

Safety Research Report Index - Automatic Seat Belt Failure

A. Background

1. "Volkswagen Rabbit is First Car to Offer Automatic Seat Belts," VWOA Release, 2/28/75.
2. "Passive-Restraint Changes Proposed," Automotive News, 4/15/85.
3. "Makers Get Break on Passive Restraints," Automotive News, 3/31/86.
4. "NHTSA Urged To Enforce Rules On Automatic Belts," Status Report, IIHS, 3/18/89.
5. "GM Passive Belts Fail User-Choice Test," Automotive News, 7/31/89.
6. "Seat Belts Used by Officer Suspected in Other Deaths," Portland Press Herald, 10/3/90.
7. "Deaths Stir Concern Over Lap-Belt Use" & "Petition Fails to Spur Agency Probe," Albuquerque Journal, 2/10/91.
8. "Seat Belts, Are They Safe?," Law and Order, 3/91.
9. "Abolish Hazardous Automatic Belts...," Institute for Injury Reduction Press Release, 4/23/91; B. Kelley, "Reducing Automatic Seat Belt Hazards," IIR, 4/23/91.
10. "Critics Questioning Safety of Some Automatic Seat Belts," Cleveland Plain Dealer, 4/23/91.
11. "Fatal Crashes, Seat Belt Link Investigated," Gwinnett Daily News, 6/6/91.
12. "Chest Harnesses In Cars Are Seen As Possible Peril," New York Times, 6/13/91.
13. "Shoulder Harness Blamed in Wreck," Atlanta Journal/Constitution, 6/18/91.
14. "Safety Hazard: Automatic Seat Belts Sans Lap Belts," Trial, 7/91.
15. "Tardy NHTSA to Expose Failure of Passive Belts," Automotive News, 7/29/91.
16. "NC Motorists Neglecting Lap Belts, Study Shows," UNC-CH, 11/4/91.
17. "Nissan Sued over Seat Belts," Fulton County Daily Report, 2/18/92.
18. "Jury Exonerates Nissan in Decapitation Suit," Automotive News, 4/6/92.
19. "Study Says Automatic Seat Belts Not Safer," Detroit Free Press, 6/26/92.
20. "Belt Design Compromises Driver Safety," Detroit Free Press, 11/25/92.
21. "Hyundai Loses Seat Belt Case as Safety Issue Arises Again," Newsday, 5/26/93.
22. "Fasten Those Seat Belts," Cleveland Plain Dealer, 3/94.
23. CAS Lemon Times and IMPACT articles.

B. Attorneys/Litigation

1. List of Attorneys.
2. List of Lawsuits.
3. O'Bryan v. VWOA, CA No. 89-0059-0(CS), Denial of Summary Judgment Based on FMVSS Preemption (W.D. Kent., Feb. 11, 1992)

C. Experts

D. Federal Motor Vehicle Safety Standard 208 & 209 Rulemaking & Documents

1. FMVSS 208: Occupant Protection
2. FMVSS 208: Rulemaking History
3. FMVSS 209: Seat Belt Assembly
4. FMVSS 209: Rulemaking History
5. DOT release on denial of request for delay in passive restraints, 3/5/71.
6. VW petition to add new crash protection option to FMVSS 208, 10/1/73.
7. Letter from VW to NHTSA regarding 10/1/73 VW petition, 3/8/74; NHTSA response, 4/10/74.
8. DOT release on hearings on future of vehicle occupant restraint systems, 6/9/76.
9. Proposed Rule (Passive Restraint Options); 41 FR 24070; 6/14/76.
10. DOT release & statement on passive restraint demonstration program, 12/6/76.
11. DOT statement on passive restraint demonstration program, 1/18/77.
12. DOT memo on meeting with VW on request for exemption from FMVSS 208, 9/22/77.
13. Proposed Rule (Comfort & Convenience) 44 FR 77210, 12/31/79.
14. Final Rule (Comfort & Convenience) 46 FR 2064, 1/8/81.
15. NHTSA Internal Memo, Suggestions for FMVSS 208, 1982.
16. Final Regulatory Evaluation, Comfort & Convenience; Two year delay, 5/83.
17. Proposed Rule (Passive Restraint Options After 1983 Supreme Court Decision) 48 FR 48622; 10/19/83.
18. Proposed Rule (Supplemental Alternative Restraints) 49 FR 20460; 5/14/84.
19. Final Regulatory Impact Analysis, Passive Restraint Phase-in, 7/11/84 (Section III Omitted).
20. Final Rule (Passive Restraint Phase-in for 1987-90 Passenger Cars) 49 FR 28962; 7/17/84.
21. Proposed Rule (Due Care Defense to Non-Compliance; Convertibles Oblique Test) 50 FR 14589, 4/12/85.
22. CAS Comments on Proposed Rule, 5/12/85.
23. Summary of Comments on HIC, NIC, Test Procedures, & Oblique Impacts, 6/12/85.
24. Response to Petitions for Reconsideration (Automatic Restraint Phase-in) 50 FR 35233; 8/30/85.
25. Final Rule (Due Care Defense; Dynamic Testing of Manual Belts) 51 FR 9800, 3/21/86.
26. CAS Reconsideration Petition on Due Care Defense, 4/21/86
27. Final Regulatory Evaluation, Amendment to Provide New Method for Calculating HIC, 8/86.
28. Final Rule (Exemption for Convertibles During Phase-in) 51 FR 37028; 10/17/86.
29. Proposed Rule (Denial of Petition), 51 FR 42598, 11/25/86.

