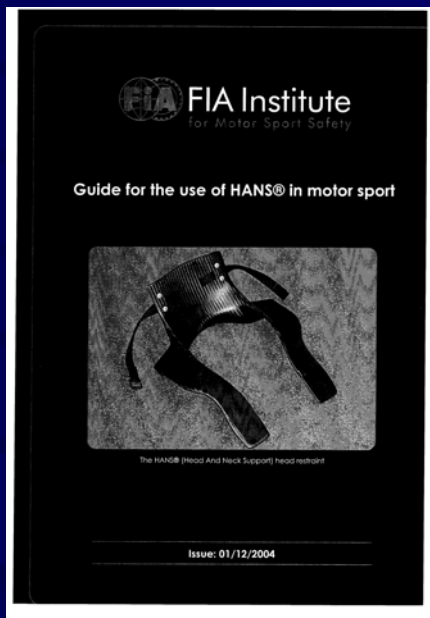




# Hans

## in Historic Racing 2005

FIA HMSC Seminar \_ February 2005



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**1. Choosing a HANSB**

HANSB devices exist not only in different sizes but with different angles between the yoke and collar. The manufacturer or supplier should be consulted on the best model for the motor sport activity and car concerned.

**2. Safety harness with HANSB**

2.1 FIA homologated safety belts complying with 8854/98 or 8853/98 shall be used. It is strongly recommended that 6-point belts are used.

Safety belts with energy conversion in the shoulder straps (as in Anti-submarining) shall NOT be used with HANSB.

2.2 The length adjustment device of the shoulder belt shall be positioned on the HANSB yoke with the upper edge not more than 70mm from the lower edge of the HANSB yoke as shown in Figure 1 (This does not apply in the case of the double shoulder belt system described in point 1.5).

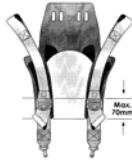


Figure 1. Correct position of shoulder strap length adjustment device on HANSB yoke

2.3 The shoulder strap anchorage points on the car shall be symmetrical about the centre line of the driver's seat. When viewed from above, the angle between the belts shall be approximately 20°-25° as shown in Figure 2.

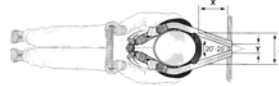


Figure 2. Position of shoulder belt anchorage points to achieve desired belt angle (plan view)

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This can be achieved with reference to the values in Tables 1 to 4 which have been calculated based on 75mm wide belts (values for 50mm wide belts are shown in brackets) and four HANSB collar sizes: 120mm, 140mm, 140mm and 180mm. Negative values indicate that the belts are crossed. These values should be closely respected, but a tolerance of +/-20 mm would be acceptable.

The values in red (underlined>) denote that theoretical separation is less than belt width. In this case it is recommended that the belts are installed side by side to avoid any overlap; hence the actual separation shall be equal to the belt width. If the value is negative, the belts should be crossed.

**Table 1: Reference values for 120mm HANS Collar**

Z HANS collar width (mm)	120
X HANS to belt anchorage (mm)	100 200 300 400 500 600 700 800
Y belt anchorage to separation (mm)	130 95 55 15 15 250 280 125 143
	(130) (200) (250) (300) (350) (400) (450) (500)

**Table 2: Reference values for 140mm HANS Collar**

Z HANS collar width (mm)	140
X HANS to belt anchorage (mm)	100 200 300 400 500 600 700 800
Y belt anchorage to separation (mm)	130 115 75 35 35 250 280 80 125
	(130) (160) (200) (250) (300) (350) (400) (450)

**Table 3: Reference values for 140mm HANS Collar**

Z HANS collar width (mm)	140
X HANS to belt anchorage (mm)	100 200 300 400 500 600 700 800
Y belt anchorage to separation (mm)	170 135 95 55 55 250 280 110 105
	(150) (170) (200) (250) (300) (350) (400) (450) (500)

