Part 73 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 73—[AMENDED]

1. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 334, 336.

§ 73.202 [Amended]

2. Section 73.202(b), the Table of FM Allotments under Louisiana, is amended by adding Ringgold, Channel 253C3.

Federal Communications Commission.

John A. Karousos,

Chief, Allocations Branch, Policy and Rules Division, Mass Media Bureau.

[FR Doc. 00–7826 Filed 3–30–00; 8:45 am]

BILLING CODE 6712–01–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[DA 00–585; MM Docket No. 99–283; RM–9711]

Radio Broadcasting Services; Hays, KS

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: This document allots Channel 289C2 to Hays, Kansas, as that community's third local FM transmission service in response to a petition for rule making filed on behalf of Gatoradio Media Group, Inc. See 64 FR 51286, September 22, 1999. Coordinates used for Channel 289C2 at Hays, Kansas, are 38–57–15 NL and 99–26–43 WL. With this action, the proceeding is terminated.

DATES: Effective May 1, 2000. A filing window for Channel 289C2 at Hays, Kansas, will not be opened at this time. Instead, the issue of opening a filing window for this channel will be addressed by the Commission in a subsequent Order.

FOR FURTHER INFORMATION CONTACT: Nancy Joyner, Mass Media Bureau, (202) 418–2180.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's Report and Order, MM Docket No. 99–283, adopted March 8, 2000, and released March 17, 2000. The full text of this Commission decision is available for inspection and copying during normal business hours in the FCC's Reference Information Center (Room CY–A257), 445 Twelfth Street, SW., Washington, DC. The complete text of this decision may also be purchased from the Commission's copy contractor, International Transcription Service, Inc., 1231 20th Street, NW., Washington, DC 20036, (202) 857–3800.

List of Subjects in 47 CFR Part 73

Radio broadcasting.

Part 73 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 73—[AMENDED]

1. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 334, 336.

§ 73.202 [Amended]

2. Section 73.202(b), the Table of FM Allotments under Kansas, is amended by adding Channel 289C2 at Hays.

Federal Communications Commission.

John A. Karousos,

Chief, Allocations Branch, Policy and Rules Division, Mass Media Bureau.

[FR Doc. 00–7824 Filed 3–30–00; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 572

[Docket No. NHTSA–00–7052]

RIN 2127–AG78

Anthropomorphic Test Devices; 12-Month-Old Child Dummy

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

ACTION: Final rule.

SUMMARY: This document adopts design and performance specifications for a new 12-month-old infant dummy. The new dummy is especially needed to evaluate the effects of air bag deployment on children who are in rear-facing child restraints installed in the front passenger seat of vehicles. It will also provide greater and more useful information in a variety of crash environments to evaluate child safety. Adopting the dummy is a step toward using it in the tests we conduct to determine compliance with our safety standards. The use of the dummy in our compliance tests is being addressed in separate rulemaking proceedings.

DATES: The amendment is effective on May 30, 2000. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of May 30, 2000.

Petitions for reconsideration of the final rule must be received by May 15, 2000.

ADDRESSES: Petitions for reconsideration should refer to the docket number and notice number of the notice and be submitted to: Administrator, room 5220, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: For nonlegal issues: Stan Backaitis, Office of Crashworthiness Standards (telephone: 202–366–4912). For legal issues: Deirdre R. Fujita, Office of the Chief Counsel (202–366–2992). Both can be reached at the National Highway Traffic Safety Administration, 400 Seventh St., S.W., Washington, D.C., 20590.

SUPPLEMENTARY INFORMATION: This document amends our regulation for Anthropomorphic Test Devices (49 CFR Part 572) by adding Subpart R, containing specifications for a new, more advanced 12-month-old infant test dummy. The new dummy is more representative of humans than the dummies representing younger infants in Part 572, and allows the assessment of the potential for more types of injuries in automotive crashes. The new dummy can be used to evaluate the effects of air bag deployment on children in rear-facing child restraints and potentially on out-of-position children, and can provide a fuller evaluation of the performance of child restraint systems in protecting young children.

NHTSA has already specified a number of child test dummies in Part 572, including dummies representing a newborn, a 6-month-old and a 9-month-old child (subparts K, D and J, respectively). The dummies have been used to test child restraint systems to the requirements of Federal Motor Vehicle Safety Standard No. 213 (49 CFR 571.213). These test devices enable NHTSA to evaluate motor vehicle safety systems dynamically, in a manner that is both measurable and repeatable.

Today's final rule is part of NHTSA's effort to add to and improve the child dummies specified in Part 572. We recently amended Part 572 to add new, more advanced, Hybrid III-type test dummies representing a 6-year-old and a 3-year-old child. Together with the dummy adopted today, the new child test dummies will be used in tests we are specifying in our occupant crash protection standard (49 CFR 571.208) to assess the risks of air bag deployment for children, particularly unrestrained, improperly restrained, and improperly located children. The new child test dummies may also be incorporated into Standard No. 213 (49 CFR 571.213) for use in compliance testing of child restraint systems. Today's final rule only concerns adding the new 12-month-old dummy to Part 572. Issues relating to whether this and the other new dummies should be incorporated into the compliance tests for the motor vehicle safety standards are being addressed in separate rulemaking actions.

Summary of Final Rule

The 12-month-old dummy was developed as a child restraint air bag interaction dummy (hereinafter referred to as the CRABI 12 dummy). Its specifications consist of a drawing package that shows the component parts, the subassemblies, and the assembly of the complete dummy. It also defines materials and material treatment processes for all the dummy's component parts, and specifies the dummy's instrumentation and instrument installation methods. In addition, there is a manual containing disassembly, inspection, and assembly procedures, and a dummy drawings list. These drawings and specifications ensure that the dummies will vary little from each other in their construction and are capable of consistent and repeatable responses in the impact environment. The parts list and drawings are available for inspection in NHTSA's docket (room 5108, 400 Seventh St., S.W., Washington, D.C. 20590, telephone (202) 366–4949). (We are using NHTSA's docket because the drawings cannot be electronically scanned into the DOT Docket Management System.) Copies may also be obtained from Reprographic Technologies, 9000 Virginia Manor Road, Beltsville, MD 20705; Telephone: (301) 210–5600.

In addition to the drawings and specifications, we are establishing impact performance criteria for the CRABI 12 dummy. These criteria will serve as calibration checks and further assure the kinematic uniformity of the dummy and the absence of structural damage and functional deficiency from previous use. The criteria address head, neck, and thorax impact responses. This rule does not adopt the torso flexion requirements that we had proposed.

We have adopted generic specifications for all of the dummy-based sensors. For dummies incorporated into Part 572 in years past, the agency specified sensors by make and model. However, we believe that approach is unnecessarily restrictive and limits innovation and competition. Accordingly, consistent with the new approach taken for the sensors for the new Hybrid III-type 3-year-old, 6-year-old child and 5th percentile female adult dummies, we are adopting generic specifications for the sensors. These generic specifications reflect performance characteristics of sensors used in our evaluation tests of the dummy, which are identified by make and model in a NHTSA technical report ''Development and Evaluation of the CRABI 12-month-old Infant Dummy.'' A copy of this report is in the docket for the notice of proposed rulemaking that we published for this final rule (Docket No. 99–5156). Those sensor characteristics were also the basis for our discussions with a special task force of the SAE J211 Instrumentation Committee concerning the dummy.

Background

Air bag fatalities of children have raised serious concerns about how best to evaluate the safety of children in a variety of crash environments. We have been working with the automotive industry to assure greater safety in motor vehicles through the development, evaluation and application of significantly improved occupant protection technologies. As part of our overall program to achieve greater safety, we have sought to evaluate, for possible inclusion into our safety standards, new and improved test devices to evaluate the relationship between observed injuries and the forces causing them. One of the new test devices is a 12-month-old infant dummy.

