

8.13.3 The position on the car of the on-board camera will be determined by the F2 Promoter and approved by the scrutineers.

8.14 Permitted Modifications

The ECU and data acquisition must be used as supplied with the exception of the following permitted modifications:

- a. Any modifications required to fit sensors and wires relating to a data acquisition system as described in Articles 8.4.7 and 8.4.8 above.
- b. Any modifications required to fit a driver communication system as described in Article 8.13.c.
- c. The addition of any radio equipment for the sole purpose of transmitting voice communication between a driver and his team.
- d. Each competitor must install and maintain in working order a driver audio warning system – Details of the requirements can be found in the FIA F2 Team Documentation SFTP Area.

ARTICLE 9: TRANSMISSION SYSTEM

9.1 Definitions

9.1.1 Gearbox

All the parts in the power train which transfer torque from the power unit output shaft to the drive shafts (the drive shafts being defined as those components which transfer drive torque from the sprung mass to the unsprung mass). It includes all components whose primary purpose is for the transmission of power or mechanical selection of gears, bearings associated with these components and the casing in which they are housed.

9.2 General Principles

9.2.1 The only Gearbox that can be used is one that complies with the requirements of a Formula 2 Car as detailed in Article 1.5.

9.2.2 Once supplied, the gearbox is considered as a Type 1 part and may not be modified in any way whatsoever except where specifically permitted by a Technical Bulletin.

9.2.3 Any revision, repair or change to the gearbox can only be carried out by the gearbox supplier.

9.2.4 The gear ratios defined in the FIA F2 Team Documentation SFTP Area must be used for the corresponding Competition and Official Test. Only ratios available for the Formula 2 Championship year of these regulations from the F2 Promoter may be used.

9.3 Permitted Modifications

9.3.1 Differential ramp angles may be changed but only by using the range of parts available for the Formula 2 Championship year of these regulations from F2 Promoter.

9.3.2 In addition to, or instead of the preload spacer(s) from the gearbox supplier which can be surface ground, it is permitted to add circular shim(s) to preload the differential.

This (or these) additional shim(s) must be a flat piece of steel without any teeth on its inside or outside periphery and have no other function than calibrate the axial thickness of the differential components.

9.4 Reverse Gear

All cars must be able to be driven in reverse by the driver at any time during the Competition.

9.4 Clutch disengagement

All cars must be fitted with a means of disengaging the clutch for a minimum of fifteen minutes in the event of the car coming to rest with the engine stopped. This system must be in working order throughout the Competition even if the main hydraulic, pneumatic or electrical systems on the car have failed.

In order that the driver or a marshal may activate the system in less than five seconds, the switch or button which operates it must be marked with a letter "N" in red at least 40mm tall, with a line thickness of at least 4mm, inside a white circle of at least 50mm diameter with a red edge with a line thickness of at least 2mm.

9.5 Clutch Control

9.5.1 Devices which allow specific points along the travel range of the clutch operating device to be identified by the driver or assist him to hold a position are not permitted.

9.5.2 Parts of the steering wheel or chassis should not be practically usable as reference points for the driver to identify or hold a specific position.

- 9.5.3 Other than during the standing start procedure, the minimum and maximum travel positions of the clutch operating device must correspond to the clutch fully engaged normal rest position and fully disengaged (incapable of transmitting any useable torque) positions respectively.

ARTICLE 10: SUSPENSION, STEERING SYSTEMS, WHEELS AND TYRES

10.1 Definitions

10.1.1 Sprung suspension

The means whereby all complete wheels are suspended from the sprung mass by a spring medium.

10.1.2 Complete wheel

Wheel, inflated tyre, and the items detailed in this Article. The complete wheel is considered part of the suspension.

The only permitted additional parts which may be physically attached to the wheel in addition to the tyre are; valves for filling and discharging the tyre, wheel fasteners, balance weights, drive pegs, standard supply tyre pressure and temperature monitoring sensors.

10.1.3 Wheel or wheel rim

Rim (including lips and barrel), spokes and centre hub.

10.2 General Principles

10.2.1 Suspension must comply with the requirements of a Formula 2 Car as detailed in Article 1.5.

10.2.2 The wheels are specific to FIA Formula 2 Championship and can only be purchased from the F2 Promoter.

10.2.3 Wheel colour and the manufacturer's logo may not be changed.

10.3 Permitted Modifications and Adjustments

10.3.1 Suspension settings may be changed provided the adjustment margins specified by the car supplier for each component are respected.