**Table 4: Reference values for 180mm HANS Collar**

Z HANS collar width (mm)	180
X HANS to belt anchorage (mm)	100 200 300 400 500 600 700 800
Y belt anchorage to separation (mm)	195 155 115 75 75 250 280 85 85
	(175) (195) (200) (250) (300) (350) (400) (450) (500)

**Definitions for the reference values:**

- dimension Z (mm) = width of the HANSB collar, as shown in Figures 2 and 3
- dimension X (mm) = distance from the rear edge of the HANSB belt-bearing surface to the car attachment point (mm) as shown in Figure 2
- dimension Y (mm) = separation of the centres of the two shoulder straps of the car attachment points (mm) as shown in Figure 2



Figure 3. Measurement of HANS collar width

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**2.4** The rear section of the shoulder strap should slope downwards by 0° to 20° from the uppermost point of contact with the HANS®-belt-bearing surface to the anchorage point on the car as shown in Figure 4.

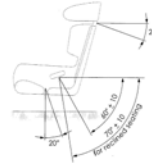


Figure 4. Side view to show recommended belt angles

In accordance with Article 253-4 of Appendix J to the International Sporting Code it is particularly important to prevent any lateral movement of the belt anchorage points by the application of adequate provisions. Screw inserts in conformity with Article 253-4 of Appendix J are recommended.

**2.5** A double shoulder belt system is available to improve the damping load of the shoulder straps on the driver's torso (for his comfort only) during normal racing conditions. The double shoulder belt system provides one **body-belt** that is positioned on the driver's shoulders (beneath the HANS®) and a second **HANS®-belt** that is positioned on the HANS® eyes (as for standard HANS® use). A drawing of the double belt system is shown in Figure 5.

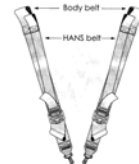


Figure 5. Double shoulder belt system

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For Formula Cars and other cars where the shoulder belt anchorage is less than 200mm behind the rear edge of the HANS®-belt-bearing surface (ie X < 200 mm), the body-belt anchorage points should be positioned 40mm +/- 15mm below the HANS®-belt anchorage points (see Figure 6).



Figure 6. Installation of HANS® double belts in cars where (X < 200mm)

For closed cars and other cars where the shoulder belt anchorage is more than 200mm behind the rear edge of the HANS®-belt-bearing surface (ie X > 200 mm), the body-belt anchorage points should be the same height as the HANS®-belt anchorage points (see Figure 7).



Figure 7. Installation of HANS® double belts in cars where (X > 200mm)

In both cases (X < 200mm and X > 200mm), the HANS®-belts should be installed as detailed in sections 2.3 and 2.4.

If the HANS® belts and body-belts are installed on the same roll cage tube, the HANS®-belts shall respect the dimensions in Tables 1 to 4 and should be attached to the tube inboard of the body-belts, as shown in Figure 8. The body-belts may, exceptionally, be installed with a greater dimension Y if necessary to accommodate this, up to the point of being parallel to each other, but not divergent.

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When using double shoulder belts, there MUST be a minimum distance **B** between the lower edge of the HANSB yokes and the merging of the two belts where the HANSB belt is sewn to the body-belt (see figure 8).



Figure 8. Minimum distance between HANSB yokes and double-shoulder belt merge point

The minimum distance **B** shall be determined as follows:

- the driver shall be seated in the car in the normal driving position, wearing the HANSB and helmet and with the safety harness fastened;
- the driver should lean his/her body and head forward as far as possible - in this position the horizontal distance from the front surface of the HANSB collar to the rearmost point of the helmet shall be measured (**distance A**);
- **minimum distance B = 150mm - distance A.**

**2.6** The upper surface of the HANSB shall be covered in a high friction rubber to grip the lower surface of the shoulder straps. The HANSB may be painted but it is essential that the rubber is left completely uncovered to ensure that the friction with the shoulder belts is not compromised. Any painted HANSB shall respect the flame resistance requirement of FIA Standard 8858-2002. The condition of the rubber surface should be monitored - no breakage, flapping, tears or other damage is acceptable. In case of repair, a repair kit provided by the original manufacturer should be used strictly in accordance with the manufacturer's instructions.