The dummy was developed through the efforts of the Society of Automotive Engineers (SAE) Child Restraint Air Bag Interaction (CRABI) Task Force. The CRABI Task Force had determined that a new infant dummy was needed for testing and evaluating the effects of child restraints and air bags, as well as their interaction, on infants. The new dummy had to be capable of evaluating both rear facing and forward facing child restraints, as well as the injury potential of air bags on out-of-position children.

The SAE subsequently developed a 12-month-old infant dummy. The dummy's initial configuration and biomechanical response corridors were based on anthropometry and mass distribution of 12-month-old infants and on scaling techniques from the larger size Hybrid III-type dummies. The scaling reflected differences in geometry and dimensional characteristics of particular body segments and their elastic properties. Our initial evaluation of the dummy in 1996 revealed some structural and performance deficiencies which the SAE later remedied with substantial modifications to the dummy. The dummy continued to be modified until September 1998.

In the latter part of 1998, based on the results of an agency test program evaluating the 12-month-old dummy, we tentatively concluded that the dummy was ready for incorporation into Part 572. On March 8, 1999, we published an NPRM proposing to incorporate the CRABI 12 dummy into Part 572 as Subpart R, and invited comments (64 FR 10965)(Docket NHTSA–99–5156). The original 45-day comment period was extended on April 22, 1999, to June 22, 1999 (64 FR 19742), in response to a request for an extension of the comment period.

Comments on the NPRM

We received comments from seven organizations and one individual: Robert A. Denton, Inc. (Denton), TRW Vehicle Safety Systems Inc. (TRW), Advocates for Highway and Auto Safety (Advocates), Toyota Technical Center, USA, Inc. (Toyota), Transportation Research Center, Inc. (TRC), the Alliance of Automobile Manufacturers (Alliance), the SAE Dummy Testing Equipment Subcommittee (DTES), and Gelsys Perez, a private citizen. General Motors (GM) submitted test data to the docket for this rulemaking on January 25, 2000.

Advocates and Gelsys Perez expressly supported the incorporation of the CRABI 12 dummy into our regulations. The Alliance, Toyota, and Denton (a manufacturer of load cells used in crash dummies) generally supported the proposal with technical comments to correct or clarify various specifications in the regulatory text proposed for the dummy. TRC and TRW commented on technical aspects of the proposal. GM submitted neck calibration test data to supplement data provided by the Alliance. In general, the comments addressed the following issues: calibration requirements and procedures, instrumentation specifications, dimensional changes to dummy drawings, and the dummy's user's manual.

In addition to comments on specific aspects of the proposal, TRW suggested that it is premature for the agency to proceed with rulemaking and suggested ''a delay of at least 12 months to allow the industry time to test the dummy * * * to assess the appropriateness of the dummy as a compliance tool.'' TRW believes that the industry has had insufficient time to test the CRABI 12 to ascertain performance and reliability due to the unavailability of the latest dummy configuration from the manufacturer. The commenter contends that it has been unable to test the dummy under the requirements proposed in the agency's advanced air bag rulemaking (Docket NHTSA 98–4405, Notice 1) and therefore cannot make judgments as to the suitability of the CRABI 12 dummy for these test conditions.

We do not agree that this rulemaking should be delayed a year. Since the issuance of the NPRM, TRW has had sufficient time to procure a dummy and conduct enough tests to assess the dummy's appropriateness as a compliance tool. The dummy specified today differs very little from the dummy specified in the NPRM. There has been an ample supply of the dummy for parties to test and a sufficient amount of time to test. Since publication of the NPRM, GM has tested two dummies and has submitted its data to the docket (see 99–5156–14). Delaying this rulemaking would postpone use of the dummy in our compliance tests evaluating the injury causing potential of air bags on infants. Because the dummy has been shown to be a reliable test instrument time after time in rigorous testing, as discussed in a technical report cited in the NPRM,[1] we believe that delays in using the dummy for evaluating the safety of air bags cannot be justified.

Calibration Requirements and Procedures

Head

To calibrate the dummy's head, the agency proposed requirements for the head's response in drops onto the forehead and onto the rear of the head (§ 572.152). The head response on the forehead was proposed to be unimodal (*i.e.,* consisting of an acceleration-time curve which has only one prominent peak) and not less than 100 g or more than 120 g; the response on the back of the head was proposed to be not less than 55 g or not more than 71 g. The regulatory text proposed for the CRABI 12 dummy stated that the resultant acceleration versus time history curve shall be unimodal, and the oscillations occurring after the main pulse must be less than 10 percent of the peak resultant acceleration.

In its comments, TRW states that results from head drop tests indicate that a 10 percent limit on subsequent peaks after the first peak resultant acceleration is not sufficient for the dummy. TRW believes that none of the data presented by the agency, except for one rear impact test, met the 10 percent oscillation limit of the peak resultant head acceleration. The commenter suggests that a 15 to 20 percent oscillation limit of subsequent peaks would be more appropriate.

Similarly, TRC (a test facility that uses and calibrates test dummies) notes that the oscillation requirement should be changed because the 10 percent-of-peak definition does not fit the data beyond the primary peak. The commenter further states that truncating the time frame does not seem advisable. The commenter provided test data consisting of two head drop resultant acceleration plots, one front and one rear, that illustrate typical curves which have second or third peaks exceeding 10 percent of the first peak. The commenter states that the DTES has determined that 17 percent for front and 16 percent for rear would be more appropriate and suggests changing the requirement to reflect these values.

The Alliance also believes that the 10 percent limit on subsequent oscillations cannot be met. The commenter suggests that a limit of 20 percent is appropriate.

We agree that the 10 percent oscillation limit should be widened for this dummy. We proposed the 10 percent unimodal requirement based on our experience with dummies having metallic skulls. However, the CRABI 12 dummy's head has a non-metallic skull which responds in drop tests with a lower natural frequency and with less structural damping than heads with aluminum skulls,[2] which makes it more difficult to meet the 10 percent limit on oscillatory responses. Upon reevaluation of our test data, we agree that oscillatory head accelerations following the primary response peak could be as high as 14.5 percent in frontal impacts and 13.6 percent in rear impacts, as compared to an aluminum skull (with a vinyl skin cover) at less than 10 percent. Considering the head drop test data on a statistical basis, values of subsequent accelerations at 2 standard deviations (s.d.) could result in oscillation peaks as high as 16.4 percent in frontal impacts and 15.4 percent in rear impacts. Accordingly, this final rule specifies that for both frontal and rear head drop tests, oscillations occurring after the main pulse must be less than 17 percent of the peak resultant acceleration.

The regulatory text proposed for the CRABI 12 dummy specifies in section 572.152(c)(5) a two-hour wait between successive tests on the same head. TRC suggests that the waiting period should be changed to apply only to successive tests on the same side of the head (front or rear). We agree that the two-hour waiting time need apply to only head drops on the same side. The skin on the head needs a recovery period between tests, but a recovery time is not needed if the test is conducted on the opposite sides of the head. Thus, to allow testing of the head to proceed more expeditiously, this rule specifies that the two-hour waiting period applies to successive tests of the head assembly "at the same impact point."

Neck Flexion and Extension

For calibration, the agency proposed a pendulum mounted headform-neck assembly impact test and corresponding neck flexion and extension performance requirements (§ 572.153).

Neck Flexion Calibration Requirements

For flexion, the regulatory text proposed for the CRABI 12 dummy stated that:

(1) plane D of the headform must rotate in the direction of preimpact flight with respect to the pendulum's longitudinal centerline not less than 75 degrees and not more than 89 degrees occurring between 42 milliseconds (ms) and 56 ms from time zero; (2) the peak moment about the occipital condyles must not be less than 37 Newton meters (N-m) and not more than 45 N-m occurring within the minimum and maximum rotation interval; and (3) the positive moment shall decay for the first time to 5 N-m in the time frame between 60 ms and 80 ms.

TRW, TRC and the Alliance suggest that according to DTES-compiled data, some of the proposed calibration corridors need to be adjusted to incorporate a larger sampling of tested necks. The commenters recommend the following adjustments: Maximum rotation between 75 and 86 degrees; time at peak rotation between 49 and 57 ms; peak moment during the specified rotation interval not less than 34 and not more than 47 Nm; and moment decay time to 5 N-m (from time zero) not less than 66 and not more than 78 ms. The commenters state that these corridors are based on the statistical average of the DTES data ± two standard deviations.

