



Technical Car Construction Regulations Rule Changes for 2019

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**Document compiled on behalf of BriSCA F2 by: Adrian Blackwell
BriSCA F2 Chief Technical Consultant**

Summary

- This document contains the changes to the BriSCA F2 Technical Car Construction Regulations for the 2019 season and beyond.
- This document is divided in to 5 primary sections:
 1. Changes previously agreed, and already documented in the 2018 Technical Car Construction Regulations
 2. Changes agreed between BriSCA F2 and the BDF for implementation in 2019
 3. Minor changes to existing rules for clarification, housekeeping, or the prevention of future undesirable development
 4. Confirmation of proposals that are NOT being implemented – For information only.
 5. Information on the medium-term future direction of rule changes
- Any feedback should be directed to the following:
 - Individual BDF members
 - The BDF group via the contact section of the BriSCA F2 website:
<http://www.briscaf2.com/information/contact-drivers-forum.ashx>
 - Adrian Blackwell, BriSCA F2 Chief Technical Consultant, directly, or via email to:
BriSCAF2Tech@outlook.com
- The ORCi are looking at a number of safety related issues. Any changes resulting from the ORCi's work may impact BriSCA F2 and other formulas in the future, and will be notified as appropriate.
- Despite extensive input to these rule changes by driver representatives from the BDF, it is recognised that there will undoubtedly be questions generated from the wider driver population. It is therefore expected that a further update will be issued in due course to answer those questions, provide any additional clarity necessary, and tie-up any other loose ends currently under discussion, e.g. high-capacity oil pumps.

1 Previously Agreed Changes

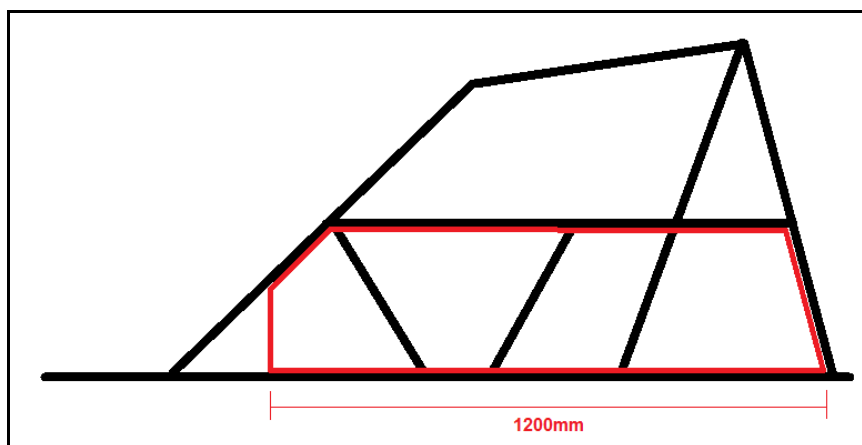
The changes document in this section were agreed in 2017, and published in the 2018 BriSCA F2 Technical Car Construction Regulations rulebook. These are NOT new changes that have not been previously communicated.

Weight and Ballast

- *The MAXIMUM steel plate thickness in ANY part of the car construction will be reduced to a MAXIMUM of 3mm, unless explicitly permitted, e.g. 4mm cab floor. This change will cover items such as the side-pod, and cab-sides. This will NOT include plate used in the construction of items such as wishbone brackets, or rear-axle link-bar mounting brackets, which require a thicker material.*
- *The “stacking” of more than two lengths of tube (e.g. RHS, SHS, CHS) in the construction of the chassis, side-pod, fuel-tank/battery protection, or other parts of the car may be restricted. Limitations such as a maximum number of stacked tubes, or a minimum gap between tubes, may be put in place.*