30. Final Regulatory Evaluation, One Vehicle Credit, 2/87.
31. Final Rule (Extension of One Car Credit), 52 FR 10096, 3/30/87.
32. Interpretive Opinion (Manufacturer/Dealer Obligations During Automatic Restraint Phase-in) 52 FR 23 250, 6/18/87.
33. Denial of Petition (Reconsideration of Full Front Automatic Restraints by 1990) 52 FR 42440; 11/5/87.
34. IIHS Petition to Ban Detachable Automatic Belts, 2/28/89; NHTSA response, 8/4/89.
35. Morris & Ward Engineers petition to ban door-mounted belts, 12/22/89; NHTSA Response, 2/14/90.
36. Proposed Rule (Automatic Restraints for Light Trucks, MPV's & Buses), 55 FR 747, 1/9/90.
37. Request for comments (Evaluation Plan for Standard), 55 FR 1586, 1/17/90.
38. Morris & Ward Engineers petition to NHTSA for ban on motorized belts with manual lap belt. 2/20/90; NHTSA Response, 6/11/90.
39. Summary of comments on NHTSA plan for assessing effectiveness of passive restraints, 7/90.
40. NHTSA Final Regulatory Impact Analysis, Summary of comments, 11/90.
41. Final Rule (Extension to Light Trucks, Vans, Buses), 56 FR 12472, 3/26/90.
42. DOT interim report, "Evaluation of the Effectiveness of Occupant Protection," 6/92.
 - a. DOT news release, 6/25/92.
 - b. CAS news release, 6/25/92.
43. Final Rule (Mandatory Airbags for Cars, Light Trucks, Vans) 58 FR 46551, 9/2/93.