Maximum rotation. We are lowering the upper limit of the headform peak rotation corridor by three degrees from

[1] "Development and Evaluation of the CRABI 12-Month-Old Infant Crash Test Dummy (January, 1999 version)."

[2] We do not believe the lower natural frequency of this dummy's head has any significant consequences on the test results, unless the dummy's head was going to impact rigid objects. Test results in a variety of child restraints with and without head impact as well as in air bag out-of-position deployments did not indicate any resonance-associated problems that would have affected the impact measurements.

the proposal of 89 degrees to 86 degrees while retaining the lower limit at 75 degrees. The suggested narrower rotation range is based on a statistical analysis of a much larger data base than that available to the agency at the time the NPRM was published and thus is likely to be more representative of actual performance. Further, it limits variability to approximately 7 percent which is in the ''good'' performance range. It also is in agreement with the range proposed by the commenters.

Time at peak rotation. The regulatory text proposed for the CRABI 12 dummy specified headform rotation versus time requirements in § 572.153(b)(1)(i) that were identical in concept to the requirements for the 3-year-old child dummy specified in Subpart C of Part 572. TRW, TRC and the Alliance suggested changes to the requirements. Upon further consideration, we have decided to delete the headform rotation versus time requirement altogether. When the Subpart C dummy was added to Part 572 in 1979, a means of measuring bending moments in the neck and combining them with the motion of the head was not available. However, in 1991 a moment-measuring load cell became available for this dummy. With the availability of a six-axis load cell for the CRABI 12 dummy, it became possible to measure the peak moment and to relate it to the rotation of the headform. This made the headform displacement-rotation versus time requirement redundant. We believe that specifying a minimum-maximum peak moment within a maximum headform rotation window is sufficient to control the dynamic properties of the neck (to control head kinematics), and that headform rotation in time requirement would serve no purpose. Accordingly, this final rule does not adopt the proposed headform rotation versus time requirements.

Peak moment during rotation interval. TRW, TRC and the Alliance suggested that the proposed peak moment of 37–45 N-m within the maximum headform rotation corridor should be revised to a range between 34 and 47 N-m. The commenters indicate that the recommendation of the wider peak moment corridor is based on DTES-compiled data ± 2 s.d. However, they do not indicate if the moments listed by DTES were peak moments at the maximum headform rotation or peak moments within the allowed time corridor. Upon receiving these comments, we reviewed the DTES reported data summary in Attachment 11 of the DTES meeting minutes of April 14, 1999 (a copy of which is in the docket for the NPRM, Docket 99–5156). The data indicate that the average performance for 23 necks was 40.19 N-m ± a 2.31 s.d., leading to a response range of 35.56 N-m to 44.81 N-m. It is accepted practice in the biomechanics community to judge the adequacy of a component's variability in subsystems tests as 0–5% being in the excellent range, 5–8% good, 8–10% marginally acceptable and above 10% not acceptable. Using the 10% value as the maximum allowable variability and rounding the values to the lowest and the highest next numbers, we believe that the existing data support neck performance at 36 N-m at the lower limit and 45 N-m at the upper limit. We are accordingly specifying that range.

Moment decay time to 5 N-m (from time zero). TRW, TRC and the Alliance suggested reducing the time corridor for the positive moment decay at the first 5 N-m from the proposed range of 60–80 ms to 66–78 ms. While these test value recommendations are supported by the test data, we believe the data sample is still too small to justify the adoption of narrower corridor limits. Also, we do not know how narrowing the corridor might affect the rejection rate of manufactured necks. Further, we see no evidence that narrowing the corridor would lead to better performing necks. Accordingly, we are adopting the time duration for moment decay as proposed in the NPRM.

TRC suggested that the requirements be clarified to specify that the peak moment occurs during the time the angle is between the ''passing'' head displacement-rotation limits, rather than time limits. The commenter also suggested it would be clearer to specify that the moment of interest is not the Y-axis moment which reads directly from the load cell, but is a calculated moment reflecting its correction to the occipital condyle. TRC suggested including the actual equation for moment calculation.

The regulatory text proposed for the CRABI 12 dummy specifies in section 572.153(b)(1)(ii) that the moment is to be calculated about the occipital condyle. While the proposed regulatory text does not expressly provide the equation to be used, the proposed text incorporates by reference SAE J1733 ''Sign Convention for Vehicle Crash Testing,'' which includes the equation for moment calculation. The document also defines the proper polarities of the signal measured in a crash test which are critical to the calculation of the moment about the occipital condyle. Nonetheless, because the regulatory text for the Hybrid III-type 6-year-old child and 5th percentile female adult dummies include an equation for moment calculation, we have added the equation to the text for the CRABI 12 dummy. Accordingly this final rule adopts the following language in new § 572.153(b)(1)(iii): ''The moment shall be calculated by the following formula: Moment (Nm) = My − (0.005842m)×(Fx), where My is the moment about the y-axis, Fx is the shear force measured by the neck transducer (drawing SA572–S23) and 0.005842m is the distance from the point at which the load cell measures the force to the occipital condyle.''

Neck Extension Calibration Requirements

For extension, the regulatory text proposed for the CRABI 12 dummy specified that: (1) Plane D of the head must rotate in the direction of preimpact flight with respect to the pendulum's longitudinal centerline not less than 78 degrees and not more than 90 degrees occurring between 58 ms and 66 ms from time zero; (2) the peak negative moment about the occipital condyles must have a value not more than −11 N-m and not less than −23 N-m occurring within the minimum and maximum rotation interval; the negative moment shall decay for the first time to −5 N-m in the time frame between 78 and 90 ms after time zero.

TRW, TRC and the Alliance, referring to DTES data, indicate that some of the calibration corridors need to be adjusted to reflect a larger sampling of tested necks. These commenters believe that the neck extension calibration corridors be based on DTES-developed values as follows: Maximum rotation should be 81–92 degrees; time at peak rotation should be 67–78 ms; peak moment during the specified rotation interval should be −12 to −23 Nm; and moment decay time to −5 N-m (from time zero) should be 76–84 ms. The commenters state that these corridors are based on the statistical average of the DTES data ±2 s.d.

Maximum rotation. The three commenters recommended adjusting the headform peak rotation corridor from the proposed 78–90 degree range to 81–92 degrees. Our review of the furnished additional data support an upward shift of the proposed range. However, the data also show that the lower limit should be set at 80 degrees rather than at 81 degrees. Setting the limit at 81 degrees would fail a greater number of necks, even though those necks would be considered satisfactory on a statistical basis. Accordingly, the new rotation corridor is set at 80–92 degrees.

Time at peak rotation. The regulatory text proposed for the CRABI 12 dummy specified headform extension rotation versus time requirements in

§ 572.153(b)(2)(i) that were identical in concept to the requirements for the 3-year-old child dummy specified in Subpart C of Part 572. As discussed in the previous section on neck flexion requirements, we believe that specifying a minimum-maximum peak moment within a maximum headform rotation window is sufficient to control the dynamic properties of the neck (to control of head kinematics) without the need to establish redundant specifications for headform rotation versus time. Accordingly, this final rule does not adopt the proposed headform rotation versus time requirements.

Peak moment during rotation interval. The three commenters suggested that the NPRM's proposed peak moment of −11(−)−23 N-m within the maximum headform rotation corridor should be revised to −12(−)−23 N-m. Based on our analysis of all of the available test data, we agree with the suggestion to reduce the width of the peak moment corridor, and accordingly adopt acorridor of −12(−)−23 N-m.

Moment decay time to 5 N-m (from time zero). TRW, TRC and the Alliance suggested that we reduce the time corridor for the negative moment decay at the first −5 N-m from 78–90 ms to 76–84 ms. We agree that the data show that the lower limit of the time corridor should be lowered to 76 ms. However, we see no benefit in narrowing its range. Narrowing the range would fail a greater number of necks, even though those necks perform satisfactorily in all other respects. The commenters have not provided nor do we have any evidence that a narrower corridor at 76–84 ms would lead to better performing necks. Accordingly, this final rule reduces the lower limit to 76 ms while retaining the upper time limit at 90 ms.