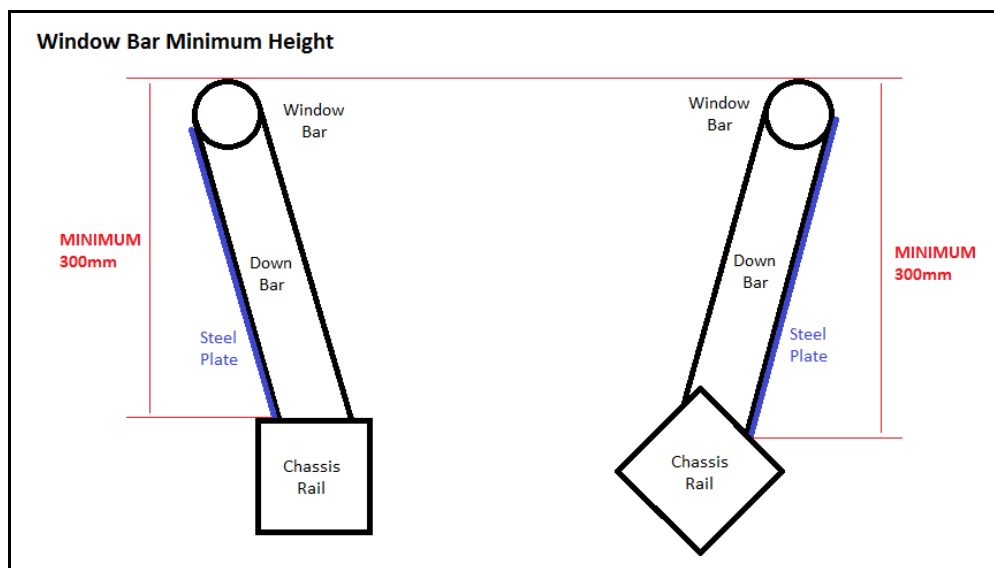
Roll-cage Plating

- *BOTH sides of the roll-cage MUST be plated in steel plate (with a MINIMUM thickness of 2mm) to fully enclose the area bordered by the main chassis rail, the rear roll-cage pillar, the side window bar, and the front roll-cage pillar (or an additional down-bar as necessary to meet dimensional requirements).*
 - *The plate MUST be fitted as either a single piece (formed as required), or up to a MAXIMUM of 3 pieces on each side of the car (for easier fitment on non-flat cab sides).*
 - *The plate MUST be fitted to the outside of the roll-cage/window-bar/down-bars, or inset NO MORE than a MAXIMUM of 5mm from the outer edge of the tube.*
 - *The plate (each plate section) MUST be fully welded to the roll-cage structure along the full length of each of its sides (in the same manner as the existing rear panel).*
 - *The area covered by the plate MUST measure at least a MINIMUM of 1200mm in length, from the rearmost point where the rear roll-cage pillar meets the chassis rail, horizontally, to the vertical plane where its front-most point meets the chassis rail.*
 - *Should the roll-cage be less than 1200mm in length, i.e. the 1200mm measurement extends forward of the front roll-cage pillar, then an additional steel bar (minimum 25mm CHS/SHS x 2.5mm wall), MUST be welded around the exposed forward/upper edges of the plate, and link the chassis rail to the front roll-cage pillar.*
 - *As the plate must be welded to the window-bar along its top edge and chassis rail along the bottom edge, then the plate height will be determined by the height of the window-bar (see separate rule change for 2019).*
 - *The front edge of the plate must be vertical, or angled forward, from the point at which it meets the main chassis rail, up to the front roll-cage pillar, the window bar, or the required additional bar (depending on the size of the cab).*
 - *See Technical Diagram 01 for a visual guide to the above changes.*



Window Bar Height

- Side window bars **MUST** measure a **MINIMUM** height of 300mm vertically from the top of the bar (excluding bodywork panels) to the point at which the steel side-plates are welded to the main chassis rails.
 - The minimum measurement applies to all points along the length of the window bar, from the front roll-cage pillar to the rear roll-cage pillar.
 - In the case of cars with a “diamond chassis” type design, e.g. the HCD Dozer, the measurement will be taken vertically from the top of the window bar (excluding bodywork panels) to the point at which the vertical would intersect with the main chassis rail in a traditional flat ladder-chassis type design. Cars employing the “diamond chassis” type design, will already be carrying larger foot protection side-plates than cars with a traditional flat ladder-chassis, and therefore this method of measurement will just ensure competitive parity.
 - See Technical Diagram 02 for a visual guide to the method of window bar height measurement.



Floors and Side-Pods

- The **MAXIMUM** permitted thickness of the CAB FLOOR will be 4mm.
- The **MAXIMUM** permitted thickness of any other floor section, including any side-pod, will be ~~3mm~~*. [* see below for minor change]
- The **MAXIMUM** permitted thickness of any sump-guard will be ~~3mm~~* for steel, and 5mm for aluminium. A **MAXIMUM** width may also be specified following further research. [* see below for minor change]
- The construction/installation of any steel floor section, between the main chassis rails, forward of the driver/engine firewall, or rearward of the driver's seat, will **NOT** be permitted. The use of aluminium plate, on the sides or underneath the chassis, to prevent the ingress of dirt/shale that may clog up the radiator or other moving parts, will still be permitted.
- The maximum permitted thickness of any floor section, including any side-pod will be 4mm.
- The maximum permitted sump-guard width will be 300mm.
- The maximum permitted thickness of the sump-guard will be 4mm for steel, and 5mm for aluminium.
- The centre of the sump-guard must not be any further left than the centre-line of the engine.

