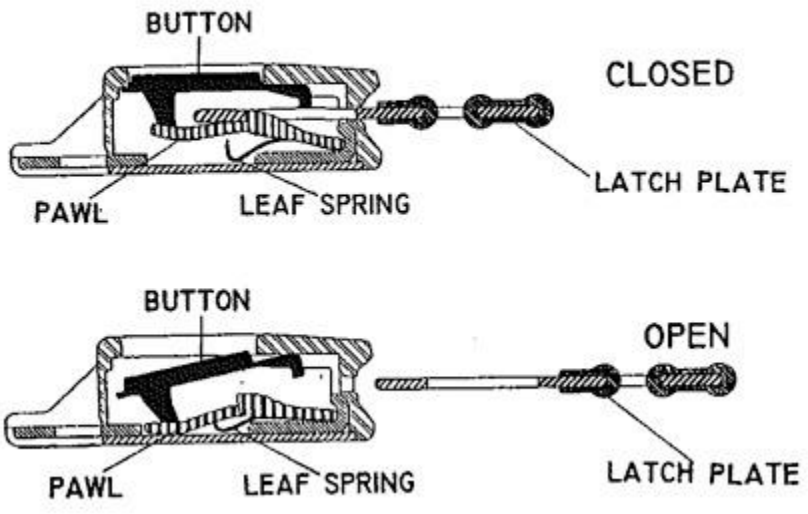
Characterization of Automotive Seat Belt Buckle Inertial Release. The Proceedings of the 37th Conference of the Association for the Advancement of Automotive Medicine, San Antonio, Texas, November 4-6, 1993. Arndt, Stephen M., Gregory A. Mowry, Mark W. Arndt, Arndt & Associates Dickerson, Charles P., Stephen M. Arndt, Mark W. Arndt, and Gregory A. Mowry, Arndt & Associates, Ltd.



The objective of this research program was to determine the dynamic conditions under which a restraint system will unlatch due to inertial loading. This question must be answered in order to provide the basis for understanding whether or not inertial release of seat belt buckles can occur in real-world automobile collisions. Controlled laboratory dynamic tests were conducted on several different manufacturers' seat belt buckles to determine the conditions which would result in inertial unlatching. The two key variables evaluated were:

1. Velocity Change at Release.
2. Acceleration -Time History.

These tests provided a characterization of the acceleration and delta velocity conditions necessary to inertially unlatch a wide range of seat belt buckles. Future research is required to determine if these conditions actually occur in real-world collisions.