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SEAT BELT

Seat belt is a kind of active safety equipment on vehicles. The main raw materials are polyester, polypropylene and nylon. The safety belt is not only the webbing, but also the assembly of other parts besides the webbing. The "safety belt" has become the primary consideration of drivers and passengers, and is also one of the most important performances of automobiles. Traditional components to ensure safe driving, such as rear-view mirror and left and right door mirrors (traditional rear-view system), seat belt, AIRBAG (air bag) and ABS (brake anti-lock system), have been familiar to drivers and passengers, and are widely used in imported luxury cars.

Origin of safety belt

As a basic protective device to protect drivers and passengers in the process of vehicle collision, seat belts were born earlier than the automobile. In a car race held in New York on May 20, 1902, a racing driver tied himself and his companion to the seat with several belts to prevent being thrown out of the car at high speed. During the race, the car they were driving crashed into the audience by accident, resulting in two deaths and dozens of injuries. However, the racers survived because of the belt. These belts have also become the rudiments of automobile safety belts. The first time they are used in automobiles, they have saved the lives of users. In 1922, sports cars on the racetrack began to use seat belts; In 1955, Ford cars in the

United States were equipped with safety belts; In 1968, the United States stipulated that all seats facing the front of cars should be equipped with seat belts.

Working principle of safety belt

When a high-speed car collides or encounters unexpected emergency braking, it will generate a huge inertial force, which may exceed 20 times the driver's weight (depending on the driving speed and impact degree), causing the driver and passengers to collide with the steering wheel, windshield glass, seat back, door and other objects in the car, which is very easy to cause injury to the driver and passengers, and even throw the driver and passengers out of the seat or out of the car. The function of the car safety belt is that in the event of a collision or emergency braking, the pre-tightening device will immediately tighten, tighten the loose safety belt when wearing, and firmly fasten the passenger on the seat to prevent a second collision. Once the retraction force of the safety belt exceeds a certain limit, the force limiting device will properly relax the safety belt and keep the force on the chest stable. Therefore, the automobile safety belt plays a role of restraining displacement and buffering, absorbing impact energy, dissolving inertia force, and avoiding or reducing the degree of injury to drivers and passengers.

If the safety belt is not fastened before the collision, the airbag will hurt the driver and passenger instead. Without the restraint of the seat belt, not only part of the impact energy cannot be "unloaded" from the driver and passenger, but also the airbag that is "as always" rapidly inflating will collide with the fast moving driver and passenger head-on. The huge impact force generated by the rapid expansion of the airbag will hit the driver and passenger's head and chest heavily. It is conceivable that in this "crash", the driver and passenger's head

and chest will be seriously injured, and the airbag has become the "culprit" of the driver and passenger's injury.

Safety effect

Very early vehicles did not have safety belts. Because the concept of safety structure of the car body has not yet been formed, people think that throwing it out is better than in the flattened iron can body. However, after many cases, it was found that the accident victims could not effectively survive by throwing them out. It is often because the trunk is stuck in the door, or it is too close to the vehicle wreckage, and it is pressed by the car you drive; So he changed his concept of safety and thought that fixing in the car was an effective survival requirement. In addition, the seat belt can only be used by one person and cannot be shared by more than one person. Although modern vehicles can reduce the structural deformation of the collision, if the safety belt is not fastened, the collision may cause passengers to: 1. Hit hard objects in the vehicle, even the airbag, based on the principle of inertia, the impact force of instant collision is very large. 2. Fly out of the vehicle. According to different crash conditions, the impact on occupant mortality cannot be determined. 3. According to the research of the University of Tokyo, if the rear seat passengers wear seat belts, the death rate of the front seat passengers can be reduced by 80%, because when the car crashes, the rear seat passengers without seat belts will hit the back of the front seat.

Use in the United States

As the "paradise of the automobile industry", the United States is the place that most despises the seat belt at the beginning. American public opinion is even more critical of the seat belt's obstruction and discomfort to passengers. Until 1967, after Niles published the "28000

Accident Reports" in the United States, Americans began to realize the value of seat belts and issued the first regulation on seat belts in 1968, stipulating that seat belts should be installed on seats facing the front of cars. At present, in the United States, each state legislates for the use of seat belts. All states require drivers and passengers on the passenger seat to wear seat belts, but many states are more strict, requiring all passengers on ordinary cars to wear seat belts, or they will be punished if found. For example, in California, if the driver fails to tell the rear seat passenger to fasten the seat belt, if the driver is stopped by the police, both the driver and the passenger will be fined, with a maximum fine of \$200. In addition, the United States has further invested resources in the research and development of safety belt technology, such as the use of RW seat safety belt switch to indicate the instructions for the use of the front seat safety belt to remind passengers that they must use the safety belt.

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