10.3.2 Suspension mounting points and mounting brackets may not be modified. Camber angles may be adjusted by the use of spacers in the mounting of the hub to the upper wishbone both at the front and rear of the car, but only from the range specified by the car supplier, and only within the limitations defined by the Tyre Supplier as detailed in the Sporting Regulations.

10.3.3 Only springs and torsion bars specified by the car supplier and supplied by the F2 Promoter may be used.

10.3.4 Adjustment of shock absorbers is free using the range available on the part provided by the car supplier.

10.3.5 Damper valves may be changed but only by using the range of parts detailed in the car supplier user manual.

10.3.6 No modification is permitted to any damper sub-component.

10.3.7 Thrust bearings or spacers may be added between the springs and spring platforms.

10.3.8 Only solid packers, metal wool washers and bump rubbers may be fitted to damper shafts. Belleville washers or coil springs, other than those allowed by Article 10.3.3, are not permitted.

10.4 Tyres

10.4.1 Tyre supply

- a. Only tyres provided by the official tyre supplier may be used during Competitions or Official Test sessions. This applies to both wet and dry-weather tyres.
- b. All tyres which are to be used during a Competition or Official Test will be marked with a unique identification by the official manufacturer. The use of tyres without the appropriate identification is strictly forbidden.
- c. If, in the opinion of the appointed tyre supplier and FIA technical delegate, the nominated tyre specification proves to be technically unsuitable, the stewards may authorise the use of additional tyres to a different specification.

10.4.2 Treatment of tyres

- a. Tyres may only be inflated with air or nitrogen.
- b. Any process the intent of which is to reduce the amount of moisture in the tyre and/or in its inflation gas is forbidden.
- c. The use of vacuum or any other means to drain the air or gas from a tyre fitted to a rim is strictly forbidden.
- d. All tyres must be used as supplied by the manufacturer, any modification or treatment such as cutting, grooving, the application of solvents or softeners is prohibited. This applies to dry and wet weather tyres.
- e. No tyre heating devices are permitted. Any device, system or procedure (except for driving of the car) the purpose and/or effect of which is to heat the wheels, hubs or brakes above the ambient air temperature, or to maintain their temperature if they are already warm, is prohibited.

10.4.3 Tyre pressure

- a. Each competitor must install and maintain in working order a tyre pressure monitoring system [TPMS]. Details of the system, including installation instructions can be found in the FIA F2 Team Documentation SFTP Area.
- b. Only the TPMS and TPMS components distributed by the F2 Promoter for the Championship are permitted.
- c. If required by the F2 Promoter and the FIA, competitors must fit TPMS sensors with tyre carcasses temperature measurement. The carcasses temperature values will not be available for the competitor.
- d. It is the responsibility of the competitor to ensure that the TPMS is working at any time throughout a Competition and Official Test. The Race Director may require a car with a faulty TPMS and / or TPMS sensor to pit and rectify the TPMS and / or change the tyre.

10.5 Wheel attachment and retention

10.5.1 With the exception of manual torque wrenches, devices which are used to fit or remove wheel fasteners during a pit stop may only be as specified in Sporting Regulations and the FIA F2 Team Documentation SFTP Area.

10.5.2 The dual stage retaining systems must incorporate a means of allowing the wheel operator/fitter to visually identify an incorrectly fitted fastener.

10.5.3 It is team's responsibility to ensure that wheels are properly fitted and to ensure that tyre valve caps are properly fitted when cars are running.

ARTICLE 11: BRAKE SYSTEM

11.1 General Principles

- 11.1.1 The brakes and brake system must comply with the requirements of a Formula 2 Car as detailed in Article 1.5.
- 11.1.2 Only brake discs distributed by the F2 Promoter for the Formula 2 Championship are permitted.
- 11.1.3 Only brake pads distributed by the F2 Promoter for the Formula 2 Championship are permitted.

11.2 Permitted Modifications and Adjustments

- 11.2.1 One brake pressure sensor is mandatory, if another is fitted it will be considered as data acquisition optional equipment.

ARTICLE 12: CAR CONSTRUCTION AND SURVIVAL CELL (CHASSIS)

12.1 Definitions and General Requirements

12.1.1 Cockpit

The volume that accommodates the driver.