In response to TRC's comment, as we did with regard to the neck flexion requirements, this final rule adopts new section 572.153(b)(2)(iii) to set forth the equation for calculating the moment. The reason for adding the equation is to clarify how the moment is calculated.

Issues Relating to Neck-Headform Test Procedure

The proposed regulatory text for the CRABI 12 dummy stated in § 572.153(c)(4)(i) that ''Time zero is defined as the time of initial contact between the pendulum striker plate and the honeycomb material. The pendulum accelerometer data channel should be at the zero level at this time.''

Toyota suggests that all data channels for the neck extension and flexion tests be set at the zero level at time zero, rather than only the pendulum accelerometer data channel, as was done for the Hybrid III-type 6-year-old and 5th percentile adult female dummies. We disagree. The CRABI 12 dummy neck is considerably more flexible than those of the 6-year-old and 5th percentile female adult dummies. As a result, the head-neck complex of the CRABI 12 dummy experiences considerable pre-impact kinematic lag as the pendulum accelerates downward towards the vertical. If all data channels, including rotation and moment channels, were made zero at impact, as Toyota suggests, the pre-impact neck rotation lag would not be accounted for in the total rotation of the neck, which would not be in line with the method by which biomechanical moment-rotation corridors were established.

The neck biomechanical response corridors were based on ''flexion'' and ''extension'' kinematics, or forward and backward bending of the neck from its neutral position, respectively, due to inertial forces of the head. In order to measure true flexion and extension of the dummy during calibration tests, the zero level of the data channels must be established prior to initiation of the drop test, when the longitudinal centerlines of the neck and pendulum are parallel to each other, i.e., when the pendulum hangs down in a vertical position. The pendulum accelerometer data channel, on the other hand, must be zeroed at time zero (the instant the pendulum engages the hexcell) in order to get the correct integrated velocity curve from which the velocity readings are taken at specific time intervals. Accordingly, as proposed in the NPRM, the final rule retains the time zero setting procedure for the pendulum data channel, but not for the neck data channels.

Toyota requested that the regulatory text specify a 30-minute recovery time between successive neck tests. The proposed regulatory text in § S572.156(m) specified a separation of 30 minutes between performance tests of the same component, segment, or assembly, which includes the neck. Accordingly, no change is needed to meet Toyota's concerns and the text is adopted as proposed.

Thorax

For calibration, we proposed a thorax response corridor in terms of peak resistance force exerted by the dummy's sternum on the penetrating impactor. The regulatory text proposed a peak force response corridor between 1600 N and 1700 N.

TRW, TRC and the Alliance believe that there is no need for this test. TRW states that the thorax consists of a rigid steel substructure with a foam pad attached to it. ''Since there are no moving parts within the chest area as well as no method by which chest displacement can be measured, a dynamic calibration test would seem inappropriate.'' TRW suggests that if NHTSA believes that a test is needed to check the foam pad, a standard ASTM compression test would be more appropriate. Further, TRW states that the proposed corridor of 1600 to 1700 N is not accurate because it was developed based on only four tests conducted on a single dummy. TRW's tests of its own dummy found that the average peak resistive force was 1830 N.

TRC states that the dummy was designed with no deflecting rib components and that a ''torso impact test when there is no chest deflection to measure gives little data; the compression characteristics of the foam can be determined without a dynamic test or by simply spelling them out as a manufacturer's specification of foam density/compression characteristics.'' The Alliance states ''It is our belief that the performance of the thorax in impact is best assured by specifying the ratio of the reactants for the foam from which the insert is molded, the method used by the manufacturer of the dummy. The foam-in-place reactant ratio is adjusted until a test block of the material exhibits the required compression force-deflection characteristic. The insert is then molded from the same mix of reactants.''

We do not agree with the suggestion to abolish the proposed thorax impact response requirement. In each of the Federal motor vehicle safety standards that use test dummies in compliance tests, one of the key injury assessment parameters is the thorax acceleration response. The suggestion that a periodic inspection test can be used in place of the proposed thorax impact test provides no assurance that the available material in conjunction with the supporting thorax structure will be capable of consistent and repeatable impact response. This assurance is particularly needed for thorax impacts because foams degrade with the number of test applications, different loading levels, and time. We do not know of any ASTM load-deflection tests for foams that would consistently correlate with dynamic-impact responses as installed and used on the dummy over time, and no information on that issue has been provided by the commenters. Accordingly, we are adopting a dynamic impact response requirement in the regulatory text for the CRABI 12 dummy.

The Alliance and TRW disagree with the peak force measurements proposed in the regulatory text for the dummy. The Alliance suggests revising the thorax impact specification from the proposed 1600–1700 N level to 1526–1880 N. While TRW states that it ran impact tests on its own dummy and found the average peak resistance force to be 1830 N, TRW did not provide data to support this claim. Data in the minutes of the DTES meeting of June 2, 1999, provide a compilation of impact test results from three groups of dummies tested at three different facilities. The average response value for those test was 1695 N with a s.d. of 89 N, suggesting a response corridor, based on 2 s.d., between 1517 N and 1872 N. The majority of the data (16 dummies) were from FTSS, and three were from other users.

An indication of what can be expected from a reasonably controlled batch of foams is found in early data from the combined NHTSA and FTSS tests, as reported in DTES minutes of April 14, 1999. NHTSA tested one dummy and FTSS tested three. These tests yielded an average response of 1670 N with a s.d. of 63. Subsequently reported data from General Motors (DTES minutes of June 2, 1999), based on two dummies, yielded an average response 1622 N with an s.d. of 54. The latter two test series suggest corridor widths based on 2 s.d. at 1544–1796 N for the former and 1514–1730 for the latter. Based on these two test series, we believe that with some controls at the dummy manufacturer level, the dummies can meet a response range of 1514–1796 N. This suggested corridor would be larger than that proposed in the regulatory text, but it would reflect a more realistic data base, and it would be in the good to marginal acceptance range at 8.5 percent.

TRC states that the pendulum used in the thorax impact test should be specified in ‘‘generic’’ terms. We agree. In response to similar comments in our rulemakings on the Hybrid III-type 3-year-old, 6-year-old and 5th percentile adult female dummies, we have developed generic impactor specifications for those new dummies. Similar to what we have done with respect to the impactor specifications in those rulemakings, this final rule describes the thorax impactor using generic specifications.

TRC suggests that the positioning of the dummy in the thorax assembly test procedure needs to be modified to match the placement shown in proposed Figure R5. The proposed regulatory text (§ 572.154(c)(3)) stated that the dummy is positioned with fingers barely touching the seating surface plane. However, Figure R5 showed the dummy’s fingers as well above the seating surface. We agree that the dummy’s arms are too short for the fingers to touch the seating surface plane and have made the necessary corrections to § 572.154(c)(3).

The regulatory text proposed for the CRABI 12 dummy specifies that the dummy is dressed in a light-weight cotton stretch short-sleeve shirt and above-the-knee pants for the thorax impact test (§ 572.154(c)(2)). TRC states that these specifications for the clothing do not match the drawing package for the dummy. The commenter also states that it believes that all tests of the dummy have been run with the dummy in long-sleeved and ankle length clothing. Upon reviewing our testing experience with the dummy, we agree that the clothing that has been used consisted of long-sleeved shirt and long-legged pants. We have revised the paragraph in question to refer to such clothing, and have included a limit on how much the clothing may weigh. That specification more precisely describes the clothing that is used on this dummy.

Torso

The regulatory text proposed for the CRABI 12 dummy specified in § 572.155 the following torso flexion test and performance requirements: (1) When the torso is flexed 45 degrees from vertical, the resistance force must not be less than 90 N and not more than 120 N, and (2) upon removal of the force, the upper torso assembly returns to within 10 degrees of its initial position.

