



# FIA STANDARD GUIDELINES SAFETY HARNESSES



## Preliminary notices and terms

The reproduction or distribution of these FIA Standard Guidelines Safety Harnesses ("Guidelines"), in whole or in part, without the written permission of the FIA, is prohibited except for FIA affiliated members, and the event organisers approved by them, who are entitled to use this document for non-commercial purposes.

### INTRODUCTION

1. The FIA Standard Guidelines Safety Harnesses ("Guidelines") set out general informational guidance and illustrative graphics regarding Helmets approved in accordance with FIA Standards. This document is provided, at the FIA's discretion, to assist drivers and/or competitors taking part in competitions appearing on the FIA International Sporting Calendar and scrutineers ("Third Parties").

2. Provision of the Guidelines to any Third Party is strictly subject to the Third Party's acceptance of and agreement to comply with these Preliminary Notices and Terms.

### DISCLAIMER

3. The contents of the Guidelines (including general informational guidance in relation to health and safety, sporting or technical matters) taken in isolation may not be suitable or appropriate for each and every regional and national "Motor Sport Event" (which incorporates all of the following activities i) motor sports competitions, practices, tests, reconnaissance's / "recces" and demonstrations, ii) any associated entertainment, marketing or commercial activities and iii) any engineering, scrutineering, maintenance or other technical activities, and begins from the time the relevant locations where these activities are taking place are made accessible to any persons, and ends when the relevant locations are closed to access or the activities end, whichever occurs later). This is because the Guidelines relate to FIA Standards created for competitions appearing on the FIA International Sporting Calendar which operate within a regulatory and safety environment that does not apply to Motor Sport Events that do not appear on the FIA International Sporting Calendar.

4. It is the full responsibility of Third Parties to ensure that they understand and comply with any relevant obligations or duties relating to health and safety, product design, construction/manufacturing or consumer law which are placed on them under i) any applicable National Sporting Authority requirements, regulations and safety standards ("ASN Regulations"), ii) FIA requirements, regulations and safety standards ("FIA Regulations") and/or iii) any relevant transnational, national and/or local laws, regulations, directives and decrees passed by the government, a quasi-governmental entity or by any entity which has the same authority as the government in any applicable country or other territory, including all applicable local, state and federal laws, and any industry practices, codes of practice and/or codes of conduct incorporated into any of the foregoing, and all binding court orders, decrees, and any decisions and/or rulings of any competent authority that are relevant ("Applicable Laws"). The FIA assumes no responsibility in relation to such understanding or compliance.

5. The Guidelines do not contain any advice or guidance in relation to Applicable Laws, and the FIA makes no representation or warranty that the general informational guidance within the Guidelines complies with the Applicable Laws applying to a particular Motor Sport Event. Accordingly, it is the full responsibility of Third Parties to i) take appropriate advice and make their own enquiries as to Applicable Laws and any particular local safety requirements or other relevant considerations applying to a Motor Sport Event and ii) to adapt and implement the Guidelines in a suitable and safe manner depending on the circumstances of the particular Motor Sport Event. The FIA assumes no responsibility in this regard.

6. For the avoidance of any doubt, compliance with the Guidelines in isolation does not guarantee the safety of a particular Motor Sport Event.

7. If there is any conflict, or any doubt as to a conflict, between the contents of the Guidelines and Applicable Laws, Applicable Laws always take precedence. If it is possible to comply both with Applicable Laws and the Guidelines (subject to all appropriate adaptations as per paragraph 5), Third Parties should endeavour to do so.

8. The FIA does not make any representation or warranty, express or implied, and does not assume any responsibility as to the quality, suitability or fitness for purpose:

- a. of any equipment, products or designs that may be referred to within the Guidelines; nor

- b. as to the applicability or suitability of the Guidelines in relation to Motor Sport Events that do not appear on the FIA International Sporting Calendar.

9. All Third Parties are made aware that technology utilised in motor sport vehicles, equipment, structures, installations and products is subject to ongoing change and development, as well as good and best practice evolving over time. As a result, the Guidelines are subject to ongoing review and amendment over time.

10. All Third Parties are made aware of the risks that are inherent in the attendance of any person at or within the vicinity of a Motor Sport Event. Depending on the circumstances of the Motor Sport Event, these risks may include (non-exhaustive): the possibility of incidents (resulting from motor sports or otherwise) resulting in physical and/or mental injury or death; exposure to noise; exposure to / interaction with high voltage or other technical / mechanical equipment; or contracting/spreading communicable diseases.

