



FEDERATION INTERNATIONALE DE L'AUTOMOBILE

FIA STANDARD 8855-2021

COMPETITION SEAT

CLARIFICATION NOTE

INTRODUCTION

The aim of this document is to clarify DESIGN REQUIREMENTS AND TEST PROCEDURES of the standard. Every time this document is updated, it will be shared with Manufacturers and Test Houses approved for 8855-2021 Seats.

This document is meant to be a clarification and does not modify or replace any content of the FIA Standard 8855-2021.

STANDARD IMPLEMENTATION IMPORTANT DATES

15 December 2020:

- Publication of the FIA Standard.
- Start of tests and approval process for seats 8855-2021.

1 January 2021:

- Publication of the Technical List with 8855-2021 approved seats.
- Start of the sale of 8855-2021 stickers.
- FIA 8855-2021 seats become effective (Appendix J & K will be updated).

31 December 2022

- Deadline to approve new 8855-1999 Seats, only Re-homologation will be accepted.

31 December 2028:

- 8855-1999 no longer accepted in modern cars (removed from Appendix J).

Article 4.7 – SEAT BRACKET ADJUSTABILITY

“The seat shall be approved with one or more seat brackets in order to allow at least the following adjustments:

i) 120 mm in the longitudinal direction.

ii) 80 mm in the vertical direction.

iii) 15 degrees in pitch.”

If the seat is homologated with back-brackets, the adjustability criteria also need to be respected by the back-bracket installation.

Article 4.8. - ALTERNATIVE SEAT BRACKETS TEST PROCEDURE

Hereafter the main options:

- Option 1: the test procedures defined in APPENDICES B and C by Finite Element Analysis (FEA) by a Company Approved by the FIA for the Calculation of Safety Cages and listed in Technical List 35.
- Option 2: the test procedure defined in APPENDIX E, either by physical testing at the test house or by Finite Element Analysis (FEA) by a Company Approved by the FIA for the Calculation of Safety Cages and listed in Technical List 35.
- Option 3: homologation test of the original seat with a new set of seat brackets (it is only required to perform the side and rear loading tests).

When approving an alternative seat bracket based on Option 1 or Option 3 procedure, the rear loading test is not necessary if the alternative seat bracket meets the following additional requirements in relation to the reference seat bracket:

- a. same type (e.g., L-shaped or blade bracket);
- b. same material;
- c. thickness is not reduced.

The option "a" requires that the design/shape of the bracket shall be the same as the reference bracket. Please check with the FIA Safety Department if the new bracket meets these requirements.

FEA ANALYSIS CLARIFICATIONS

For a manufacturer who wants to proceed with an option that includes FEA Analysis, here are some clarifications on this process:

i) Information to be provided regarding the analysis:

- Specification of the material used in the simulation (e.g. physical properties, module, tensile strength, etc.)
- Definitions of loads and constraints of the system (graphical scheme)
- Comparison of the stresses and overall deflection of the proposed design with the original design.

ii) Clarification on the process:

- Seat Shell can be modelled as a simplified structure as far as the application point of the loads and the contact surface with the brackets are aligned with reality. The seat can be considered infinitively rigid.
- The stress criterion adopted shall be the Von Mises Criterion.
- The simulation shall be performed in the worst-case adjustment position.
- The Report shall include the peak stress and its location.

iii) Pass/Fail main criteria:

- The deflection in all the points of the bracket shall be $\leq$ of the reference case (Simulation performed with the original seat brackets).

4.7.1 Bespoke areas

Bespoke Areas are specific optional zones, defined and marked by the seat manufacturer on the seat bracket contact surfaces (seat-to-bracket and bracket-to-chassis), to accommodate chassis-specific anchorage points while remaining within the homologation scope.

Within these areas, manufacturers must define drilling guidelines, and any holes or slots created must comply with the limits declared and validated during the approval process.

Before these bespoke areas can be included in a homologated seat bracket, **manufacturers must validate them through testing of the worst-case configuration** in accordance with the set of rules prescribed in this FIA Standard and the manufacturer's guidelines. Once approved, the bespoke areas may be incorporated into the seat brackets.

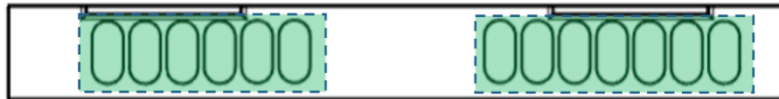


Figure 1 Representative top view of a given bracket as a reference to showcase the "Bespoke areas" concept.



Figure 2 Representative front view of a given bracket as a reference to showcase the "Bespoke areas" concept.

Teams will then be allowed to carry out any modifications accordingly but must strictly follow manufacturer's instructions. **Failure to follow these instructions may invalidate the bracket homologation.**

Note: the Family of Brackets and Bespoke Areas concepts may be applied independently or combined within the same seat bracket.

4.8.1 Family of Brackets

A Family of Brackets is a group of seat brackets with the same design concept and certain common geometrical dimensions.

Manufacturers are responsible for not creating extreme designs on the profile of the brackets within the same Family of Brackets – the shape must always be recognisable with the Presentation Form within the same family.

Key rule: The same bracket design (L-shaped, machined, for example), the nominal thickness, and the material grade shall not be modified within the same family, and the Hole-to-Hole and Hole-to-Edge distances shall not be reduced throughout the same family.

Definitions	MEANING
Hole-to-Hole	Minimum distance between the centres of two consecutive holes or slots.
Hole-to-Edge	Minimum distance from the centre of a hole or slot to the nearest edge.