E. Type of Automatic Belt by Make, Model, & Year

F. Technical Materials

1. D. Peck, Triumph, "Semipassive Seat Belt System," 2nd Int'l Conf. on Passive Restraints, 5/72.
2. P. Willumeit, VW, "Passive Preloaded Energy-Absorbing Seat Belt System," 2nd Int'l Conf. on Passive Restraints, 5/72.
3. G. Johannessen, et al., Hamill Manufacturing, "Passive & Semi-Passive Seat Belts for Increased Occupant Safety," 2nd Int'l Conf. on Passive Restraints, 5/72.
4. Bohlin, et al., Volvo, "Consumer Acceptance of the Volvo Passive Belt System," 2nd Int'l Conf. on Passive Restraints, 5/72.
5. Coenen, "How to Turn a 3-Point Inertia Belt into a Passive Seat-Belt System," 2nd Int'l Conf. on Passive Restraints, 5/72.
6. Seiffert, et al., VW, "Threepoint Energy-Absorbing Seat Belt System with Combined Vehicle & Webbing-Sensitive Emergency Retractor," 2nd Int'l Conf. on Passive Restraints, 5/72.
7. J. Takada, Takata Kojyo Co., "Seat Belt Type Passive Restraint System," 2nd Int'l Conf. on Passive Restraints, 5/72.
8. N. Phillips, Beta Industries, "Fully Passive Restraint Systems: Alternative to Inflatable Systems," 5/73.
9. H. Schimkat, et al., VW, "Comparison Between Volkswagen Automatic Restraint & Three-point Automatic Belt on the Basis of Dummy & Cadaver Tests," 17th Proceedings AAAM, 1974.
10. Seiffert, et al., VW, "Description of the VW Restraint Automatic Used in a Fleet Test Program," 3/74.
11. Ventre, et al., Renault, "An Objective Analysis of the Protection Offered by Active & Passive Restraint Systems," 2/75 (Excerpts Only).
12. Compton, NHTSA, "Lifetime Cost & Weight Analysis Occupant Restraint Systems for Passenger Cars," 2/76.
13. R. Ashworth, Kangol Magnet, Ltd., "Development of Passive Seat Belt Restraint System," 9/20/76.
14. A. Westefeld, et al., "Passive v. Active Safety Belt Systems in VW Rabbits," HS 801-958, 8/76 (Appendix omitted).
15. HLDI, "Preliminary Comparison of Results from VW Rabbits with Passive & Active Seat Belts," 6/77.
16. S. Miller, et al., VW, "VW's Passive Seat Belt/Knee Bolster Restraint-Progress Report," 3/3/78.
17. Man Factors, "Passive Restraint Systems Study," HS 803 6590, 6/78.
18. Verve Research, "Examination of Comfort & Convenience of Safety Belt Systems in 1980 Model Vehicles," 3/80.
19. DOT, "Automobile Occupant Crash Protection, Progress Report No. 3," 7/80 (Excerpt Only).
20. Chi, et al., U. of North Carolina, "Comparison of Automatic Shoulder Belt/Knee Bolster Restraint System with Lap & Shoulder Belt System in VW Rabbits" (Summary), HS 805-856, 3/31/81.
21. J. Morris, DOT, "Seat Belt Performance of Manual & Automatic Systems Installed in Chevrolet Chevette & VW Rabbit," HS 805-203, 12/79.
22. N. Deleys, Calspan, "Evaluation of Passive Belts for Different Size Occupants", HS 806-056, 1/81.
23. R. McCarthy, et al., Failure Analysis, "Reliability Study of Automatic & Manual Restraint Systems," HS 806-271, vol.1, 3/82 (Photographs Omitted).
24. J. States, et al., "Field Performance of VW Restraint System (Progress Report)", 9th Int'l Experimental Safety Vehicle Conf., 11/82.
25. H. Johannessen, OmniSafe, "Historical Review of Automatic Seat Belt Restraint Systems," 1987.
26. J. Esterlitz, IIHS, "Comparison of Rates of Fatal Ejection from Manual & Automatic Belt Cars," 10/87.
27. A. Williams, et al., "Driver Use of, and Reaction to, Automatic Seat Belts in Ford & GM Cars," Journal of Public Health Policy, 1988.
28. A. Williams, et al., IIHS, "Observed Use of Automatic Seat Belts in 1987 Cars," 2/89.
29. L. Evans, GM Research Laboratories, "Passive Compared to Active Approaches to Reducing Occupant

- Fatalities," 12th Int'l Experimental Safety Vehicle Conf., 3/10/89.
30. D. Biss, "Investigation, Evaluation, & Development of Advanced Concepts in Three-point Belt Comfort Enhancement Devices," 12th Int'l Experimental Safety Vehicle Conf., 5/89.
 31. R. McCarthy, et al., Failure Analysis, "Discussion of HSRC Automatic Seat Belt Study," 34th Proceedings AAAM, 10/90.
 32. J. VanDyke, NHTSA, "Volkswagon Restraint Systems & Fatality Rates," 2/90.
 33. L. Evans, GM Research Laboratories, "Motorized Two-Point Safety Belt Effectiveness in Preventing Fatalities," 23 Accident Analysis & Prevention 165 (1991).
 34. Reinfurt, et al., U. of North Carolina, "Usage Patterns & Misuse Rates of Automatic Seat Belts by System Types," 34th Proceedings AAAM, 10/90.
 35. HLDI, "Driver Injury Experience in 1990 Models Equipped with Airbags or Automatic Belts," 10/91.
 36. E.M. Ricci & B. Kelley, "When Safety Belts Aren't Safe," 1991.