### LIMITATION & INDEMNITY

11. The FIA disclaims, excludes and limits (to the fullest extent permitted under Applicable Laws) any and all claims, liability, costs, expenses, damages, losses (including but not limited to any direct, indirect, incidental, special, consequential or exemplary damages or losses, property damage, breach of intellectual property rights, breach of contract, loss of profit, loss of reputation or goodwill, use, data or other intangible loss, loss of agreements or contracts, loss of sales of business and all interest, penalties and legal costs) and any personal or mental injury (including nervous shock, disease, disablement and death and any financial losses resulting), sustained by any organisation or person (including Third Parties and their subsidiaries, affiliates, licensors, licensees, agents, co-branders, partners, employees, directors, members, officers, advisors, consultants, representatives, successors and assigns (collectively the "Representatives")), howsoever arising from any use or implementation of, or reliance placed on the contents of, the Guidelines in relation to a particular Motor Sport Event by Third Parties or their Representatives, including in relation to:

- a. Statements (including false statements), acts or omissions by the FIA or its Representatives or Third Parties and their Representatives; or
- b. Any other negligence, lack of reasonable care, breach of any statutory or other duty or Applicable Laws, careless or wrongful act or wilful default by the FIA or its Representatives or Third Parties and their Representatives.

12. Any use or implementation of, or reliance placed on the contents of, the Guidelines in relation to a particular Motor Sport Event by any Third Party or its Representatives is (to the fullest extent permitted under Applicable Laws) strictly subject to acceptance by the Third Party and its Representatives of the following:

- a. The Third Party and its Representatives agree to waive any rights and/or claims, agree to release, hold harmless and not to sue the FIA or its Representatives in relation to any claims, liabilities, costs, expenses, damages and losses (including those referred to in paragraph 11); and
- b. The Third Party and its Representatives agree to indemnify the FIA and its Representatives in relation to any and all claims, liabilities, costs, expenses, damages and losses (including those referred to in paragraph 11), and this indemnity shall apply whether or not the FIA has been negligent or is at fault; in each case arising from the use or implementation of, or reliance placed on the contents of, the Guidelines in relation to a particular Motor Sport Event.

### GOVERNING LAW & JURISDICTION

13. The Guidelines and any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with the Guidelines or their subject matter or formation, shall be governed by and construed in accordance with the laws of France.

14. The courts of France shall have exclusive jurisdiction to settle any dispute or claim (including non-contractual disputes or claims) arising out of or in connection with the Guidelines or their subject matter or formation.

15. Any matters relating to investigation and enforcement of FIA Regulations are subject to the jurisdiction of the internal judicial and disciplinary bodies of the FIA.

## SCOPE

The FIA safety regulations are made up of several different types of document. Some of the documents, such as FIA Standards, FIA Homologation Regulations for Safety Equipment and FIA labelling guidelines, are targeted to the safety equipment manufacturers. Some regulations aim to ensure that the safety equipment used in competitions appearing on the FIA International Sporting Calendar delivers a specified level of safety protection. There are other documents, such as Appendices to the International Sporting Code, Technical and Sporting Regulations, that aim to regulate the use of the safety equipment in competitions appearing on the FIA International Sporting Calendar.

The aim of these new Safety Equipment Guidelines ("Guidelines") is to complement the FIA safety regulations and to collect all the relevant regulatory information in one place, including the different Standards recognized by the FIA, the differences between them, the importance of safety equipment, the protection delivered, how to select, use and customize safety equipment, and how to avoid critical mistakes. It also gives tips on how to identify non-original products and what to do after an accident.

This document is intended to make the FIA regulations more easily understandable for competitors and scrutineers.

The text written here does not replace the official documents published on the FIA website and it has no regulatory value.

This is a living document that can be updated to reflect any new information, updates to regulatory or guidance documents or clarification that the FIA considers relevant to the competitors and officials. Please ensure that you take into consideration the latest available version.