Fuel Tank Protection

- The maximum material thickness will be reducing to 3mm in 2019, in line with general car construction/ballast rules.

Exhausts

- A common set of exhaust rules will apply to ALL engine types.
- These rules will be based on the existing Zetec engine exhaust rules for pipe lengths and diameters.

2 Additional (New) Changes

The items in this section are a small number of new rule changes for 2019 that were not included in the 2018 Technical Car Construction Regulations.

Weight

- The minimum and maximum weight limits will be changed as follows to account for the additional weight added to cars in recent years.
 - The LOWER weight limit will be increased by 10Kg to a MINIMUM of 660Kg.
 - The UPPER weight limit will be increased by 10Kg to a MAXIMUM of 725Kg.

Cab Floor – Length

- A maximum permitted cab floor length of 800mm will be introduced. This is in conjunction with the previously communicated rule changes regarding plate thicknesses and sizes.

All Engines – Throttle Return Springs

- All throttle mechanisms MUST be fitted with TWO return springs on safety grounds to reduce the likelihood of a stuck throttle.
 - **Note:** The small spring attached to the throttle on the carburettor body does NOT count as one of the two mandated return springs.
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3 Minor Modifications & Clarifications

The following changes are required to clarify, confirm, or restrict further development on existing rules.

Zetec Engine – Sump Depth

- The rule regarding the Zetec sump depth will be enhanced to confirm that the minimum depth of 160mm is measured from the lower face of the engine block to the base of the sump.

Zetec Engine – Claimer Rule

- The claimer rule for Zetec engines will be re-introduced (after being previously suspended) with more appropriate claim figures. Currently it is expected to be £1,300+vat in the UK, and €1,500+vat in Mainland Europe.

Pinto Engine - Water Pump Pulleys

- Water pump pulleys MUST be the original standard type and size. (Note: there were two sizes originally produced by Ford for the Pinto engine. Either is permitted.)
- Modification of original components is NOT permitted.

All Engines

- The installation of ANY fittings, wiring, outlets, or any other hardware, to facilitate the use of ANY kind of engine or performance monitoring or alteration system(s), including (but not limited to) lambda sensors, is NOT permitted unless as a mandatory requirement detailed elsewhere in the technical specifications (e.g. the Zetec flywheel sensor).

All Engines

- The painting, coating, or protection of ANY non-ferrous engine component, and ALL inlet manifolds, is NOT permitted.

Brakes

- Where a single master cylinder incorporates a bleed-nipple outlet (in addition to the normal brake pipe outlet), this must NOT be used to connect a brake-line. ALL brake-lines MUST be connected to the single brake-pipe outlet.

Rear-Bumper

- The top edge of the rear bumper MUST remain in the same horizontal plane along its entire length. The dropping of the bumper ends is NOT permitted.
- The top edge of the rear bumper blade MUST be parallel to the bottom edge of the rear bumper blade along its entire length, excepting any additional permitted bumper section underneath the blade for the purpose of mounting rear wheel-guards.

Bumpers - Repair

- The use of repair plates (current rule 204.15) will be restricted to a maximum of 4 such plates per bumper, however, such plates may be used on bumpers made from the traditional 25mm x 50mm RHS, as well as the increasingly common (especially on shale) 30mm x 50mm SHS.
- The restriction that such repair plates must still remain within the maximum 30mm thickness, thus effectively preventing 30mm bumpers from being repaired, will be removed.

Nerf Rails

- It will be clarified that the requirement for nerf rails to be symmetrical in appearance when viewed from above includes both the design, and the material specification. E.g. a 25mm O.D. brace on one side must be mirrored by a 25mm O.D. brace on the other.

Rear Axle - Clearance

- Clarity will be added that the existing axle clearance rule refers to the car and axle in any orientation or position, NOT just sitting the chassis on the floor when the shock absorbers are disconnected.

Batteries

- Where two batteries are fitted, BOTH batteries MUST be used in powering and running the car.
- The use of a 2nd battery purely for ballast purposes is NOT permitted.