TRW, TRC and the Alliance question the need for this procedure in view of the anticipated use of the CRABI 12 test dummy in compliance tests. These commenters believe that the dummy will likely be used only when restrained in a rear-facing child restraint system, and thus there is no need to determine the flexion articulation between upper and lower halves of the torso assembly. The commenters suggest that periodic inspections would be adequate to assure the dummy’s performance instead of a calibration test.

While we agree with the commenters that the dummy in crash tests will likely be restrained in a rear-facing child restraint, we had proposed the torso flexion test primarily to address an overall variability problem. At the time the NPRM was issued, we believed that a dummy’s torso flexion stiffness could substantially influence the variability of the dummy’s impact response when the dummy’s upper torso moved considerably with respect to the lower half of the torso. In response to the comments received on this issue, we conducted additional sled tests in January 2000 and found that the dummy’s response variability we had initially observed was caused by insufficient support of the child restraint seat back on the standard seat assembly. Once the child restraint was provided sufficient support, there was a substantial reduction in the dummy’s impact response variability. (We have placed a report of this testing in the docket for this final rule.) Accordingly, we agree with the commenters that the torso flexion stiffness test is not needed, and that periodic inspections will be adequate to assure the dummy’s structural integrity and performance consistency. Such inspection will be included in the Procedures for Assembly, Disassembly and Inspection (PADI) document (see discussion below on the PADI). Accordingly, we have not adopted the torso flexion requirement as proposed in § 572.155.

Other Issues Relating to Calibration Requirements and Procedures

Post-Test Calibration Requirement

The Alliance suggests that the specifications for the CRABI 12 dummy should include a requirement that the dummy meet calibration specifications following a NHTSA compliance test. The commenter states that Part 572 has such a requirement for dummies adopted in years past, while recent rulemakings on the new Hybrid III-type 3-year-old, 6-year-old, and 5th percentile female adult have not included such a requirement. The Alliance believes that the post-test dummy state of compliance is very important because test results indicating a noncompliance may be dummy-related. Without post-test dummy verification (calibration), the commenter claims, no one can determine with reasonable certainty whether a non-compliance is due to a test dummy anomaly or to the vehicle’s safety deficiency.

We disagree. The pre-test calibration should adequately address the suitability of the dummy for testing. We are concerned that the post-test calibration requirement could handicap and delay our ability to resolve a potential vehicle or motor vehicle equipment test failure solely because the post-test dummy might have experienced a component failure and might no longer conform to all of the specifications. On several occasions during the past few years, a dummy has been damaged during a compliance test such that it could not satisfy all of the post-test calibration requirements. Yet the damage to the dummy at the time it occurred did not affect the dummy’s ability to accurately measure the performance requirements of the standard. We are also concerned that the interaction between the vehicle or equipment and the dummy could be directly responsible for the dummy's inability to meet calibration requirements. In such an instance, the failure of the test dummy should not preclude the agency from seeking a compliance investigation. Thus, we conclude that a post-calibration requirement would not be in the public interest, since it could impede our proceeding with a compliance investigation in those cases where the test data indicate that the dummy measurements were not markedly affected by the dummy damage or that some aspect of the vehicle or its equipment design were responsible for the dummy failure.

TRC also asks that a provision be added to the test procedure to specify that a light coat of talcum powder is applied to the headform skin to reduce the tackiness of the urethane. The agency has addressed the powdering question during the formulation of the Part 572 Subpart B rulemaking (50th percentile male) and has evaluated its merits in this rulemaking. We rejected the powdering issue on the basis of subjectivity of the procedure, which could unnecessarily complicate compliance tests in which the CRABI 12 dummy is used. Additionally, we believe that powder is neither needed nor helps to assure consistent head performance. We found no benefits or advantages in using the powder. Accordingly, we have not adopted the suggested change.

Instrumentation

The agency proposed generic specifications for all of the dummy-based sensors, which included—

(1) head, thorax, and pelvis accelerometers designated in drawing SA572–S4 and shown in drawing 921022–000;

(2) force and/or moment transducers:

(a) pubic load cell SA572–S24,

(b) lumbar spine and neck force moment transducer SA572–S23, and

(c) shoulder load cell SA572–S25.

Comments on proposed generic sensors were received from the Alliance and Denton. The Alliance supports the intent of the agency in proposing generic specifications, but finds the specifications not sufficiently generic. Denton commented on the need to revise specifications in drawings SA572–S23, –S24, –25, and 921022–35 (pelvis structure weldment).

Weight Specifications

Denton recommends changing the weights of the specified load cells in SA572–S23, –S24 and –S25. Denton also believes that several drawings should indicate a maximum weight, and not a nominal weight. We concur with this suggestion. While we would prefer to establish nominal weights for the load cells,[3] there is no acceptable method of weighing the load cells, particularly those containing integral cables. Because of this, weight tolerances for the load cells could not be established. Until an acceptable weighing procedure is developed, dummy manufacturers must take into account the variabilities of load cell weights to assure that each subsystem weight specification, as shown in sheet 5 of drawing 921022–000, is met. Accordingly, we have specified in the sensor drawings only maximum weights, as follows:

—Drawing SA572–23 (neck and lumbar spine)—0.34 lb maximum (each);
—Drawing SA572–24 (pubic)—0.58 lb maximum; and
—Drawing SA572–25 (shoulder)—0.14 lb maximum.

Denton also suggests that the load cell weight specifications should clarify that the specified weight does not include any cable or mounting hardware, except as noted. We disagree with this suggestion. All of the load cells specified by the agency include weights associated with 8 in. of cable length.

Accelerometer Specifications

The Alliance supports our intent to propose generic specifications for sensors to reduce the restrictive nature of instrumentation specifications seen in the past. However, the commenter believes that the proposed sensor specifications are not sufficiently generic. The commenter states that the generic specifications would require the use of a certain model made by a specific manufacturer, having a particular seismic mass and mounting hole configuration. The commenter notes that other accelerometers might be acceptable but can not be used under the proposed specification. The Alliance suggests that the agency develop a more functional description.

We are aware of at least two manufacturers that have in the past or are now marketing accelerometers that match the specifications listed in the drawings. The specific hole patterns are needed for mounting the accelerometers in several locations in this dummy as well as all of the other Part 572 dummies. Although the sensing mass of the accelerometer is defined relative to its attachment surface, hole patterns and mounting platform dimensions need to be known to assure the existence of compatible space, mating surfaces and methods of attachment in the areas where the accelerometers are to be mounted. In addition, shock and vibration standards require that matching mounting surfaces and attachments have structural integrity for vibration control purposes which we believe are sufficiently defined in the drawing package. While the Alliance's suggestion that the agency develop a "more functional description" of the sensors is attractive as a concept and warrants further study, we do not believe that the technology is sufficiently developed for implementation at the present time.

Pubic Load Cell Mounting

Denton suggests changes to drawing 921022–035 to specify an orientation of two tapped holes in the pelvic structure weldment to accommodate the mounting of the pubic load cell SA572–S24. If that is not done, Denton states, it will not be possible to insert a wrench through the access holes in the load cell to loosen the set screws which thread into detail 3 of drawing 921022–035. Denton suggests that "the top surface of the weldment (which is ground flat to within 0.001) be indicated as datum A, and that a callout be added indicating that the centerlines of the holes are perpendicular to the datum surface A within 0.020 inches."

We agree with the comment and have revised drawing 921022–35 in line with the suggested changes.

Accelerometer Frequency Response

Denton, in its comments on frequency response for the Hybrid III-type 5th percentile female adult dummy (Docket No. NHTSA–1998–4283–10), suggests adding a note on each of the sensor drawings indicating "* * *what CFC channel class should be used for recording data with that type of transducer." This is a reasonable suggestion, since the SAE J211 clearly deals with the entire data channel and not with a particular sensor within the data channel. Accordingly, a note has been added to the drawings saying that "Signal output must be compatible with and recordable in the data channel defined by SAE J211."