# TABLE OF CONTENTS

## **INTRODUCTION** 06

- 1/ The Importance of Safety Harnesses in Motorsport Accidents
  - 2/ Regulation references
- 

## **USER GUIDE & INSTALLATION** 08

- 1/ Correct buckle position in relation to the pelvic/iliac crest area
  - 2/ Safety Harness anchorage points
  - 3/ Safety Harness straps routing
  - 4/ Free volume around the safety harness buckle
  - 5/ Optimal angle of the straps
  - 6/ Safety Harness tension
  - 7/ Critical mistakes
- 

## **SCRUTINEERING CORNER** 12

- 1/ Pre-event control
- 2/ Post-accident analysis



A safety harness is an arrangement of straps with a securing buckle, adjusting devices, tongues and attachments capable of being anchored to the interior of a power-driven vehicle to restrain the driver. A safety harness must be used in its homologation configuration without any modifications or removal of parts, and in conformity with the manufacturer's instructions. The effectiveness and longevity of safety harnesses are directly related to the way they are installed, used and maintained.



## 1/ THE IMPORTANCE OF SAFETY HARNESSES IN MOTOR SPORT ACCIDENTS

The FIA has defined standards for personal protective equipment and for on-board equipment, which include FHR device, seat, roll cage padding, overalls, helmets, etc. The safety harness is one of the safety devices designed to restrain a driver/co-driver during race and crash conditions. The safety harness is an integral part of the driver safety restraint system which is designed to support the very high loads that are generated during a severe accident. In order to do so, the FIA Standard defines objective requirements, such as specified safety performance and design requirements.

## 2/ REGULATION REFERENCES

At the moment there are 2 FIA Standards for Harnesses: 8854/98 and 8853-2016. Check Article 253, Article 283 of Appendix J to the International Sporting Code and the Technical Regulations of the specific Championship to understand which one you need.

**8854/98 - TL n°24 :**  
Harnesses with 4 attachment points.



5-year validity  
Used in:  
• Historic cars (FIA)  
• National level Championship

**8853/2016 - TL n°57 :**  
Harnesses with 6, 7, 8 or 9 attachment points.



5-year validity  
Used in:  
• Recommended for all cars  
• Compulsory for all cars in accordance with Appendix J from 2023





## GENERAL REQUIREMENTS



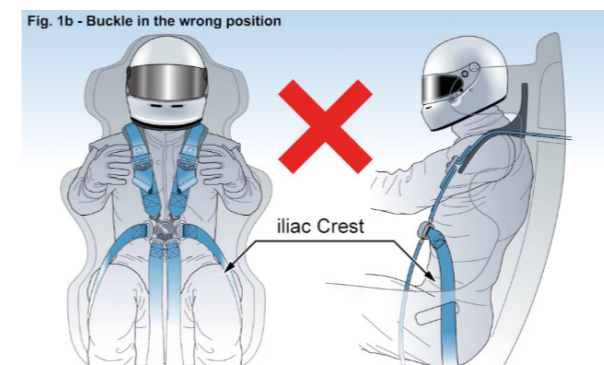
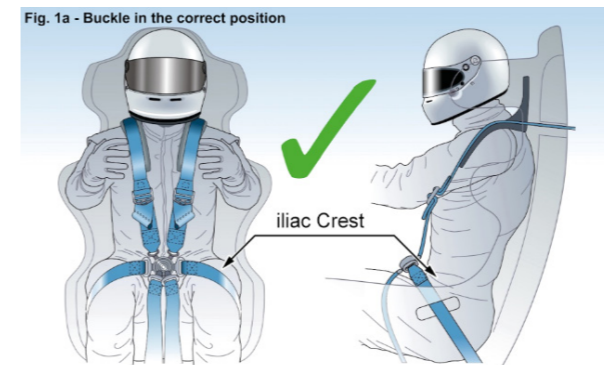
1. To ensure that safety harnesses provide optimal protection, competitors should follow the best practice for installation of safety harnesses as specified in the FIA International Sporting Code under Articles 253, 283 or the championship technical regulations.
2. Drivers must check the safety harness position prior to setting out to compete, to ensure that the safety harness delivers optimal protection.

3. Elastic devices attached to the shoulder straps are forbidden.

Although all the installation requirements defined in Appendix J and/or the technical regulations are important and must be fully respected, you can find below some tips to ensure that your safety harness is installed correctly:

## 1/ CORRECT BUCKLE POSITION IN RELATION TO THE PELVIC/ ILIAC CREST AREA

The lap straps must fit tightly into the bend between the pelvic crest and the upper thigh. Under no conditions may they be worn over the region of the abdomen. The lap and crotch straps must hold the pelvic region over the greatest possible surface.



