



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: December 19, 1990

In reply refer to: H-90-111

To: Manufacturers of Passenger Vehicles
(see attached list)

In its 1988 Safety Study on the performance of seatbelts,¹ the National Transportation Safety Board concluded that, "Increasing the level of occupant protection in passenger cars is one of the most important steps this country can take to lower the number of transportation casualties." One way of accomplishing that goal is to increase the number of passenger vehicle occupants who use their lap/shoulder belts and use them properly. Due primarily to the passage of mandatory seatbelt laws by 36 States and the District of Columbia, seatbelt use increased from 14 percent in 1984 to nearly 50 percent in 1990.² Belt use could be increased further by the passage of additional mandatory use laws, by increased enforcement and education campaigns, and by making the belt systems more comfortable and more convenient to use. The Safety Board is fully supportive of all of these steps.

Concerning the effectiveness of seatbelts, the Safety Board stated in the 1988 report that lap/shoulder belts clearly offer occupants of motor vehicles substantial protection in a wide variety of crashes. In the cases described in the report, which were all tow-away crashes, 80 percent of the 214 front seat occupants wearing properly routed lap/shoulder belts sustained only minor or moderate injuries or no injuries at all. In these cases, the injury-reducing effectiveness of lap/shoulder belt use during rollover accidents was particularly striking. In overturns of more than 360 degrees, many lap/shoulder-belted occupants sustained minor injuries only.

The Safety Board further stated that if the occupant of the vehicle is to receive the full benefit of the lap/shoulder belt, the belt must be worn properly. Improper use can degrade the belt's ability to prevent serious injury and, given certain accident circumstances, may introduce the possibility of serious belt-induced injuries. Among the types of misuse discussed in the study report was the misrouting of the shoulder portion of

¹Safety Study--"Performance of Lap/Shoulder Belts in 167 Motor Vehicle Crashes" (NTSB/SS-88/02).

²State Legislative Fact Sheet--Safety Belt Use Laws, National Highway Traffic Safety Administration, November 1990.

the belt. The most common belt routing error, especially by children, was the placement of the shoulder portion of the belt behind the child's back. The absence of adjustable upper anchorages in most cars sold in this country has meant that parents continue to be concerned about the placement of the shoulder portion of a three-point belt relative to the child's face or neck; such concern can lead them to misroute the belt. This essentially reduces the lap/shoulder belt to a lap-only belt, degrading the crash protection of the belt and introducing the possibility of belt-induced injuries. Short adults also share the fear of neck injury from an ill-fitting shoulder harness and also may be tempted to misroute the belt. Another form of misuse noted was the placing of the shoulder portion of the belt under the arm -- a routing that can have fatal consequences.

One method of encouraging proper use of seatbelts and discouraging misuse is to improve the fit of the shoulder portion of the belt. In its 1988 report, the Safety Board stated that it believed that the seatbelts in passenger vehicles should provide the occupants with the opportunity to adjust the shoulder strap to an upper anchorage elevation that is compatible with their body size. The Safety Board recommended that the National Highway Traffic Safety Administration (NHTSA):

Evaluate the possibility of requiring an adjustable upper anchorage point for the shoulder portion of lap/shoulder belts in newly manufactured motor vehicles. (H-88-10)

The NHTSA has advised the Safety Board that it believes that rulemaking to require adjustable anchorages was not warranted. However, the NHTSA indicated that it "...is not to say manufacturers should not provide adjustable anchorages to consumers without a regulation." The agency further noted that, "Clearly, any devices to improve belt use, comfort and convenience are beneficial, and NHTSA supports their introduction into the marketplace."³

Dr. Murray Mackay, in a paper in the 1988 Transportation Research Board report on Transportation in an Aging Society, noted, "...power-assisted adjustment of the upper mounting point with a memory setting diminishes much of the discomfort of belts that reduces their use by older persons. Certainly an adjustable upper mounting point, now common on current models in Europe, is a necessary requirement for acceptable seatbelts for those of small stature."⁴

In fact, many manufacturers are already offering adjustable upper anchorage points on some or all of their passenger vehicle models. In Great Britain, when the country passed a mandatory seatbelt use law in 1983, short

³Letter from NHTSA Associate Administrator for Rulemaking to NTSB Director, Office of Safety Recommendations, October 22, 1990.

