



Volvo Car Corporation

## Press Information

Forty-year jubilee for Volvo's three-point safety belt

### **THERE IS A LITTLE BIT OF VOLVO IN EVERY CAR**

It is an indisputable fact that safety belts save lives, but it took a long time for both the authorities and the general public to understand this. Among the latter there are still those who believe that they can travel by car without a belt. Despite common sense, science and statistics. The very fact that, on average, one person is killed in traffic every minute somewhere in the world should be good enough reason for everyone everywhere to wear their belts.

When, in 1959, Volvo introduced its patented three-point belt in the front seat of cars on the Nordic market, it was the first time any car had proper safety belts as standard. At the time, there was still not much evidence of the belt's effectiveness. On the contrary, certain evidence pointed against two-point diagonal or lap solutions.

In the light of the relatively poor protection provided by the two-point belt, Volvo's three-point belt also found it difficult to gain acceptance to begin with. A belt that was easy to use, comfortable and effective was still greeted with some scepticism.

On the basis of the company's own crash tests, Volvo still decided to introduce the three-point belt on all cars in 1963, and on all markets - including the USA, where there had been strong opposition to date. During the following years, Volvo also began to gather and compile more systematic data from accidents in which Volvo cars had been involved and the occupants had either used or not used the belts.

#### **The report that changed the world**

In 1963, the widespread introduction of the three-point belt was followed by a Volvo report on car safety in general and the three-point belt in particular in order to pave the way for the solution. Both measures were greeted with considerable scepticism in many quarters. Nobody wanted to believe that the "uncomfortable" car belt could alleviate the consequences of an accident in the ways Volvo claimed. But Volvo did not give up...

On the basis of all the injuries that had occurred in accidents involving Volvo cars in Sweden in 1966, Volvo and Nils Bohlin presented the "28,000 accident report". This was a very important and pioneering work which did much to lay the foundations of future work on making the safety belt essential in our cars.

The results of the report were quite clear: the three-point belt saves lives, and reduces or prevents injury in more than half the cases. It became clear that knowledge of what happens to a vehicle and its occupants in a collision is essential to further development of both the car and its safety systems. It was also, once and for all, established that the consequences of an accident are strongly linked with the speed of the impact.

The report became a strong lobbying tool in many places, particularly in the USA, where William Haddon from the National Highway Safety Bureau (now the NHTSA) had long been fighting for the introduction of three-point belts in cars. Here, the report became an effective tool in the battle of the belt. In 1968, the first belt regulations appeared on the American market.

Over the years, of course, the Volvo report has become one of the most quoted SAE reports, since the body of facts it contains points unambiguously to the benefits of the three-point belt.

### **Law in most countries**

Now, the use of belts is mandatory in large parts of the world, although most countries still only require them at the front. Legislation requiring cars to be fitted with safety belts began to appear in the 1960s, but it was not until 1971 that the first law requiring them to be worn appeared - in the state of Victoria in Australia. A number of countries followed, including Sweden in 1975, but there is still no Federal law in the USA, for example, requiring that the belts that are themselves mandatory must actually be worn by the occupants!

Belt use is therefore a priority area for Volvo. Legislation increases the frequency of use drastically, but is no guarantee of complete compliance. Despite increasingly comfortable belts and regulations about their use, not everyone wears them and use varies widely depending on factors such as age, sex and car type.

In the USA, belt use can roughly be estimated at 60-65%, despite the lack of Federal legislation, although 49 states and the District of Columbia have regulations requiring belt use. In Europe, the average is around 70%, but varies widely due to geographical and cultural reasons.

Naturally, 100% would be desirable, in commercial vehicles as well, and Volvo is working actively to promote this goal through "Buckle Up" campaigns and the like, and by making the belt more attractive to use.

The general introduction of belts meant that most of the three-point belts fitted in cars the world over are of the Bohlin type. So there is a little bit of Volvo in every car.

### **Revolutionary reel**

A revolution in terms of belt comfort and convenience took place at Volvo in 1968 when the inertia reel was introduced at the front in 1968 and then on the outer rear seats in 1971. The inertia-reel belt means greater comfort by allowing more freedom of movement and eliminating the need of readjustment for different users. And it was always out of the way when not in use.

It soon became increasingly clear that rear-seat passengers must also sit safely. There was not a lot of point in restraining the driver in a collision if the passenger behind him did not have the same protection. The enormous force - several tonnes - when the rear seat occupant was thrown forwards in a collision had to be dealt with, both for his or her own sake and for the person in front.

The three-point belt was introduced on the outer rear seats of Volvo cars as long ago as 1967. In Sweden, a law to this effect was introduced in 1971, but there were no rules requiring all occupants in a car to wear their belts until 1986.

This was the year that Volvo launched the three-point belt in the rear centre seat as extra equipment. It became standard in 1990, making Volvo once again the first car manufacturer to provide a safe belt solution. This meant that all five occupants in a Volvo car could travel in equal safety, with three-point inertia-reel belts and head restraints. And by then, Volvo cars had already been fitted with belt tensioners at the front for a year.

### **Volvo: traffic accident research pioneer**

The "28,000 report" and its compilation of accidents involving Volvo cars in 1967 led, three years later, to the establishment of a formal Traffic Accident Research Commission at Volvo. This was one of the first of its kind among car manufacturers.

The report covered all accidents in Sweden over a period of one year involving Volvo cars. In order to make the Commission's work more manageable and allow in-depth analysis of individual cases, it was decided to limit the investigation to serious accidents involving Volvo cars within a radius of 100 km of Göteborg.

This is still the case - when any accident occurs, the Commission is called out, day or night.

In addition to this, a special survey is carried out on the most serious accidents involving Volvo cars in Sweden (about 50,000 annually reported to Volvo's insurance company Volvia) and certain Volvo accidents abroad.

All this has provided Volvo with a unique body of data on how different injuries and types of vehicle damage occur, their consequences and the measures taken to reduce or eliminate them in Volvo cars.

This is how the golden Volvo research circle works - design, information feedback, experience, constant improvement of designs, etc. This is the basis of Volvo's safety philosophy: to build ever-safer cars, designed for the real traffic environment where they will be driven.

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