## POINTS OF ANCHORAGE TO BODYSHELL

Two anchorage points for the lap strap, two anchorage points symmetrical to the seat for the shoulder straps, and two for the straps between the legs.



Exemples de points de rotation de l'ancrage de sangle  
Examples of pivot points of the anchorage of the strap

The anchorage points must be designed in accordance with Articles 253 and 283 of Appendix J of the International Sporting Code and/or the championship Technical Regulations. Remember that in some categories the harness anchorage points must be homologated with the car.

## RESISTANCE OF ANCHORAGE POINTS

For non homologated anchorage points with the car, each anchorage point on the shell (chassis) must be reinforced with a steel plate with a surface area of at least 40 cm<sup>2</sup> and a thickness of at least 3 mm and must be able to withstand a load of 15 kN.

## 2/ SAFETY HARNESS ANCHORAGE POINTS

It is important that safety harness straps are anchored in accordance with the FIA International Sporting Code under Appendix J or/and with the championship technical regulations.

It is prohibited for the safety harnesses to be anchored to the seats or their supports; furthermore, care must be taken that the straps cannot be damaged through chafing against sharp edges. This is to ensure that, if the seat anchorage points fail during an accident, the driver will not be ejected together with the seat and harness. The pivot point of the attachment must be located in the green areas shown below.

## 3/ SAFETY HARNESS STRAPS ROUTING

The shoulder, lap and crotch straps must pass through the dedicated seat slots, in order to ensure that they wrap and hold the shoulder and pelvic regions over the greatest possible surface. All the straps must pass freely through the seat slots in order to prevent the webbing from stressing the seat slot edge.

Care must be taken that the straps cannot be damaged through chafing against sharp edges.

Regarding the pelvic/lap straps, they must not pass over the sides of the seat but through the seat, in order to wrap and hold the pelvic region over the greatest possible

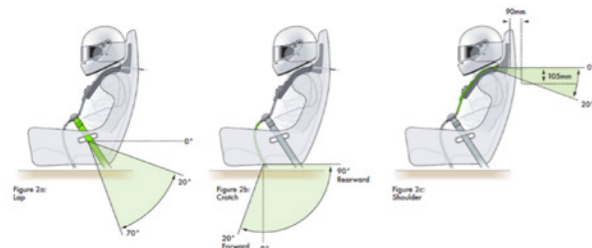
surface. They must fit tightly into the bend between the pelvic crest and the upper thigh, and they must not be worn over the region of the abdomen.

#### 4/ FREE VOLUME AROUND THE SAFETY HARNESS BUCKLE

To avoid an involuntary opening of the safety harness while driving, competitors must check the distance of the hands to the safety harness buckle while steering. During a movement of the steering wheel by 180 degrees to the left and right, the hands must always be at a safe distance from the lever of the buckle.

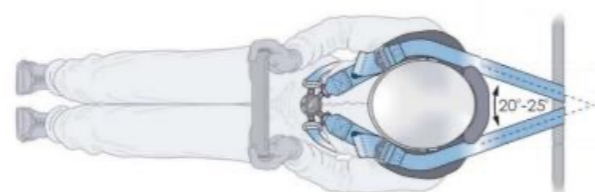
#### 5/ OPTIMAL ANGLE OF THE STRAPS

The safety harness must be installed in accordance with the FIA International Sporting Code under Appendix J or/and with the championship technical regulations, but whenever possible it should be as close as possible to the angles shown below.



The shoulder strap anchorage points must be symmetrical about the vertical and longitudinal plane passing through the centreline of the seat.

When viewed from above, the angle between the straps must be within the 10°-25° range and it is recommended that it is approximately 20°-25°. Straps may touch or even be crossed over each other if necessary. It is important to make sure that the shoulder straps attachment cannot slide laterally.



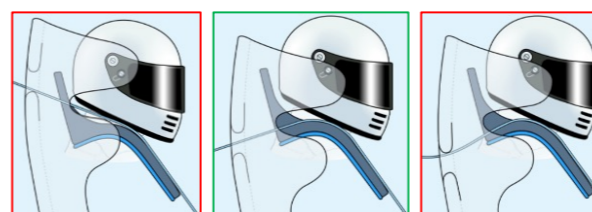
#### 6/ SAFETY HARNESS TENSION

Studies performed by the FIA Safety Department have demonstrated that safety harness tension is important to reduce the risk of serious injuries and for the correct functioning of the Frontal Head Restraint (FHR) device. It is therefore important that competitors always keep their safety harness properly tightened.