Undercarriage – Definition

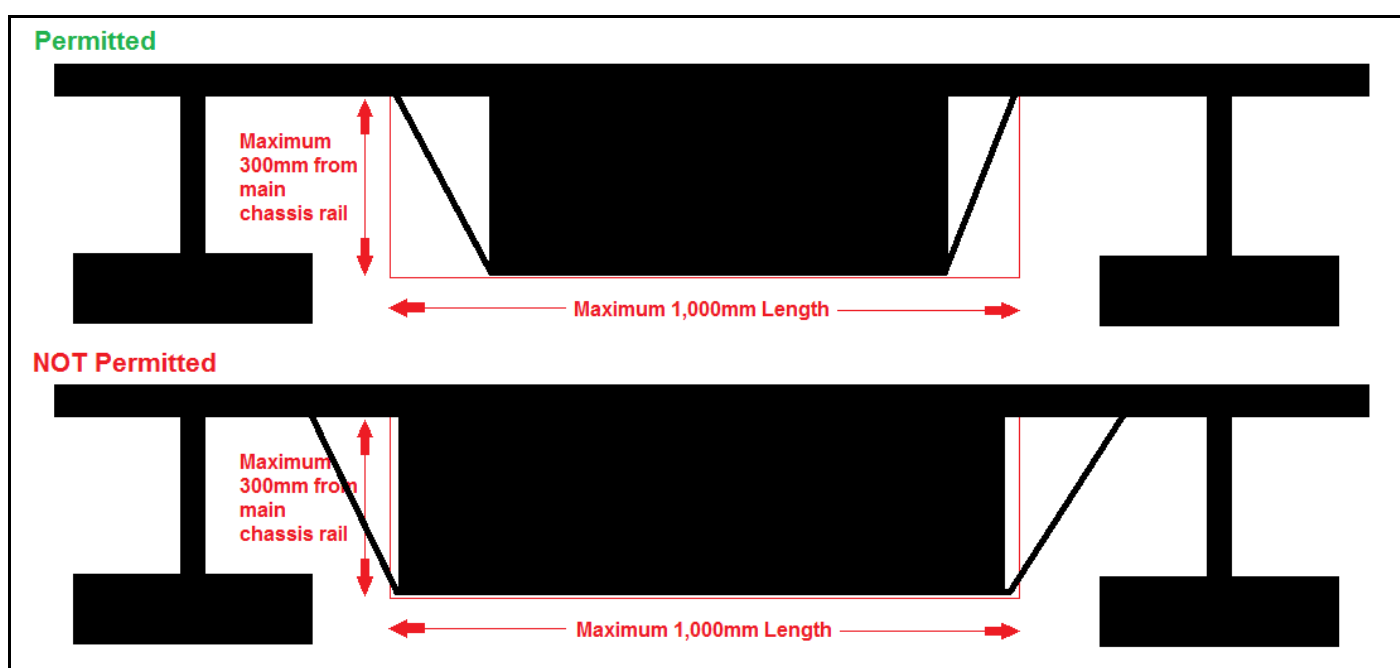
- A clearer definition of the “space-frame undercarriage” of the car will be given. The undercarriage must be constructed from hollow section (CHS, SHS, RHS, OHS) with metal panel-work as required. The construction of the undercarriage from steel plate is not permitted.

Side-Pod – Definition

- A clearer definition of the “side-pod” will be given, clarifying for drivers and constructors which parts of the design are subject to the current specifications.
- It has been agreed by BriSCA F2 and the BDF that all bracing and framework in the side-pod construction, that does not connect directly to either the main chassis rail, or the nerf rail, must be contained with the maximum 1,000mm x 300mm footprint. Appropriate diagrams will be produced and published.

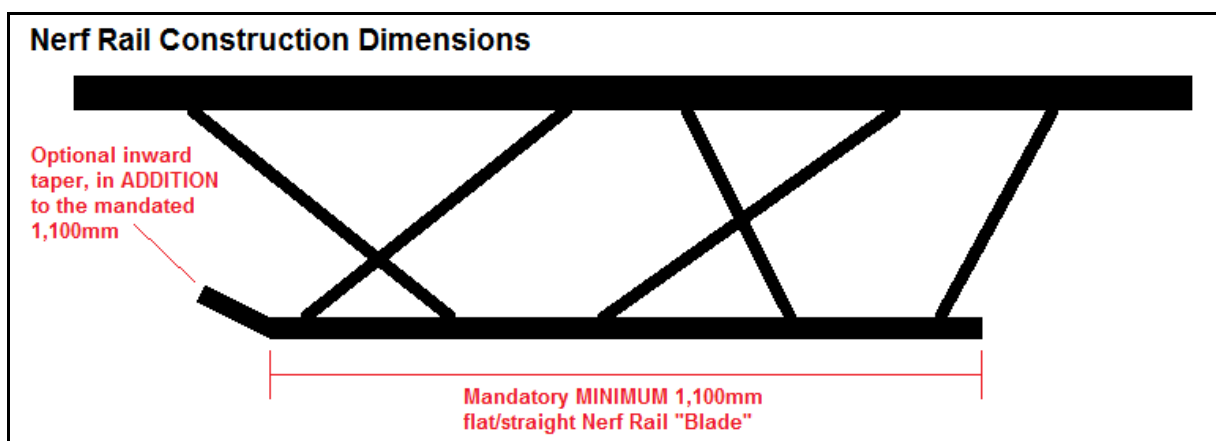
Nerf Rails – Footprint

- It is clarified that the side pod, including any bracing back to any part of the lower chassis undercarriage (i.e. below the main chassis rails **MUST** be within the permitted **MAXIMUM 300mm x 1,000mm “box”**. Bracing from the side-pod up to the main chassis rail, and/or nerf rail, may extend outside of the 300mm x 1000mm box.