G. Manufacturer Internal Documents

1. Ford Memo, "A Comparison of Long-Range Effectiveness Among 1976 Restraint Proposals," 6/25/72.
2. Ford Memo, "Long-Range Effectiveness of 1976 Restraint Proposals," 6/25/73.
3. Chevrolet Service News, Optional Automatic Shoulder Belt System for 1978 Chevette Styles, 3/78.
4. Failure Analysis, "Assessment of Accident Experience of Front Seat Outboard Occupants in 1987-1989 Motor Vehicles Equipped With Automatic Seat Belt Systems," prepared for GM, 10/19/90.

H. NHTSA Investigations

1. PE 89-014/EA 89-020: **1987 to early 1989 Toyota Camry** front lap belt failure.
 - a. Opening resume, 11/18/88.
 - b. NHTSA to Toyota, 12/1/88.
 - c. Toyota response, 1/24/89.
 - d. Resume Upgrading PE to EA, 3/22/89.
 - e. NHTSA to Toyota, 3/23/89.
 - f. Toyota response, selected attachments including internal compliance tests & change in belt design, 5/15/89.
 - g. Toyota to NHTSA Suggesting Service Campaign, 7/5/89.
 - h. NHTSA to Toyota, 7/12/89.
 - i. Toyota to NHTSA, 7/28/89.
 - j. Closing Report Noting Recall 89V-175, 11/16/89.
2. PE89-138: **1987 Hyundai Excel** malfunction of passive belt.
 - a. Opening resume, 7/6/89.
 - b. NHTSA to Hyundai, 7/11/89.
 - c. Hyundai response, 8/21/89.
 - d. Closing resume, 11/1/89.
3. PE 89-143/EA 90-008: **1987-90 Escort/Lynx & 1988-90 Tempo/Topaz** passive belt malfunction.
 - a. Opening resume, 7/18/89.
 - b. Letter to Ford, 11/27/89.
 - c. Ford response, selected attachments including Service Bulletins, & design changes, 11/6/89.
 - d. Resume Upgrading PE to EA, 12/27/89.
 - e. Letter to Ford, 3/8/90.
 - f. Ford response, selected attachments including part numbers/suppliers, internal memos on defect & test reports, 5/31/90.
 - g. Ford supplemental response to NHTSA 3/8/90 letter, selected attachments including accident reports & Hertz report, 7/12/90.
 - h. NHTSA letter to Allied Corp., 8/14/90.
 - i. Allied Corp. response including explanation of test procedures & results, 10/30/90; Letter from Fansteel Escast to Bendix Safety Restraints Group about Investment Casting Processing, 9/13/90; Passive Product Performance Control Plan, Allied Corp., 7/19/86.
 - j. Ford to NHTSA request for confidentiality on engineering drawings, 6/13/90.
 - k. Ford to NHTSA regarding accident photographs, 4/9/91.
 - l. NHTSA to Ford, 4/16/91.
 - m. Ford response, selected attachments including accidents, lawsuits & service reports, 9/3/91.
 - n. Closing Report, 12/31/91.
4. PE 90-027/EA 90-028: **1987-90 Toyota Camry** Emergency Release Lever Warning System failure.
 - a. Opening resume, 12/15/89.
 - b. NHTSA to Toyota, 12/22/89.
 - c. Resume Upgrading PE to EA, 5/29/90.
 - d. NHTSA to Toyota, 6/12/90.
 - e. Toyota response, 8/10/90.
 - f. NHTSA to Toyota, 8/6/91.
 - g. Toyota response, including warranty claims, 9/27/91.
 - h. Toyota to NHTSA regarding phone request for recall, 10/24/91.
 - i. NHTSA to Toyota recommending recall, 11/13/91.