[3] Load cell weights with only "maximum" weight designations could vary considerably. While not specifying a minimum load cell weight may not matter much for larger adult test dummies, lack of such a specification poses a potentially larger problem for the smaller child test dummies.

Title and Features of the Procedures for Assembly, Disassembly and Inspection

The preamble for the NPRM on the CRABI 12 dummy notes that the final rule package will contain a ''User's Manual'' for the dummy. The manual would contain identified procedures on how to inspect, assemble and disassemble the dummy, similar to procedures published for other Part 572 dummies. Responding to this issue, DTES noted that it has developed a User's Manual for this dummy and suggested its incorporation into Part 572. There are a number of reasons why we decline to incorporate the DTES User's Manual as a reference document.

DTES's manual contains, besides inspection and assembly procedures, several calibration procedures and response requirements. Calibration procedures and response requirements are set forth by this final rule in Part 572. It is not advisable to reference a document which could contain calibration procedures and response requirements that may be inconsistent or in conflict with the Part 572 requirements. Further, while the DTES manual appears to be reasonably well developed and well suited for research use, it has a number of redundancies and ambiguities which render it less suited for regulation and compliance testing purposes. Further, the DTES User's Manual is copyrighted by both the SAE and FTSS, which restrict its use and distribution as a public document.

Because we concluded that the DTES manual should not be incorporated into Part 572, we generated and incorporated into Part 572 our own document which is limited to addressing procedures for inspection, assembly and disassembly of the CRABI 12 test dummy. We have titled the document *Procedures for Assembly, Disassembly and Inspection (PADI), Subpart R, CRABI 12-month-old Infant Crash Test Dummy (CRABI–12, Alpha version), March 2000.* Our incorporation of the PADI does not prevent anyone from using the procedures contained in the DTES User's Manual. However, persons using the DTES document in tests assuring compliance with our safety standards are responsible for ensuring that the test dummies they use meet the specifications adopted today and are suitable for compliance testing.

Nomenclature

The CRABI 12 test dummy is incorporated in Part 572 as Subpart R. Today's final rule designates the dummy adopted today as the alpha version. Further significant changes to the dummy will be designated as beta, gamma, etc., to assure that modifications can be easily tracked and identified.

Regulatory Analyses and Notices

Executive Order 12866 and DOT Regulatory Policies and Procedures

This rulemaking document was not reviewed by the Office of Management and Budget under E.O. 12866, ''Regulatory Planning and Review.'' The rulemaking action is also not considered to be significant under the Department's Regulatory Policies and Procedures (44 FR 11034, February 26, 1979).

This document amends 49 CFR Part 572 by adding design and performance specifications for a new 12-month-old child dummy that we may later incorporate into Federal motor vehicle safety standards. This rule indirectly imposes requirements on only those businesses which choose to manufacture or test with the dummy, in that the agency will only use dummies for compliance testing that meet all of the criteria specified in this rule. It may affect vehicle and air bag manufacturers if it is incorporated by reference into the advanced air bag rulemaking, and may affect child restraint manufacturers if it is incorporated into the child restraint system standard.

The cost of an uninstrumented 12-month-old dummy is approximately $19,000. Instrumentation would add $15,000 to $43,000 to the cost, depending on the amount of instrumentation the user chooses to add.

Because the economic impacts of this proposal are minimal, no further regulatory evaluation is necessary.

Executive Order 13132

We have analyzed this rule in accordance with Executive Order 13132 (''Federalism''). We have determined that this rule does not have sufficient Federalism impacts to warrant the preparation of a federalism assessment.

Executive Order 13045

Executive Order 13045 (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under E.O. 12866, and (2) concerns an environmental, health or safety risk that NHTSA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, we must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by us.

This rule is not subject to the Executive Order because it is not economically significant as defined in E.O. 12866. It also does not involve decisions based on health risks that disproportionately affect children.

Executive Order 12778

Pursuant to Executive Order 12778, ''Civil Justice Reform,'' we have considered whether this rule will have any retroactive effect. This rule does not have any retroactive effect. A petition for reconsideration or other administrative proceeding will not be a prerequisite to an action seeking judicial review of this rule. This rule does not preempt the states from adopting laws or regulations on the same subject, except that it does preempt a state regulation that is in actual conflict with the federal regulation or makes compliance with the Federal regulation impossible or interferes with the implementation of the federal statute.

Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996) whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (*i.e.,* small businesses, small organizations, and small governmental jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

I have considered the effects of this rulemaking action under the Regulatory Flexibility Act (5 U.S.C. § 601 *et seq.*) and certify that this rule will not have a significant economic impact on a substantial number of small entities. The rule does not impose or rescind any requirements for anyone. The Regulatory Flexibility Act does not, therefore, require a regulatory flexibility analysis.

National Environmental Policy Act

We have analyzed this amendment for the purposes of the National Environmental Policy Act and determined that it will not have any significant impact on the quality of the human environment.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995, a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid OMB control number. This rule does not have any new information collection requirements.

National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, section 12(d) (15 U.S.C. 272) directs us to use voluntary consensus standards in its regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.,* materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of Automotive Engineers (SAE). The NTTAA directs us to provide Congress, through OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

The CRABI 12 test dummy that is the subject of this document was developed under the auspices of the SAE. All relevant SAE standards were reviewed as part of the development process. The following voluntary consensus standards have been used in developing the dummy: SAE Recommended Practice J211, Rev. Mar95 ''Instrumentation for Impact Tests''; and SAE J1733 of 1994–12 ''Sign Convention for Vehicle Crash Testing.''

Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA) requires Federal agencies to prepare a written assessment of the costs, benefits and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local or tribal governments, in the aggregate, or by the private sector, of more than $100 million in any one year (adjusted for inflation with base year of 1995). Before promulgating a NHTSA rule for which a written statement is needed, section 205 of the UMRA generally requires us to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule.

This rule does not impose any unfunded mandates under the Unfunded Mandates Reform Act of 1995. This rule does not meet the definition of a Federal mandate because it does not impose requirements on anyone. Further, it will not result in costs of $100 million or more to either State, local, or tribal governments, in the aggregate, or to the private sector. Thus, this rule is not subject to the requirements of sections 202 and 205 of the UMRA.

Regulation Identifier Number (RIN)

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

List of Subjects in 49 CFR Part 572

Incorporation by reference, Motor vehicle safety.

In consideration of the foregoing, 49 CFR Part 572 is amended as follows:

PART 572—ANTHROPOMORPHIC TEST DUMMIES

1. The authority citation for Part 572 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117 and 30166; delegation of authority at 49 CFR 1.50.

2. 49 CFR Part 572 is amended by adding a new Subpart R consisting of 572.150–572.155, to read as follows:

Subpart R—CRABI 12-Month-Old Infant Crash Test Dummy, Alpha Version

Sec.

Subpart R—12-Month-Old Infant, Alpha Version

§ 572.150 Incorporation by reference.

(a) The following materials are incorporated by reference in this subpart R.

(1) A drawings and specifications package entitled ''Parts List and Drawings, Subpart R, CRABI 12-Month-Old Infant Crash Test Dummy, (CRABI–12, Alpha version), March 2000'' and consisting of :

(i) Drawing No. 921022–001, Head Assembly, incorporated by reference in §§ 572.151, 572.152, 572.154, and 572.155;

(ii) Drawing No. 921022–041, Neck Assembly, incorporated by reference in §§ 572.151, 572.153, 572.154, and 572.155;

(iii) Drawing No. TE–3200–160, Headform, incorporated by reference in §§ 572.151 and 572.153;

(iv) Drawing No. 921022–060, Torso Assembly, incorporated by reference in §§ 572.151, 572.154, and 572.155;

(v) Drawing No. 921022–055, Leg Assembly, incorporated by reference in §§ 572.151, and 572.155 as part of a complete dummy assembly;

(vi) Drawing No. 921022–054, Arm Assembly, incorporated by reference in §§ 572.151, and 572.155 as part of the complete dummy assembly;

(2) A procedures manual entitled ''Procedures for Assembly, Disassembly and Inspection (PADI), Subpart R, CRABI 12-month-old Infant Crash Test Dummy (CRABI–12, Alpha version), March 2000,'' incorporated by reference in § 572.151;

(3) SAE Recommended Practice J211/1, Rev. Mar95 ''Instrumentation for Impact Tests—Part 1—Electronic Instrumentation'', incorporated by reference in § 572.155;

(4) SAE J1733 1994–12 ''Sign Convention for Vehicle Crash Testing'', incorporated by reference in § 572.155.