Nerf Rails – Tapering

- The tapering-in of the front ends of the nerf rail blades, to prevent hooking up on fence-posts or other cars, will be expressly permitted as this is seen as a benefit to drivers in terms of avoiding damage and thus reducing cost.



4 Non-Implemented Proposed Changes

A number of potential change proposals were put forward for consideration, which, following constructive discussion between BriSCA F2 promoters and the BDF representatives, are NOT being implemented.

This section simply confirms, for drivers' peace of mind, those contentious items that are NOT being changed.

Elite Transmissions

- There are NO changes to the technical specifications that would outlaw Elite transmissions in 2019.
- There are NO restrictions on the rear axle differential ratios that may be used in conjunction with an Elite transmission in 2019.
- There are NO restrictions on the specific drop-gears that may be used in an Elite transmission in 2019.

Brakes

- There are NO changes to restrict the type(s) of brake caliper used on each corner of the car in 2019.
- There are NO changes to mandate the use of 4 brake calipers in 2019.
- There are NO changes to reintroduce multiple master cylinders in braking systems in 2019.
- There are NO changes to restrict the type(s) of brake pads used on each corner of the car in 2019.

Tyres

- There are NO changes (to the published technical specification) to restrict the number of tyres permitted for use at a meeting.
 - Note: Further experimental one-off restrictions, such as that carried out by Autospeed at their 2018 Good-Friday Northampton meeting, may be undertaken.
 - There are NO changes to the number or location of required Delivery Star RY818 tyres on the car for 2019.
 - The current rule requiring a single Delivery Star RY818 to be used on the right rear wheel (off-side rear), as currently implemented, remains in place.
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5 Future Direction

Stability

- BriSCA F2 and the BDF driver representatives have a strong desire to maintain a period of stability going forward.
- It is intended that the announced rule changes for 2019 continue unchanged in to 2020 with the following exceptions:
 1. Tyre changes as a result of tyre testing (see below)
 2. A potential review of braking systems (see below)
 3. Necessary specific BriSCA F2 safety-related changes
 4. ORCi mandated safety-related changes

Tyres

- As detailed above, the current 2018 tyre rules remain in place and unchanged for 2019.
- BriSCA F2 now intend to immediately embark on a tyre testing programme with a view to replacing the current A021R and RY818 tyres for the 2020 season and beyond with 4 common tyres appropriate to the sport of contact stock car racing.
- In order to properly evaluate potential replacement tyres, a number of assessment criteria will be required.
- Initial thoughts on such criteria include, but are not limited to:
 - Cost – The chosen tyre must be cheaper than the Delivery Star RY818 to purchase
 - Cost – The chosen tyre must have sufficient wear rate to result in a lower overall cost to drivers
 - Performance – The chosen tyre must result in an overall lowering of racing speeds
 - Availability – The chosen tyre must be readily available
- The involvement of the BDF and individual drivers will be vital in this process; in defining the evaluation criteria, carrying out on-track testing, and reviewing the tested products against the evaluation criteria.
- Clearly, measures will need to be put in place to ensure that drivers taking part in testing are not disadvantaged by doing so, nor do they gain any unfair advantage.
- BriSCA F2 will now look to work closely with the BDF, potentially forming a Tyre Testing Working Group to manage the process.

Rev Limiters

- BriSCA F2 will be introducing the Rev. Limiter for the 2.0-litre Pinto engine as mandatory from 1st March 2019, however this process is currently held up while BriSCA F2/OMEX wait on a number of drivers to send requested components to them (as has been promised) to facilitate the next stage of testing.
- With the exception of one unit, all other Rev. Limiters returned to OMEX for testing so far have been proven to not be at fault, with any issues experienced lying with wiring or other components.

Brakes

- It is the intention of BriSCA F2 to review all elements of the braking system for 2020 and beyond.
- BriSCA F2 wish to undertake detailed analysis of this, in conjunction with drivers and car-constructors, and agree any brake system changes by mid-season 2019.
- Comment will therefore be invited in due course.