⁴Mackay, Murray; 1988. Crash Protection for Older Persons. In: Transportation in an Aging Society. Transportation Research Board, special report 218. Vol. 2. Washington, D.C.

people, particularly small females, complained of the uncomfortable position of the shoulder portion of the seatbelt in certain cars. The new car requirements were changed to allow adjustable upper anchorages (AUAs). Consequently, even though not required, a large number of vehicles sold in Great Britain have adjustable upper mounting points.

European manufacturers generally offer AUAs, not only for their vehicles sold in Europe, but also for similar models sold in the United States. For example, Mercedes Benz, BMW, Audi, and Saab offer AUAs for most or all models sold in this country. Volvo currently provides AUAs as an option for its 240 series and is considering offering it for other models in the future. Ford provides a five-position adjustable upper D ring as standard equipment for almost all of its cars marketed in Europe. Ford also provides this system, as standard equipment or as an option, on many of its light trucks and vans sold in Europe. In the United States, however, this system is not yet available. Ford is planning to introduce this system on four-door models of two car lines in the United States in the spring of 1991, and is planning to phase it in for other car, light truck, and van models in the next 2 to 3 years. General Motors currently offers AUAs only on its four-door Oldsmobile 98 and four-door Buick Park Avenue. Nissan provides AUAs only on its Infiniti Q45.

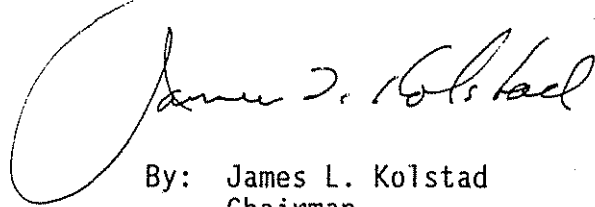
Most manufacturers have announced plans to provide both driver and passenger-side air bags in future models. As a part of this program, passive belt systems are being phased out. Motorized belt systems and belts that are now anchored on doors will be replaced with active systems anchored on the B pillar. Thus, the timing appears to be excellent for the manufacturers to include AUAs as part of this redesign. For example, Honda provided AUAs for its 1988 and 1989 four-door Accord and Civic station wagon. However, in 1990 Honda switched to a motorized passive belt system that did not include an AUA. As the company begins phasing in air bags, it will switch back to a manual belt which will include AUAs. By model year 1994, all Honda four-door cars will have AUAs. In addition, some manufacturers that currently offer air bags for some of their model cars (and are therefore not required to provide passive belt systems) also provide AUAs. For example, Toyota offers both a manually or power-operated AUA system with a memory setting in its Lexus LS400 (Toyota also offers a slide or swivel-type AUA in many of its other models). BMW in its 5 and 7 series provides AUAs, with a memory setting in the 7 series. Honda's four-door Acura Legend provides a four-position AUA.

The Safety Board believes that providing the occupants of passenger vehicles with the opportunity to adjust the upper anchorage of the shoulder strap to an elevation that is compatible with their body size may not only result in a decrease in the misuse of seatbelts, but may also bring about an increase in the overall use of seatbelts. Therefore, the National Transportation Safety Board recommends that the manufacturers of passenger vehicles:

Provide in all newly manufactured passenger vehicles an adjustable upper anchorage for the shoulder portion of the seatbelt.
(Class II, Priority Action) (H-90-111)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "...to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation H-90-111 in your reply.

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, and LAUBER, BURNETT and HART, Members, concurred in this recommendation.

A handwritten signature in cursive script, reading "James L. Kolstad". The signature is written in dark ink and is positioned above the typed name and title.

By: James L. Kolstad
Chairman

Mr. Robert C. Stempel
Chairman and Chief Executive Officer
General Motors Corporation
3044 West Grand Blvd.
Detroit, MI 48202

Mr. Lee A. Iacocca
Chairman and Chief Executive Ofcr.
Chrysler Corporation
12000 Chrysler Drive
Highland Park, MI 48188-1919

Mr. Hiroyuki Yoshino
President
Honda of America Manufacturing Inc. ✓
Honda Parkway
Marysville, OH 43040

Mr. Jerry L. Benefield
President and Chief Executive Ofcr. ✓
Nissan Motor Mfg. Corp. U.S.A.
Nissan Drive
Smyrna, TN 37167

Mr. Tamon Yamamoto
President and Chief Executive Ofcr.
Subaru-Isuzu Automotive Inc.
5500 State Road 38 East
Lafayette, IN 47905