(b) The Director of the Federal Register approved those materials incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the materials may be inspected at NHTSA's Docket Section, 400 Seventh Street S.W., room 5109, Washington, DC, or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, DC.

(c) The incorporated materials are available as follows:

(1) The drawings and specifications package referred to in paragraph (a)(1) of this section and the procedures manual referred to in paragraph (a)(2) of this section are available from Reprographic Technologies, 9000 Virginia Manor Road, Beltsville, MD 20705 (301) 419–5070.

(2) The SAE materials referred to paragraphs (a)(3) and (a)(4) of this section are available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

§ 572.151 General description.

(a) The 12-month-old-infant crash test dummy is described by drawings and specifications containing the following materials:

(1) Technical drawings and specifications package 921022–000

(refer to § 572.150(a)(1)), the titles of which are listed in Table A of this section;

(2) Procedures for Assembly, Disassembly and Inspection document (PADI) (refer to § 572.150(a)(2)).

(b) The dummy consists of the component assemblies set out in the following Table A:

TABLE A

Component assembly	Drawing number
Head Assembly	921022–001.
Neck Assembly (complete).	921022–041.
Torso Assembly	921022–060.
Leg Assembly	921022–055 R&L.
Arm Assembly	921022–054 R&L.

(c) Adjacent segments of the dummy are joined in a manner such that, except for contacts existing under static conditions, there is no contact between metallic elements throughout the range of motion or under simulated crash impact conditions.

(d) The structural properties of the dummy are such that the dummy shall conform to this Subpart in every respect before its use in any test under this chapter.

§ 572.152 Head assembly and test procedure.

(a) The head assembly (refer to § 572.150(a)(1)(i)) for this test consists of the assembly (drawing 921022–001), triaxial mount block (SA572–80), and 3 accelerometers (drawing SA572–S4).

(b) Frontal and rear impact.

(1) Frontal impact. When the head assembly in paragraph (a) of this section is dropped from a height of 376.0±1.0 mm (14.8±0.04 in) in accordance with paragraph (c)(3)(i) of this section, the peak resultant acceleration measured at the head CG shall not be less than 100 g or more than 120 g. The resultant acceleration vs. time history curve shall be unimodal, and the oscillations occurring after the main pulse shall be less than 17 percent of the peak resultant acceleration. The lateral acceleration shall not exceed ±15 g's.

(2) Rear impact. When the head assembly in paragraph (a) of this section is dropped from a height of 376.0±1.0 mm (14.8±0.04 in) in accordance with paragraph (c)(3)(ii) of this section, the peak resultant acceleration measured at the head CG shall be not less than 55 g and not more than 71 g. The resultant acceleration vs. time history curve shall be unimodal, and the oscillations occurring after the main pulse shall be less than 17 percent of the peak resultant acceleration. The lateral acceleration shall not exceed ±15 g's.

(c) Head test procedure. The test procedure for the head is as follows:

(1) Soak the head assembly in a controlled environment at any temperature between 18.9 and 25.6 °C (66 and 78 °F) and at any relative humidity between 10 and 70 percent for at least four hours prior to a test. These temperature and humidity levels shall be maintained throughout the entire testing period specified in this section.

(2) Before the test, clean the impact surface of the head skin and the steel impact plate surface with isopropyl alcohol, trichlorethane, or an equivalent. Both impact surfaces shall be clean and dry for testing.

(3)(i) For a frontal impact test, suspend the head assembly with its midsagittal plane in vertical orientation as shown in Figure R1 of this subpart. The lowest point on the forehead is 376.0±1.0 mm (14.8 ±0.04 in) from the impact surface. The 3.30 mm (0.13 in) diameter holes located on either side of the dummy's head are used to ensure that the head is level with respect to the impact surface. The angle between the lower surface plane of the neck transducer mass simulator (drawing 910420–003) and the plane of the impact surface is 45 ±1 degrees.

(ii) For a rear impact test, suspend the head assembly with its midsagittal plane in vertical orientation as shown in Figure R2 of this subpart. The lowest point on the back of the head is 376.0±1.0 mm (14.8 ±0.04 in) from the impact surface. The 3.30 mm (0.13 in) diameter holes located on either side of the dummy's head are used to ensure that the head is level with respect to the impact surface. The angle between the lower surface plane of the neck transducer structural replacement (drawing 910420–003) and the impact surface is 90 ±1 degrees.

(4) Drop the head assembly from the specified height by a means that ensures a smooth, instant release onto a rigidly supported flat horizontal steel plate which is 50.8 mm (2 in) thick and 610 mm (24 in) square. The impact surface shall be clean, dry and have a micro finish of not less than 203.2×10^{-6} mm (8 micro inches) (RMS) and not more than 2032.0×10^{-6} mm (80 micro inches) (RMS).

(5) Allow at least 2 hours between successive tests of the head assembly at the same impact point. For head impacts on the opposite side of the head, the 30-minute waiting period specified in § 572.155(m) does not apply.

§ 572.153 Neck-headform assembly and test procedure.

(a) The neck and headform assembly (refer to §§ 572.150(a)(1)(ii) and 572.150(a)(1)(iii)) for the purposes of this test consists of parts shown in CRABI neck test assembly (drawing TE–3200–100);

(b) When the neck and headform assembly, as defined in § 572.153(a), is tested according to the test procedure in § 572.153(c), it shall have the following characteristics:

(1) Flexion.

(i) Plane D referenced in Figure R3 of this subpart shall rotate in the direction of pre-impact flight with respect to the pendulum's longitudinal centerline not less than 75 degrees and not more than 86 degrees. Within this specified rotation corridor, the peak positive moment about the occipital condyles shall be not less than 36 N-m (26.6 ft-lbf) and not more than 45 N-m (33.2 ft-lbf).

(ii) The positive moment about the occipital condyles shall decay for the first time to 5 N-m (3.7 ft-lbf) between 60 ms and 80 ms after time zero.

(iii) The moment about the occipital condyles shall be calculated by the following formula: Moment (N-m) = My − (0.005842m) × (Fx), where My is the moment about the y-axis, Fx is the shear force measured by the neck transducer (drawing SA572 –S23) and 0.005842m is the distance from the point at which the load cell measures the force to the occipital condyle.

(2) Extension.

(i) Plane D referenced in Figure R4 of this subpart shall rotate in the direction of preimpact flight with respect to the pendulum's longitudinal centerline not less than 80 degrees and not more than 92 degrees. Within the specified rotation corridor, the peak negative moment about the occipital condyles shall be not more than −12 Nm (−8.9 ft-lbf) and not less than −23 N-m (−17.0 ft-lbf) within the minimum and maximum rotation interval.

(ii) The negative moment about the occipital condyles shall decay for the first time to −5 Nm (−3.7 lbf-ft) between 76 ms and 90 ms after time zero.

(iii) The moment about the occipital condyles shall be calculated by the following formula: Moment (N-m) = My − (0.005842m) × (Fx), where My is the moment about the y-axis, Fx is the shear force measured by the neck transducer (drawing SA572 –S23) and 0.005842m is the distance from the point at which the load cell measures the force to the occipital condyle.

(c) Test procedure.

(1) Soak the neck assembly in a controlled environment at any temperature between 20.6 and 22.2 °C (69 and 72 °F) and at any relative humidity between 10 and 70 percent for at least four hours prior to a test. These temperature and humidity levels shall be maintained throughout the testing period specified in this section.

(2) Torque the jam nut (drawing 9001336) on the neck cable (drawing ATD–6206) to 0.2 to 0.3 Nm (2–3 in-lbf).