- j. Toyota response, 12/9/91.
 - k. Toyota supplement, 1/10/92.
 - l. Toyota to NHTSA regarding recall 92V-025, 2/27/92.
 - m. Closing Report & Resume, 2/28/92.
5. PE 90-013/EA 90-014: **1990 Chevrolet Lumina** cut at D-ring.
- a. Opening resume, 10/25/89.
 - b. NHTSA to GM, 11/13/90.
 - c. GM to NHTSA, 12/21/89.
 - d. Closing resume, 1/3/90.
 - e. Opening resume for EA 90-014, 3/12/90.
 - f. NHTSA to GM, 4/2/90.
 - g. GM response & accident reports, 5/14/90.
 - h. GM supplemental response to 4/2/90 NHTSA letter, including GM/TRW documents, 7/30/90.
 - i. Closing resume indicating recall 91V-005, 2/20/91.
 - j. Recall news release by GM, 2/27/91.
6. PE 91-043 **1990 Acura Integra** shoulder belt retractor may lock.
- a. Opening resume, 2/7/91.
 - b. NHTSA to Honda, 2/19/91.
 - c. Honda response including Acura Service News & Honda Service Bulletin, 4/11/91.
 - d. Closing resume, 6/28/91.
7. PE 91-082/EA 91-043: **1988-89 Dodge Shadow/Sundance** shoulder belt malfunction.
- a. Opening resume, 6/5/91.
 - b. NHTSA to Chrysler, 6/11/91.
 - c. Chrysler response & selected attachments including owners manual change, service bulletin, warranty claims, 9/20/91.
 - d. Resume Upgrading PE to EA, 10/30/91.
 - e. NHTSA to Chrysler, 1/27/92.
 - f. Chrysler to NHTSA, regarding recall 92V-053, 4/7/92.
 - g. Closing resume, 4/20/92.
8. PE91-097/EA 91-048: **1987-88 Hyundai Excel** shoulder belt failure.
- a. Opening resume, 3/12/90.
 - b. NHTSA to Hyundai, 7/22/91.
 - c. Hyundai response, 10/1/91.
 - d. Resume upgrading PE to EA, 11/19/91.
 - e. NHTSA to Hyundai, 1/27/92.
 - f. R. Scaffidi to NHTSA, 2/12/92; NHTSA response, 2/26/92.
 - g. NHTSA to Hyundai, 3/4/92.
 - h. Hyundai response to 1/27 letter, 3/19/92. (selected attachments)
 - i. Hyundai response to 3/4 letter, 4/6/92.
 - j. Closing report & resume, 10/26/92.
9. DP90-016: **1987-91 General Motors** Door Mounted Belts.
- a. Petition File Index
 - b. CAS petition, 8/14/90.
 - c. NHTSA letter to GM, 8/23/90.
 - d. GM letter to NHTSA, 9/5/90.
 - e. GM letter to NHTSA, 10/11/90.
 - f. GM supplemental response, 10/22/90.
 - g. Attachment B to GM response.
 - h. GM Voluntary Submission, 10/22/90.
 - i. NHTSA petition analysis, 12/90.
 - j. NHTSA denial letter to CAS, 12/14/90; 55 FR 52122 (Denial of Petition), 12/19/90.
10. DP91-005: **1987-88 Sterling 825SL** automatic belt.
- a. Petition File Index
 - b. CAS Petition, 2/19/91.
 - c. NHTSA denial letter to CAS due to Recall 91V-077, 6/19/91.
11. PE93-042: **1988-92 Jaguar XJS and XJ6** automatic belt
- a. Opening resume, 5/4/93.
 - b. NHTSA to Jaguar, 5/7/93.
 - c. Jaguar response, 6/16/93. (selected attachments)
 - d. Closing resume citing Recall 93V-179
12. PE93-061: **1989-92 Hyundai Sonata** motorized belt jams.
- a. Opening resume, 8/12/93.
 - b. NHTSA to Hyundai, 7/22/93.
 - c. Hyundai response, selected attachments, 9/9/93.
 - d. Closing resume, 11/30/93; Hyundai Recall 93V-196, 11/29/93.
13. PE 93-078/EA 94-004: **1990-93 Pontiac Lemans** motorized belt jams.
- a. Opening resume, 9/16/93.

- b. NHTSA to GM, 9/22/93.
- c. GM to NHTSA, selected attachment (belt diagram) 11/10/93.
- d. Resume upgrading PE to EA, 1/31/94.
- e. NHTSA to GM, 2/18/94.

I. List of Recalls

J. Crash Tests

- 1. New Car Assessment Program
 - a. NHTSA description of NCAP Program
 - b. Summary of NCAP results through 6/91.
 - c. Volkswagen Jetta 1981 high injury scores.
 - d. Chevrolet Lumina 1990 belt failure.
- 2. Compliance Tests

K. Bibliography

- 1. Active Restraint Systems: Manual Seat Belts
- 2. Passive Restraint Systems: Airbags and Automatic Seat Belts
- 3. Index to SAE P-141, "Advances in Belt Restraint Systems: Design, Performance & Usage"
- 4. Index to SAE SP-690, "Restraint Technologies: Front Seat Occupant Protection"