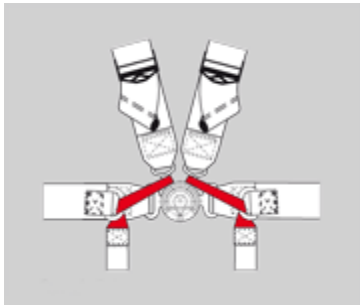
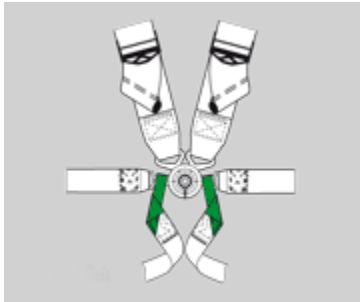


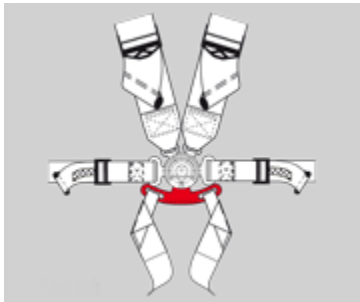
## Hybrid™ Restraints



**Formula Belt**



**Hybrid-Belt**



**T-bar Belt**

SCHROTH's patented restraint design improves on driver safety. Used by Renault F1 and a number of NASCAR drivers, the Hybrid restraint from SCHROTH offers a lighter, more comfortable and more secure solution for motorsport participants.

Formula type (D-ring) restraints route the anti-sub straps from under the body and legs, through the lap-belt D-rings and around the shoulder belt latches which attach to the buckle (see illustration). This extreme routing allows for lap belt movement and high upper torso trajectory (upper body movement) during a crash. Reducing this unwanted movement is achieved by sitting on or having a thin seat panel allowing the straps to run rearwards directly underneath the driver's buttocks, routing them rearwards and attaching them in the region near or at the lap belt anchorage points. The anti-sub straps must be worn extremely tight causing common complaints of reduced blood flow in the legs. In the event of a rear impact, the indirect routing of the anti-sub straps does not keep the buckle and the lap belt in the correct position. Particularly in typical open-wheel race car seating positions the driver is not kept firmly in his seat but is likely to move or slide up in the seat allowing his helmet to extend past the roll over protection bar.

The so called T-bar 6-point belt design provides a better restraining function since the anti-sub straps can be routed downward and slightly rearward using the properly positioned buckle as a reference point. This keeps the buckle in place and provides direct load transfer from the shoulder straps into the anti-sub straps. During a rear impact the anti-sub straps keep the buckle and lap belt in place and restrain the driver much better in the seat. The disadvantage of this type of harness? The T-bar design should be wide enough to properly separate the anti-sub straps but is then likely to put pressure into the upper thighs. To increase comfort, the buckle is often not worn as low as it should be to provide optimal lap belt positioning.

The solution: the revolutionary SCHROTH Hybrid Restraint. The crotch straps are not routed through D-rings or attached to a T-bar but are held directly by the specially developed lap belt latches (see illustration).

Thanks to the patented SCHROTH RFR rotary buckle the load is transferred from the shoulder belts through the buckle into the anti-sub straps and vice versa in case of a rear impact. This direct load transfer is important for optimal restraining performance, keeping the buckle, lap belt and upper torso in place. The routing of the anti-sub straps is wide enough not to apply pressure to the crotch region or upper thighs. The direct attachment to the buckle system allows for an optimal anchor point downwards and slightly rearwards not requiring an extreme backwards mounting position. The Hybrid type restraint also allows for an additional 7th point anti-sub strap to further reduce displacement during an impact. A further advantage of the Hybrid is weight savings over standard T-bar and Formula belts, where less hardware (no T-bar or D-rings) and webbing required.

Due to the attachment style of the anti-sub straps (loops, not latches) the Hybrid restraint is not optimal for endurance events where rapid driver changes are a must.

Hybrid belts are the ideal solution for touring and sports cars, rally cars, formula chassis' and prototypes.