

TABLE 1.—AVAILABILITY OF SEAT BELT EXTENDER OR LONGER BELTS

Company	Extender available	Length of extender (in)	Linkable? (2 or more)	Optional longer seat belts?	Vehicle sales* (2000)
Hyundai .....	No .....	.....	.....	.....	244,391
Jaguar .....	No .....	.....	.....	.....	43,728
Kia .....	No .....	.....	.....	No .....	160,606
Porsche .....	No .....	.....	.....	No .....	22,410
Subaru .....	No .....	.....	.....	No .....	172,216
Honda, Acura .....	No .....	.....	.....	No .....	1,158,860
Volkswagen, Audi .....	No .....	No .....	.....	.....	435,851
Subtotal—NO .....					2,238,062
Land Rover .....	No .....	.....	.....	Yes .....	27,148
BMW .....	No .....	.....	.....	Yes .....	189,423
Mercedes Benz .....	No .....	.....	.....	Yes, case-by-case .....	205,614
Chrysler .....	Yes .....	6, 8 .....	Yes .....	.....	2,522,695
Mazda .....	Yes .....	8, 9, 12 .....	.....	.....	255,526
Toyota, Lexus .....	Yes .....	6, 9, 12, 15, 18 .....	.....	.....	1,619,206
Volvo .....	Yes .....	.....	.....	.....	123,178
GM .....	Yes .....	9, 15 .....	No .....	Cadillac Catera, 12" only .....	4,883,040
Ford .....	Yes .....	8 .....	Yes .....	No .....	4,010,148
Nissan, Infinity .....	Yes .....	8 .....	Yes .....	No .....	752,088
Isuzu .....	Yes .....	6, 9, 12, 15, 18 .....	Yes .....	No .....	98,066
Saab .....	Yes .....	6 .....	Yes .....	No .....	39,479
Mitsubishi .....	Yes .....	6–7 .....	Yes .....	No .....	314,417
Suzuki .....	Yes .....	9, 15 .....	Yes .....	No .....	60,845
Subtotal of vehicles with oversize provisions .....					15,100,873
Total .....					17,338,935

\* The vehicle manufacturers identified the models for which they offer belt extenders or extra webbing. The vehicle sales data from Automotive News were used to quantify the number of vehicles in the fleet.

Given that many vehicles have belts long enough to fit almost all users and that optional longer belts or seat belt extenders are available for 87.5 percent of the fleet, the agency believes that a requirement to increase the belt length in all vehicles is unnecessary. NHTSA's analysis indicates that for almost all of these large individuals, there are few practical obstacles to obtaining that benefit, although they may find it more difficult to do so in some vehicles when compared to others.

Another factor in our decision is a concern that requiring manufacturers to provide either longer belts or belt extenders may have negative safety consequences. In the case of longer belts, the previously mentioned 1988 VRTC report described sled tests conducted with up to 254 mm (10 in.) of extra webbing in the restraint system. All tests were run at a 48 km/h (30 mph) change in velocity using a 50th percentile Hybrid III dummy in the front passenger seating position of a 1982 Chevrolet Celebrity. The amount of belt webbing spool-out increased from 41 mm to 76 mm (1.6 to 3.0 in.) with the increased belt length. Peak head, chest, and pelvic accelerations showed very little change with increased belt length. However, Head Injury Criterion did show an increase of about 12 percent.

The greatest change appeared to be an increase of 17 percent in the neck flexion moment. The results of the sled tests also indicated an increase in dummy excursion relative to the vehicle with increasing belt length. The maximum resultant excursion of the head varied from the baseline by 76 mm (3 in.). A linear regression through the data showed a 26 mm (1.02 in.) increase in resultant head excursion for each additional 100 mm (3.98 in.) of belt length. Thus, an addition of 254 mm (10 in.) in belt length translates to 65 mm (2.6 in.) greater head excursion than the baseline.

The results of the VRTC study were obtained from the front passenger seat of a single vehicle without an air bag or seat belt pretensioner. Since belt webbing properties have not changed substantively since the 1980s, these estimates would appear to be reasonable for current belt systems with added webbing on the retractor. Seat belt pretensioners may prevent extra belt spool-out associated with longer belts. However, where pretensioners are not used, increased excursion values due to longer belts may significantly increase the risk of injury due to contact with the vehicle interior.

Belts may also be made longer by the use of belt extenders. Belt extenders,

which would only be used by persons needing additional webbing length, would avoid some of the risks of increased spool-out and excursion associated with longer belts. However, as described in the NHTSA Technical Report, proper fit is necessary when using belt extenders. If the location of the extender places the buckle a distance of no more than 152 mm (6 in.) from the occupant's vertical center-line, the shoulder belt will not provide proper torso restraint and may pull the lap belt up onto the abdomen during a frontal impact, possibly leading to greater excursion and/or internal injury. The risks of belt extenders would be accentuated where the extender is not properly sized for the user or where a person of more average size inadvertently used a belt with an extender attached.

### III. Options for Larger Persons

NHTSA's decision to terminate this rulemaking does not foreclose opportunities for larger persons to use seat belts that fit. Both vehicles and vehicle occupants are found in a variety of shapes and sizes. A given vehicle may not be able to accommodate all persons. For reasons other than girth, a vehicle may be unsuitable for some users. For example, very tall persons