In addition, the seat must not interfere with the harness routing to ensure that the FHR can deliver optimal performance in case of an accident. In the case of the below figure on the left, the shoulder straps are not in contact with the full friction surface area HANS yoke and therefore the HANS device may not work as intended. In the case of the figure on the right, the shoulder straps webbing may get damaged and/or break the seat. If the seat does not fail, the shoulder straps may induce unnecessary compression loads to the driver's spine. The

shoulder straps must pass freely through the shoulder slot as shown in figure [reference] in the middle.

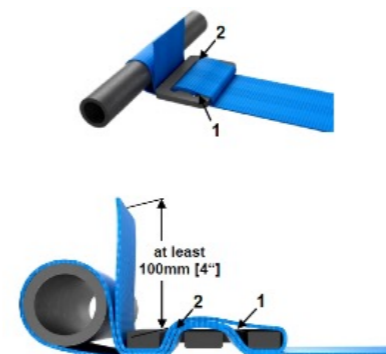


occupant's body or on the inside of the seat openings.



#### 7/ CRITICAL MISTAKES

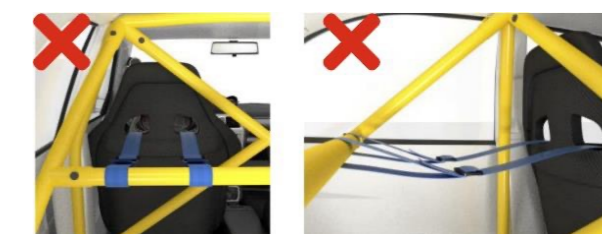
Three-bar adjuster not correctly fitted on the webbing/strap.



Good practice: install all brackets in the direction of pull (stress direction) to avoid extensive fatigue stress to the anchor points during driving.



The 3-bar adjusters are positioned too far from the safety cage and there is nothing to prevent lateral movement of the straps along the bar. The webbing is therefore improperly routed and folded back to the final part of the wrap to secure the 3-bar adjuster. This improper installation may allow webbing to slide through the hardware during an accident. If a FHR were to be used with this type of installation, the shoulder straps could slide off the FHR so its effectiveness in an accident would be reduced. Always secure wraparound attachments against lateral sliding on the safety cage bar.



This webbing runs too far back, and at too low an angle. A lap strap cannot be routed straight through the seat slots. It will tend to slide off the pelvic bone and result in submarining. This will also add additional load to the anti-sub strap.



3-bar adjusters positioned in such a way may injure the occupant's neck during an accident. Never install a racing harness with attachment hardware next to the



# SCRUTINEERING CORNER

## 1/ PRE-EVENT CONTROL

Please ensure that you have downloaded the latest version of the technical list. The technical list contains very useful information to allow you to check that the safety equipment is in compliance with the FIA Safety Regulations.

In addition, FIA-approved safety harnesses according to FIA standard 8863-2016 have a presentation form. In case of doubt, you can compare the safety equipment with the presentation form. You need to ensure that you consult the latest version updated on the FIA website. The presentation forms are accessible through the link on the technical list.



In the presentation form you will be able to check the following information:

- Visual of the harness;
- Detail on the assemblies;
- Attachments;
- Buckle;
- Adjusters;
- Complementary information;



