

### **Safety Harness mounting**

From the start of 2017 the mounting of safety harnesses for the use of Frontal Head Restraints (FHR) has been in force. The main area of difference between traditional mounting and FHR mounting has been in the positioning of the shoulder straps.

The correct orientation of these straps is very important as an ill-fitting harness can cause be ineffective when it is needed the most.

The regulation in Schedule I reads as follows:

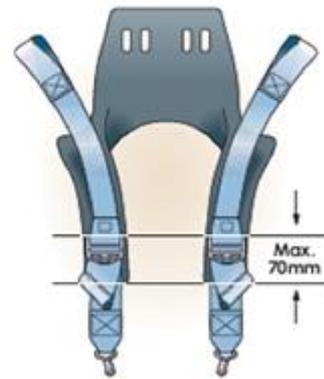
(a) Each safety harness must be homologated to FIA standards and it is strongly recommended to use only a 6 point harness homologated to FIA standard 8853/98. A safety harness with either a 75mm or a 50mm wide shoulder strap may be used with a FHR. The following shall apply:

In plain terms either a 75mm (3 inch) belt or a 50mm (2 inch) belt can be used with FHR. Please note that some harnesses that are designed to be used with FHR cannot be used without FHR. These belts usually are 50mm over the shoulders and graduating to 75mm belts leading to the buckle.

(i) The length adjustment device of the shoulder strap shall be positioned on the FHR yoke with the upper edge not more than 70mm from the lower edge of the FHR yoke as shown in Drawing I-7.

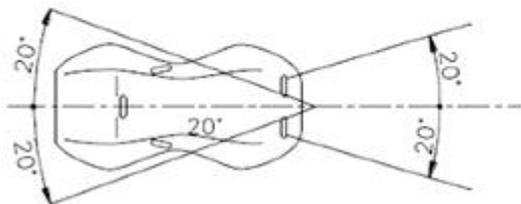
This drawing shows the correct positioning of the adjuster straps in relation to the bottom of the yolk.

Drawing I-7



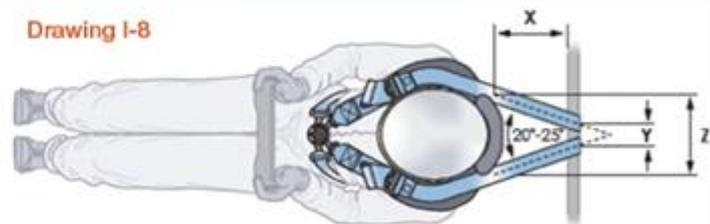
(i) The shoulder strap anchorage points on the automobile shall be symmetrical about the centre line of the driver's seat. When viewed from above, the angle between the shoulder straps shall be approximately  $20^{\circ}$ - $25^{\circ}$  as shown in Drawing I-8.

Non FHR



With FHR

Drawing I-8



(iii) This can be achieved with reference to the values in Table I-3 which have been calculated based on 75mm wide belts (values for 50mm wide belts are shown in brackets) and four FHR collar sizes according to Drawing I-10. Negative values indicate that the shoulder straps are crossed. These values should be closely respected, but a tolerance of  $\pm 20$  mm would be acceptable. Strap movement in the anchorages should be taken into account.



**Table 1: Reference Values for 120mm FHR Collar**

Z FHR COLLAR WIDTH (MM)	120							
X FHR to belt anchorage (mm)	100	200	300	400	500	600	700	800
Y belt anchorage to separation (mm)	135- (110)	95 (70)	55 (30)	15 (-10)	-25 (-50)	-65 (-90)	-105 (-130)	-145 (-170)

**Table 2: Reference Values for 140mm FHR Collar**

Z FHR COLLAR WIDTH (MM)	140							
X FHR to belt anchorage (mm)	100	200	300	400	500	600	700	800
Y belt anchorage to separation (mm)	155 (130)	115 (90)	75 (50)	35 (10)	-5 (-30)	-45 (-70)	-85 (-110)	-125 (-150)

**Table 3: Reference Values for 160mm FHR Collar**

Z FHR COLLAR WIDTH (MM)	160							
X FHR to belt anchorage (mm)	100	200	300	400	500	600	700	800
Y belt anchorage to separation (mm)	175 (150)	135 (110)	95 (70)	55 (30)	15 (-10)	-25 (-50)	-65 (-90)	-105 (-130)

**Table 4: Reference Values for 180mm FHR Collar**

Z FHR COLLAR WIDTH (MM)	180							
X FHR to belt anchorage (mm)	100	200	300	400	500	600	700	800
Y belt anchorage to separation (mm)	195 (170)	155 (130)	115 (90)	75 (50)	35 (10)	-5 (-30)	-45 (-70)	-85 (-110)

**Definitions for the reference values:**

- dimension Z (mm) = width of the FHR collar, as shown in Drawing I-8 and I-10
- dimension X (mm) = distance from the rear edge of the FHR-belt-bearing-surface to the automobile attachment point (mm) as shown in Drawing I-8
- dimension Y (mm) = separation of the centres of the two shoulder straps at the automobile attachment points (mm) as shown in Drawing I-8

(iv) The values in red (underlined) denote that theoretical separation is less than strap width. In this case it is recommended that the straps are installed side by side to avoid any overlap; hence the actual separation shall be equal to the strap width. If the value is negative, the strap should be crossed. Shoulder straps over 200mm long are not recommended.

The positioning of the hip straps and crouch strap/s should also follow the following drawing as these dictate the effectiveness of the shoulder straps.

Drawing I-4

harness placement with use with FHR



Please also consider when looking at the mounting of harnesses the type of seat being used. FHR also relies on the rigidity of a seat in that a seat with an adjustable seat back or a low backrest may not offer the same level of effectiveness.