ALLOWED	NOT ALLOWED
▪ Same Hole-to-Hole distance. The hole-to-hole distance may be increased if necessary. ▪ Same Hole-to-Edge distance. The hole-to-edge distance may be increased if necessary. ▪ Removal of existing weight-reduction features on smaller brackets. It is allowed to remove weight-reduction features for smaller brackets. For weight-reduction purposes, resizing of slots or holes may also be allowed insofar as the Hole-to-edge distance is at least the same. ▪ Bending angle for L-shaped brackets L-shaped brackets (Bending angle) A +/- 5° range is allowed for each bent L-shaped bracket within the same family. ▪ Reinforcements Ribbons are considered as being within the same design and should be in all brackets of a given family. It is possible to reposition local reinforcements for smaller brackets (for example, welded ribbons may be repositioned accordingly).	▪ Same Hole-to-Hole distance. It is not allowed to reduce the minimum hole-to-hole distance. ▪ Same Hole-to-Edge distance. It is not allowed to reduce the minimum hole-to-edge distance. ▪ Removal of existing weight-reduction features on smaller brackets. It is not allowed to add weight-reduction features for smaller brackets or to reposition them. ▪ Bending angle for L-shaped brackets L-shaped brackets (Bending angle) Additional bending angles in relation to the reference bracket of a given family are not allowed. ▪ Height of a bracket It is not allowed to increase the height of a bracket within a given "Family of Brackets". ▪ Homologation of alternative brackets Transferring a "Family of Brackets" to another seat without testing. The reference bracket of each given family must always be approved to be used with a given seat and be listed in TL91. Example: - Seat A is listed in the Technical List with Bracket X. - Seat B is listed in the Technical list with Bracket Y.

- The seat manufacturer has developed a "Family of Brackets" for Bracket X for Seat A, and wishes to do so for Seat B too.
- The seat manufacturer must now request an extension for an alternative bracket for Seat B to be listed with Bracket X too; only then will the "Family of Brackets" apply to these two seats.

▪ **Fixation holes**

For fixation holes, the diameter of the bolt cannot be reduced.

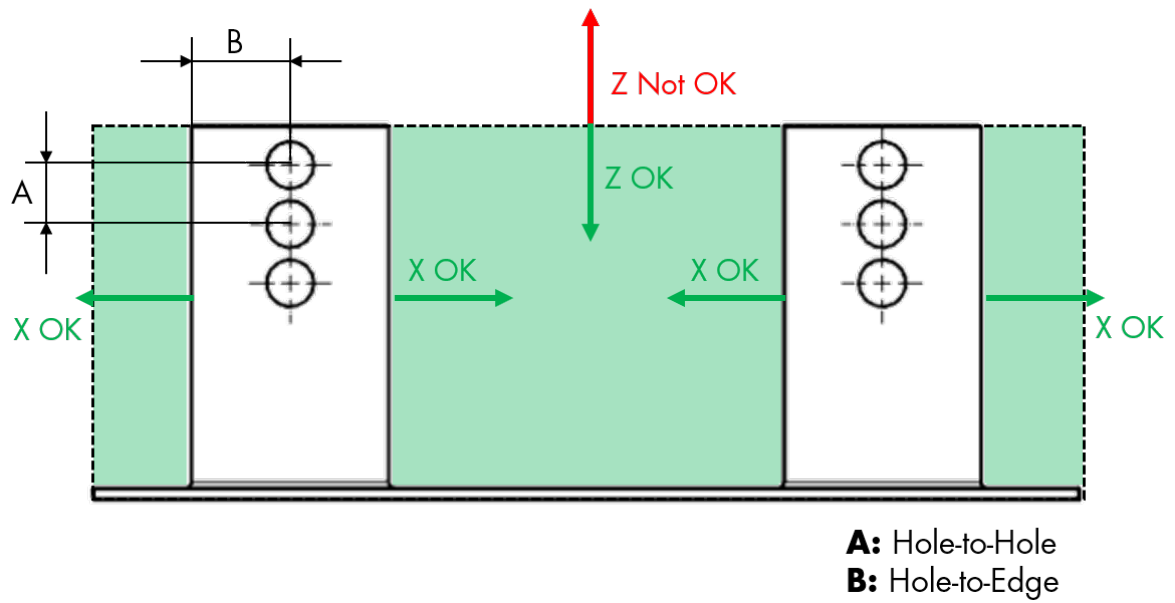


Figure 3 Representative front view of a given bracket as a reference to the design requirements above.

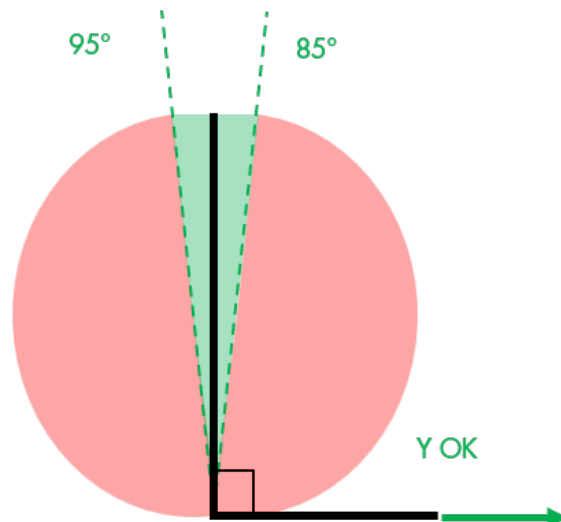


Figure 4 Representative lateral view of a given bracket as a reference to the design requirements above, specifically the allowed bending angle.