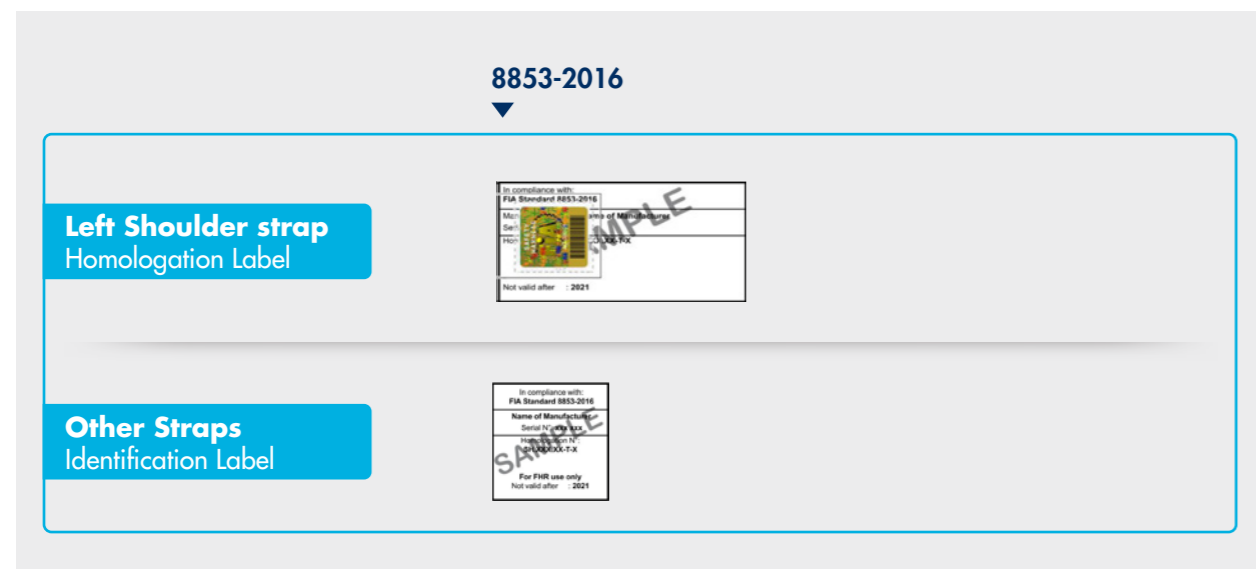
## FIA LABELS

The FIA-approved label is affixed on the products only if they comply with the FIA's safety requirements. It is easy to identify which products have been subject to the stringent tests defined in the FIA Standard: simply look for the FIA hologram and/or label on the product.

Check the FIA labels and holograms; each harness has a label and a hologram. The technical list of each standard has an example of what the label and hologram must look like; here are some details:

	8854/98	8853-2016
<b>Left Shoulder strap Homologation Label</b>		
<b>Other Straps Identification Label</b>		
<b>Comments</b>	<p>Example <b>B-123.T/98</b></p> <p>1<sup>s</sup> letter: <b>B</b> = 4 straps</p> <p>T = <b>T</b>urn buckle P = <b>P</b>ush buckle</p> <p>Label may carry multiple homologation numbers. <b>Check for 1 common number on all labels</b></p>	<p>Example <b>SH.123.17-T-8</b></p> <p>T = <b>T</b>urn buckle P = <b>P</b>ush buckle</p> <p>End number = number of straps</p> <p>Homologation number <b>must match on all straps</b></p>

Some FIA-approved 8853-2016 safety harnesses can only be used in combination with an FHR device. In this case all the labels will present the note highlighted below:

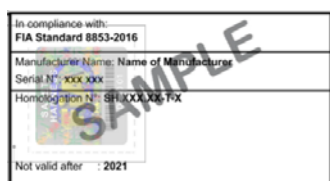


Use the above example of labels to check conformity with the technical list and prove the authenticity of the equipment. In case of doubt, contact your ASN or the officials for the event.

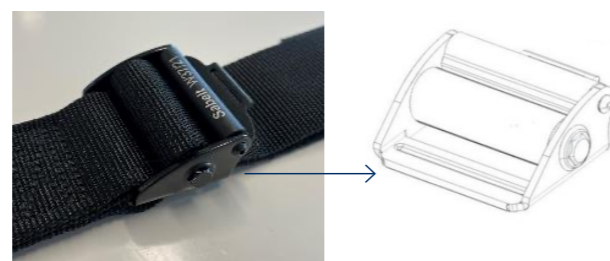
Alternatively, compare the label/hologram with another product which you are confident complies with the regulations.