Mr. Darrell L. Davis
President and Chief Executive Ofcr.
Alfa Romeo Distr. of North America
Post Office Box 598026
Orlando, FL 32859-8026

Mr. Harold A. Poling
Chairman and Chief Executive Ofcr.
Ford Motor Company
The American Road
Dearborn, MI 48121

Mr. Lino Piedra
Chairman
Diamond-Star Motors Corporation
100 N. Diamond-Star Parkway
Normal, IL 61761

Mr. Masahiro Uchida
President
Mazda Motor Mfg. (USA) Corp. ✓
1 Mazda Drive
Flat Rock, MI 48134

Mr. Kan Higashi
President and Chief Executive Ofcr.
New United Motor Manufacturing Inc.
45500 Fremont Boulevard
Fremont, CA 94538

Mr. Fujio Cho
President and Chief Executive Ofcr. ✓
Toyota Motor Mfg. USA Inc.
1001 Cherry Blossom Way
Georgetown, KY 40324

Mr. Karl Gerlinger
President and Chief Executive Ofcr.
BMW of North America Inc.
Montvale
NJ 07645

Mr. Koichi Amemiya
President
American Honda Motor Company ✓
100 West Alondra Blvd.
Gardena, CA 90248

Mr. Kozo Sakaino
President
American Isuzu Motors Inc.
13181 Crossroads Pkwy, North
City of Industry, CA 91746

Mr. Joseph Monterosso
Chairman and Chief Executive Ofcr.
Laforza Automobiles Inc.
3860 Bay Center Place
Hayward, CA 94545

Mr. Erich Krampe
President and Chief Executive Ofcr.
Mercedes-Benz of North America, Inc.
One Mercedes Drive
Montvale, NJ 07645

Mr. Kazutoshi Hagiwara
President
Nissan Motor Corp. in USA ✓
Post Office Box 191
Gardena, CA 90247-7638

Mr. Brian Bowler
President and Chief Executive Ofcr.
Porsche Cars North America Inc.
Post Office Box 30911
Reno, NV 89520-3911

Mr. John S. Fukunaka
President and Chief Executive Ofcr.
Daihatsu America Inc.
4422 Corporate Center Drive
Los Alamitos, CA 90720

Mr. H. W. Baik
President and Chief Executive Ofcr.
Hyundai Motor America
10550 Talbert Avenue
Fountain Valley, CA 92708

Mr. Graham W. Whitehead
President
Jaguar Cars Inc.
555 MacArthur Boulevard
Mahwah, NJ 07430-2327

Mr. Yoshinori Taura
President
Mazda Motors of America, Inc. ✓
7755 Irvine Center Drive
Irvine, CA 92718

Mr. Taiji Fukuda
Chairman
Mitsubishi Motor Sales of Amer. Inc.
6400 W. Katella Avenue
Cypress, CA 90630-0064

Mr. Pascal Henault
President
Peugeot Motors of America Inc.
One Peugeot Plaza
Lyndhurst, NJ 07071

Mr. Charles R. Hughes
President
Range Rover of North America Inc.
Post Office Box 1503
Lanham, MD 20706

Mr. Robert J. Sinclair
President
Saab-Scania of America Inc.
P.O. Box 697
Orange, CT 06477

Mr. Graham J. Morris
President
Sterling Motors Cars of North American
8300 North West 53 Street
Miami, FL 33166

Mr. Harvey H. Lamm
Chairman and Chief Executive Officer
Subaru of America Inc.
2235 Rte. 70-West
Cherry Hill, NJ 08034

Mr. Kenji Shimizu
Chairman & President
American Suzuki Motor Corp. Auto Div.
3251 Imperial Highway
Brea, CA 92621-6722

Mr. Yukiyasu Togo
President
Toyota Motor Sales U.S.A. Inc. ✓
19001 South Western Avenue
Torrance, CA 90509

Mr. Hans-Jorg Hungerland
President and Chief Executive Officer
Volkswagen United States Inc.
888 West Big Beaver Road
Troy, MI 48007

Mr. Bjorn Ahlstrom
Chairman
Volvo Cars of
North America
Rockleigh, NJ 07647

Mr. John A. Spiech
President and Chief Executive Officer
Yugo America Inc.
28 Park Way
Upper Saddle River, NJ 07458