**2.7** It is recommended that the surface of the HANSB in contact with the driver's body is padded for comfort. Approved foams, gel-pads and air-pads are permitted and it is recommended that the padding is covered in flame resistant material. The maximum thickness is 15mm. When using air pads it is recommended that a thin gel pad is added with strong double sided tape to the lower surface of the HANSB such that in the event of deflation of the air-pad, there will be some residual comfort padding.

**3. Headrests and cockpit surrounds with HANSB**

In order to ensure compatibility with the rear headrest, sufficient clearance is necessary between the rear of the HANSB and the seatback bulkhead or top of the seat. The minimum necessary is 25mm. Where possible the installation should enable the headrest to be fully compressed by the helmet and HANSB without any interaction with the seatback bulkhead or top of the seat.

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**4. Helmets with HANSB**

**4.1** An FIA approved helmet conforming to FIA 8858-2002 (or latest revision) fitted with helmet-lether-anchorsages shall be used. Please refer to FIA Technical List 29 for further details.

**4.2** The position of the helmet-lether-anchorsages shall comply with FIA 8858-2002. It is strongly recommended to use helmets with helmet-lether-anchorsage inserts fitted by the manufacturer or original equipment: these are identified by a glossy silver holographic FIA label as illustrated in figure 9.



Figure 9. Label for identifying helmets originally equipped with HANSB inserts.

**4.3** Original Equipment helmet anchorsages should not be removed for painting the helmet. However, if it is apparent that the helmet-anchorsages have been removed, they shall be correctly refitted with thread locking compound.

**5. Lethers with HANSB**

**5.1** The two lethers should be adjusted to the same length.

**5.2** It is not recommended to fit the lethers very short and tight. A nominal optimum length is 130mm. It is acceptable increase the length to 170mm for race conditions that require greater mobility within the cockpit; the length shall be measured from the HANSB-lether-anchorsage to the helmet-lether-anchorsage.

**5.3** The condition of the lethers and clamping brackets (commonly referred to as 'dog bones') and the screws securing them to the back of the HANSB should be closely monitored and should be replaced if any wear is observed.

**6. Car evacuation with HANSB**

It is essential to practice rapid evacuations from the car with full race equipment fitted (including race office, steering wheel, radio system and drink system if applicable). This will help to ensure successful emergency evacuation, in the case of an accident, without the four belts becoming tangled.

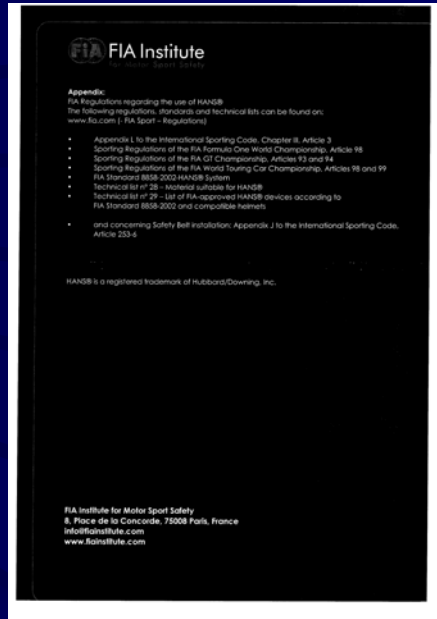
**7. HANSB in non-competitive driving**

It is unsafe to drive (or co-drive) wearing a HANSB device not attached to a helmet. Therefore whenever a helmet is not worn, for example on rally liaison sections, the HANSB shall be removed also.

**8. Accident damage**

After a heavy impact that involves loading of the HANSB, it is recommended to replace the Helmet and HANSB. The respective manufacturers may be able to provide an inspection service to determine whether the Helmet or HANSB has suffered any damage during less severe impacts.

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