**CHECK LIST TO IDENTIFY HARNESS COMPLIANCE WITH FIA REGULATIONS**

1. Compare FIA label and hologram affixed on the harness with label template shown in the respective Technical List

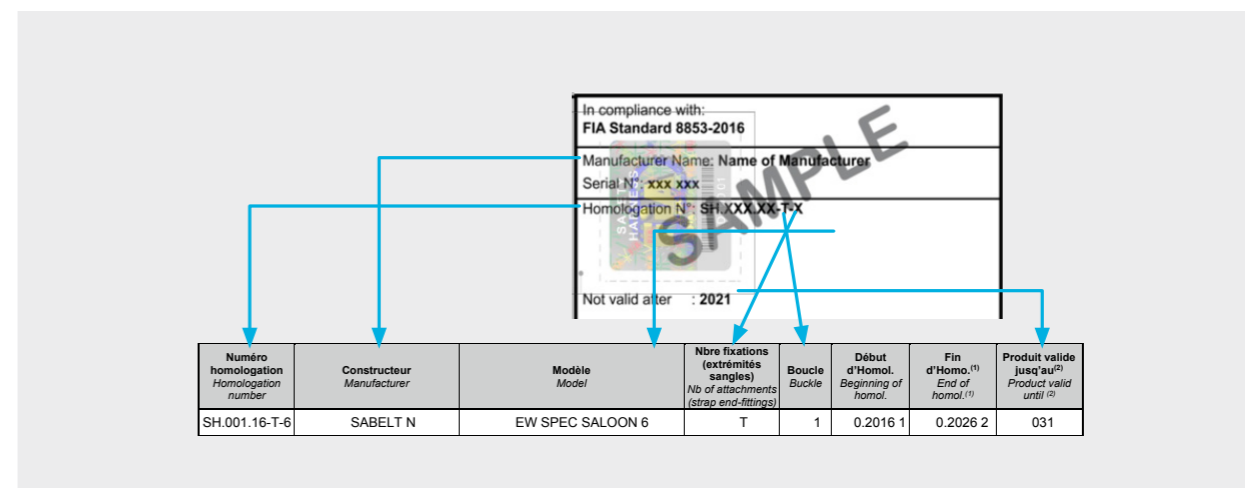


2. Compare information shown in the FIA label with the information shown in the respective Technical List
3. Compare the date of manufacturer with the homologation date.
4. In case of doubts visually compare the harness with the respective presentation form, for example accessories.



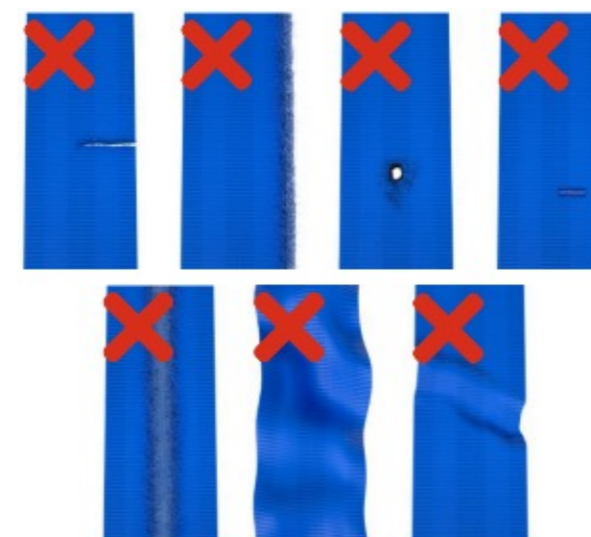
**EQUIPMENT CHECKS BEFORE RACING**

If the webbing shows damage, such as cuts, stretching, melting, etc. the harness must be replaced. Damage to the webbing decreases the performance of the entire harness.



The damaged parts will be the most likely location of a potential failure in case of a crash.

In case of loose fibres in the webbing, the harness must be replaced. Loose fibres and stretched fibres indicate that the harness has undergone a severe crash. The energy that it will be able to absorb in a subsequent event will be reduced.



In case of damage to the buckle mechanism, any mechanical hardware and signs of corrosion, the harness must be replaced. If the buckle or the attachments are damaged, the harness cannot provide the necessary

protection in case of a crash. If corrosion is visible only on the straps attachment points and there is no sign of damage or wear to any other part of the harness, just the attachment may be replaced with a new one.

**2/ POST-ACCIDENT ANALYSIS**

The official responsible for safety on-site (Technical Delegate or Chief Scrutineer) must visually inspect the safety harness, especially after a severe crash (estimated impact speed > 50 kph in any direction, with special focus on front, side and vertical impacts).

The official responsible for safety on-site should strike out all labels of the harness. This action must be performed if any of the above types of damage is visible.

As the safety harness works together with the FHR and helmet, if any of the signs of damage reported above is observed, the FHR device and helmet must be inspected as well.





## QR CODES - SUMMARY

Technical List 24



Technical List 57



Appendices



Presentation forms for harnesses

