
SAFETY DEPARTMENT

Guidelines for checking FHR devices following a severe accident – informative note with no regulatory value

Foreword

The Frontal Head Restraint (FHR) device restrains the driver's head relative to his torso during a frontal or angled frontal impact, thereby reducing the loads to the head and neck.

Tether forces from the helmet to the FHR counteract the movements of the head and the FHR carries these tether forces either directly or indirectly to the safety harness. The most severe loading of the FHR system occurs during a frontal crash where the driver's head is not restrained by contact with the protective headrest.

The FHR device has been one of the most important pieces of safety equipment introduced by the FIA and it has saved several lives and prevented serious neck injuries. Therefore, it is important that drivers use the FHR properly and that they examine their devices after a severe accident in order to identify whether or not the structural integrity of the device has been compromised.

Definition of a severe accident:

A severe accident is any frontal or angled frontal accident with a yaw angle of up to 45°, and with an estimated impact speed of over 50 kph.

How to check the FHR device

After any frontal or angled frontal accident with a yaw angle of up to 45°, and especially after a severe accident, check:

1. Whether the FHR tether or FHR end fitting is damaged, as shown in Figure 1.



Figure 1 – Deformed end fitting (top right and left, and bottom left), and stretched FHR tether (bottom right)

2. Whether there are any signs of wear or friction on the FHR surface in contact with the shoulder belts, as shown in Figure 2.



Figure 2 – Signs of wear on the rubber surface

3. Whether the shoulder belt has been stretched, as shown in Figure 3.



Figure 3 – Shoulder belts stretched after a severe crash

If any sign of damage as mentioned in points 1 to 3 above is identified, the FHR device is to be sent to the manufacturer so that non-destructive tests can be performed in order to check the structural integrity of the part.

Please also check whether there is any damage to the Helmet-M6-anchorage. If there is any damage, the helmet should be sent back to the manufacturer for further checks.

The safety harness shall be replaced with a new one, as webbing that has been stretched will not perform as desired during a second accident.



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Even if there is NO damage as mentioned in points 1 to 3 above, the FHR tether should be replaced, because the FHR tether may have been stretched and consequently it may not work properly in the event of a second severe accident.

Please note that FIA Standards 8858-2002 and 8858-2010 have been worded in such a way that the first part of the device to be damaged in the event of an accident is the FHR tether. In any case, depending on the severity of the accident, non-visible damage to the FHR part may have occurred, compromising the structural integrity of the FHR device. Therefore, it is important to undertake the above checks.

Should you need further assistance, please do not hesitate to contact us.

Kind regards,
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