



Road Safety..... **Information**

July 2005

Safer Head Restraint Designs

Whenever you get into a vehicle, you should ensure that a head restraint is properly adjusted, as described in the fact sheet entitled **How To Adjust Your Head Restraint**.

You can also think about head restraints and whiplash prevention when purchasing a vehicle. You should always sit in the vehicle, before purchasing it, to ensure that the head restraint can be adjusted properly.

Thatcham Whiplash Protection Ratings

The British insurance industries' test centre at Thatcham has been conducting research into the causes of whiplash, and has developed tests to determine which vehicle seats offer good protection. This is conducted as part of an international effort by the insurance industry to reduce the worldwide incidence of whiplash.

Seats are tested separately for both good geometry and their performance in a rear impact test. The results of the dynamic and static tests are combined to create an overall rating for the seat, which can then be compared against other vehicles.

Seats are first examined to ensure that the head restraint can be adjusted to be in the optimum position. The optimum position is when the top of the head restraint is level with the top of the head, and there is little or no distance between the back of the head and the restraint. The geometry of the seat is rated as good, acceptable, marginal, or poor.

If a seat offers good or acceptable geometry then it is subjected to dynamic tests. Seats that are rated as marginal or poor are not tested further, and are given an overall rating of poor.

In the dynamic test, a rear impact is simulated on a sled at 16km/hr using the vehicle's seat and a rear impact dummy. The acceleration of the dummy's torso is measured along with the time it takes the head to contact the head restraint, the forces acting upon the dummy's neck are also examined. These measurements can be then used to award the seat a rating that shows how much protection it can offer an occupant. This is again either good, acceptable, marginal, or poor.

You can see the results for your vehicle and find more information about the tests at <http://www.ncwr.co.uk>.



Technology To Help Prevent Whiplash

There are two common systems to help prevent whiplash that are becoming more common on vehicles.

Active Head Restraint

An active head restraint consists of a pressure plate and a pivot system in the seat back. Active head restraints are adjustable like standard head restraints and you still need to ensure that it is properly positioned behind your head.

As the occupant's body moves into the seat back in the initial stages of the collision, it contacts the pressure plate in the seat back and triggers the active head restraint. The head restraint moves towards the occupant's head creating an earlier contact time between the two, and a longer period of support for the head during the accident.

WHIPS Seat

WHIPS seats have a fixed, integral head restraint, which cannot be adjusted, as the entire seat back has been designed to offer good geometry and protect the occupant from whiplash injuries.

During a rear impact, the seat moves backwards and becomes reclined and an expandable hinge at the base of the seat back controls its movement. This ensures that the movement of the head and body are similar and increases the length of time that the occupant is in contact with the head restraint.

The expandable hinge is designed to only be used once and should be replaced following the accident.