12.1.2 Survival cell

The continuous closed structure containing the fuel tank and the cockpit.

12.1.3

The survival cell must comply with the requirements of a Formula 2 Car as detailed in Article 1.5.

12.2 Cockpit Specification

12.2.2 Entry and Exit

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 obstructed by any part of the car.

From his normal seating position, with all seat belts fastened and whilst wearing his usual driving equipment the driver must be able to remove the steering wheel and get out of the car within 7 seconds and then replace the steering wheel in a total of 12 seconds. For this test, the position of the steered wheels will be determined by the scrutineers and after the steering wheel has been replaced steering control must be maintained.

12.2.3 Helmet position

When seated normally, the driver must be facing forwards and the rearmost part of his crash helmet must be between $X_C = -50$ and $X_C = -125$.

The driver's helmet must lie below a line drawn between the front fixing axis of the secondary roll structure and a point 75mm vertically below the highest point of the principal roll structure.

No head and neck support worn by the driver may be less than 25mm from any structural part of the car when he is seated in his normal driving position.

12.2.4 Steering Wheel

The steering wheel must be positioned according to the specification defined in the FIA F2 Team Documentation SFTP Area.

The steering wheel must be positioned such that at any angle of rotation there is at least 50mm between any part of the steering wheel assembly rearward of the collapsible steering column element and the survival cell and bodywork, when measured parallel to the steering wheel axis.

12.2.5 Cockpit Padding

All cars must be equipped with the headrest and the leg padding as supplied by the car manufacturer.

If necessary, and only for driver comfort, an additional piece of padding no greater than 20mm thick may be attached to the sides and no greater than 10mm thick at the rear of these headrests provided they are made from the same material which incorporates a low friction surface.

No tape or similar material may be used to cover the forward fixings of the headrest.

12.2.6 Seat, seat fixing and removal

In order that an injured driver may be removed from the car in his seat following an accident, all cars must be fitted with a seat complying with the FIA Specification for Extractable Seats in Open Cockpit Cars.

The seat shell positioning system must not be modified.

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

An extraction test may be requested at any time by the scrutineers. The seat must be removable without the need to cut or remove any of the seat belt.

Once the buckle has been released it must be possible to extract the seat from the car without any further adjustment of the harness.

12.3 Permitted Modifications and Adjustments

- 12.3.1 Pedal position, pedal pads, master cylinder pushrod length and the relative working angles may be changed for driver comfort. The original pedal arms as supplied by the car supplier must not be modified.
- 12.3.2 The competitor may modify the type and position of the driver's heel or foot rest or replace this component with an alternative, as long as in both cases the sole purpose of the component is still as a heel or foot rest.
- 12.3.3 Equipment for supplying the driver with drink may be fitted within the cockpit.
- 12.3.4 A wind deflector no higher than 40mm may be added at the front of the cockpit. The wind deflector screen must be made from the components provided by the F2 Promoter.
- 12.3.5 The leg padding can be modified according to the procedure detailed in the FIA F2 Team Documentation SFTP Area.

ARTICLE 13: SAFETY STRUCTURES AND HOMOLOGATION

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ARTICLE 14: SAFETY EQUIPMENT

14.1 General Principles

The safety equipment of the car has to be installed according to the relevant FIA safety standards and the car supplier's user manual, at all times during a Competition and Official Test.

14.2 Fire extinguisher

The driver must be able to trigger the extinguishing system manually when seated normally with his safety belts fastened and the steering wheel in place.

Furthermore, a means of triggering from the outside must be combined with the circuit breaker switch. It must be marked with a letter "E" in red inside a white circle of at least 50mm diameter with a red edge.

14.3 Rear view mirrors

All cars must have two mirrors mounted so that the driver has visibility to the rear and both sides of the car.

The position of the rear view mirrors may be changed provided they are the components provided by the car supplier and that the fixing points to bodywork are not modified.

The FIA technical delegate must be satisfied by a practical demonstration that the driver, when seated normally, can clearly define following vehicles.

For this purpose, the driver shall be required to identify any letter or number, 150mm high and 100mm wide, placed anywhere on boards behind the car, the positions of which are detailed below:

- Height: From 400mm to 1000mm from the ground.
- Width: 4000mm either side of the car centre line.
- Position: 10m behind the rear wheel centre line.

14.4 Rear Lights

Each rear light device with more than one LED not working has to be replaced before the beginning of the following session.

14.5 Safety Harnesses

It is mandatory to wear a safety harness that has been homologated to FIA Standard 8853-2016. The safety harness must be used in accordance with the safety harness manufacturer's instructions and must be securely fixed to the car. Approved harnesses are listed in Technical List n°57.

An alternative safety harness to the one supplied with the car may be fitted as long as it complies with these standards.

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

ARTICLE 15: MATERIALS

[This section left intentionally blank]

ARTICLE 16: FUEL AND ENGINE OIL

16.1 General Principles

- 16.1.1 Fuel and lubricants must conform to the specifications in the car supplier, power unit and gearbox user manuals.
- 16.1.2 No additives may be used unless they are specified in the car supplier, power unit and gearbox user manuals.
- 16.1.3 Permitted fuel batches will be listed in the FIA F2 Team Documentation SFTP Area.

16.2 Fuel sampling and testing at a Competition

- 16.2.1 All samples will be taken in accordance with the FIA Formula 2 fuel sampling procedure, a copy of which may be found in the FIA F2 Team Documentation SFTP Area.
- 16.2.2 Fuel density will also be checked and must be within 0.15% of the figure noted during preapproval analysis.
- 16.2.3 Fuel samples taken during a Competition will be checked for conformity by using a gas chromatographic technique, which will compare the sample taken with an approved fuel. Samples which differ from the approved fuel in a manner consistent with evaporative loss, will be considered to conform. However, the FIA retains the right to subject the fuel sample to further testing at an FIA approved laboratory.
- 16.2.4 GC peak areas of the sample will be compared with those obtained from the reference fuel. Variations in any given peak area (relative to its adjacent peak areas) which are greater than 12%, or an absolute amount greater than 0.10% for compounds present at concentrations below 0.8%, will be deemed not to comply.

If a peak is detected in a fuel sample that was absent in the corresponding reference fuel, and its peak area represents more than 0.10% of the summed peak areas of the fuel, the fuel will be deemed not to comply.

If the deviations observed (above) by GC indicate that they are due to mixing with another Formula 2 fuel, which has been approved by the FIA for use by the team, the fuel sample will be deemed to comply, provided that the adulterant fuel is present at no more than 10% in the sample. Any systematic abuse of mixed fuels will be deemed not to comply.

16.3 Oil sampling and testing at a Competition

- 16.3.1 For reference purposes, before any oil may be used at a Competition, a sample must be submitted to the FIA together with the oil reference number.
- 16.3.2 Engine oil samples taken during a Competition will be checked for conformity by using a Fourier transform infrared (FTIR) technique, which will compare the sample taken with that submitted at the start of the Competition. Samples which differ from the reference engine oil in a manner consistent with fuel dilution, engine fluids contamination and oil ageing as a result of normal engine operation, will be considered to conform. Samples which differ from the reference engine oil in a manner consistent with the mixing with other engine oils, which have been approved by the FIA for use by the team at a Competition, will be deemed to comply, provided that the adulterant oils are in total present at no more than 10% in the sample. This tolerance will also be applicable for the mixing with the approved dyno engine oil but only for a new engine during the competition at which it is first used. However, the FIA retains the right to subject the oil sample to further testing at an FIA approved laboratory.

ARTICLE 17: COMPONENTS' CLASSIFICATION

17.1 General Principles

The complete car is divided into three types of parts. The parts are classified in the relevant spare parts catalogue.

- Type 1: These parts must be used exactly as supplied. Repairs may be carried out only by the manufacturer.
Competitors must keep repair certificates provided by the manufacturer and make them available to the scrutineers at all Competitions and Official Tests.
- Type 2: These parts may be modified or repaired only in the range described in the relevant spare parts catalogue, the relevant user manual or the Regulations.
- Type 3: Parts that are not referenced as Type 1 or Type 2. These parts can be sourced by the competitor.

Type 3 parts may be replaced with equivalent or superior standard parts. If applicable, the thread type, size and pitch must remain the same. The use of locking wire is permitted. If applicable, the orientation of the bolt and nut is free for any type 3 part.

Only Type 3 washers may be removed.

Washers may be added only for facilitating and improving the mechanical installation unless they have an influence on the set-up of the car or fulfill any additional function.