(3) Mount the neck-headform assembly, defined in paragraph (b) of this section, on the pendulum so the midsagittal plane of the headform is vertical and coincides with the plane of motion of the pendulum as shown in Figure R3 for flexion and Figure R4 for extension tests.

(i) The moment and rotation data channels are defined to be zero when the longitudinal centerline of the neck and pendulum are parallel.

(ii) The test shall be conducted without inducing any torsion of the neck.

(4) Release the pendulum and allow it to fall freely to achieve an impact velocity of 5.2 ±0.1 m/s (17.1 ±0.3 ft/s) for flexion and 2.5 ±0.1 m/s (8.2 ±0.3 ft/s) for extension measured at the center of the pendulum accelerometer at the instant of contact with the honeycomb.

(i) Time-zero is defined as the time of initial contact between the pendulum striker plate and the honeycomb material. The pendulum data channel shall be defined to be zero at this time.

(ii) Stop the pendulum from the initial velocity with an acceleration vs. time pulse which meets the velocity change as specified in the following table. Integrate the pendulum acceleration data channel to obtain the velocity vs. time curve as indicated in Table B:

TABLE B.—PENDULUM PULSE

Time	Flexion		Time	Extension	
m/s	m/s	ft/s	ms	m/s	ft/s
10	1.6–2.3	5.2–7.5	6	0.8–1.2	2.6–3.9
20	3.4–4.2	11.2–13.8	10	1.5–2.1	4.9–6.9
25	4.3–5.2	14.1–17.1	14	2.2–2.9	7.2–9.5

§ 572.154 Thorax assembly and test procedure.

(a) Thorax Assembly (refer to § 572.150(a)(1)(iv)) . The thorax consists of the part of the torso assembly shown in drawing 921022–060.

(b) When the thorax of a completely assembled dummy (drawing 921022–000) is impacted by a test probe conforming to § 572.155(a) at 5.0 ±0.1m/s (16.5 ±0.3 ft/s) according to the test procedure in paragraph (c) of this section, the peak force, measured by the impact probe in accordance with paragraph § 572.155(a), shall be not less than 1514 N (340.7 lbf) and not more than 1796 N (404.1 lbf).

(c) Test procedure.

(1) Soak the dummy in a controlled environment at any temperature between 20.6 and 22.2 °C (69 and 72 °F) and at any relative humidity between 10 and 70 percent for at least four hours prior to a test. These temperature and humidity levels shall be maintained throughout the entire testing period specified in this section.

(2) The test dummy is clothed in a cotton-polyester based tight fitting sweat shirt with long sleeves and ankle long pants whose combined weight is not more than 0.25 kg (.55 lbs).

(3) Seat and orient the dummy on a level seating surface without back support as shown in Figure R5 of this subpart, with the lower limbs extended forward, parallel to the midsagittal plane and the arms 0 to 5 degrees forward of vertical. The dummy's midsagittal plane is vertical within ±/1 degree and the posterior surface of the upper spine box is aligned at 90±/1 degrees from the horizontal. (Shim material may be used under the upper legs to maintain the dummy's specified spine box surface alignment).

(4) Establish the impact point at the chest midsagittal plane so that the impact point of the longitudinal centerline of the probe coincides with the dummy's midsagittal plane, is centered on the torso 196 ±/2.5 mm (7.7 ±/0.1 in) vertically from the plane of the seating surface, and is within 0.5 degrees of a horizontal plane.

(5) Impact the thorax with the test probe so that at the moment of contact the probe's longitudinal center line falls within 2 degrees of a horizontal line in the dummy's midsagittal plane.

(6) Guide the test probe during impact so that there is no significant lateral, vertical or rotational movement.

§ 572.155 Test conditions and instrumentation.

(a) The test probe for thoracic impacts shall be of rigid metallic construction, concentric in shape, and symmetric about its longitudinal axis. It shall have a mass of 2.86±0.02 kg (6.3±0.05 lbs) and a minimum mass moment of inertia of 622 kg-cm^2 (0.55 lbs-in-sec^2) in yaw and pitch about the CG. Up to 1/3 of the weight of the suspension cables and their attachments to the impact probe may be included in the calculation of mass, but such components may not exceed five percent of the total weight of the test probe. The impacting end of the probe, perpendicular to and concentric with the longitudinal axis, must be at least 12.7 mm (0.5 in) thick, and have a flat, continuous, and non-deformable 101.6 ± 0.25 mm (4.00±0.01 in) diameter face with an edge radius of 12.7±0.25 mm (0.5±0.01 in). The probe's end opposite to the impact face must have provisions for mounting of an accelerometer with its sensitive axis collinear with the longitudinal axis of the probe. No concentric portions of the impact probe may exceed the diameter of the impact face. The impact probe shall have a free air resonant frequency of not less than 1000 Hz.

(b) Head accelerometers shall have the dimensions, response characteristics, and sensitive mass locations specified in drawing SA572–S4 and be mounted in the head as shown in drawing 921022–000.

(c) The neck force-moment transducer shall have the dimensions, response characteristics, and sensitive axis locations specified in drawing SA572–S23 and shall be mounted for testing as shown in drawing 921022–000 and in figures R3 and R4 of this subpart.

(d) The shoulder force transducers shall have the dimensions and response characteristics specified in drawing SA572–S25 and are allowed to be mounted as optional instrumentation in place of part No. 921022–022 in the torso assembly as shown in drawing 921022–000.

(e) The thorax accelerometers shall have the dimensions, response characteristics, and sensitive mass locations specified in drawing SA572–S4 and be mounted in the torso assembly in triaxial configuration as shown in drawing 921022–000.

(f) The lumbar spine and lower neck force/moment transducer shall have the dimensions and response characteristics specified in drawing SA572–S23 and are allowed to be mounted as optional instrumentation in the torso assembly in place of part No. 910420–003 as shown in drawing 921022–000.

(g) The pelvis accelerometers shall have the dimensions, response characteristics, and sensitive mass locations specified in drawing SA572–S4 and are allowed to be mounted as optional instrumentation in the pelvis in triaxial configuration as shown in drawing 921022–000.

(h) The pubic force transducer shall have the dimensions and response characteristics specified in drawing SA572–S24 and is allowed to be mounted as optional instrumentation in place of part No. 921022–050 in the torso assembly as shown in drawing 921022–000.

(i) The outputs of acceleration and force-sensing devices installed in the dummy and in the test apparatus specified by this part are recorded in individual data channels that conform to the requirements of SAE Recommended Practice J211/1, Rev. Mar95 ''Instrumentation for Impact Tests—Part 1—Electronic Instrumentation'' (refer to § 572.150(a)(3)), with channel classes as follows:

(1) Head and headform acceleration—Class 1000.

(2) Neck :

(i) Forces—Class 1000;

(ii) Moments—Class 600;

(iii) Pendulum acceleration—Class 180;

(3) Thorax:

(i) Spine and pendulum accelerations—Class 180;

(ii) Shoulder forces—Class 600;

(4) Lumbar:

(i) Forces—Class 1000;

(ii) Moments —Class 600;

(5) Pelvis:

(i) Accelerations—Class 1000;

(ii) Pubic—Class 1000.

(j) Coordinate signs for instrumentation polarity shall conform to SAE J1733, 1994–12, ''Sign Convention For Vehicle Crash Testing, Surface Vehicle Information Report,'' (refer to § 572.150(a)(4)).

(k) The mountings for sensing devices shall have no resonance frequency within a range of 3 times the frequency range of the applicable channel class.

(l) Limb joints shall be set at l g, barely restraining the weight of the limb when it is extended horizontally. The force required to move a limb segment shall not exceed 2 g throughout the range of limb motion.

(m) Performance tests of the same component, segment, assembly, or fully assembled dummy shall be separated in time by period of not less than 30 minutes unless otherwise noted.

(n) Surfaces of dummy components may not be painted except as specified in this subpart or in drawings referenced in § 572.150.

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Figure R 1

FRONTAL HEAD DROP TEST SET-UP SPECIFICATIONS

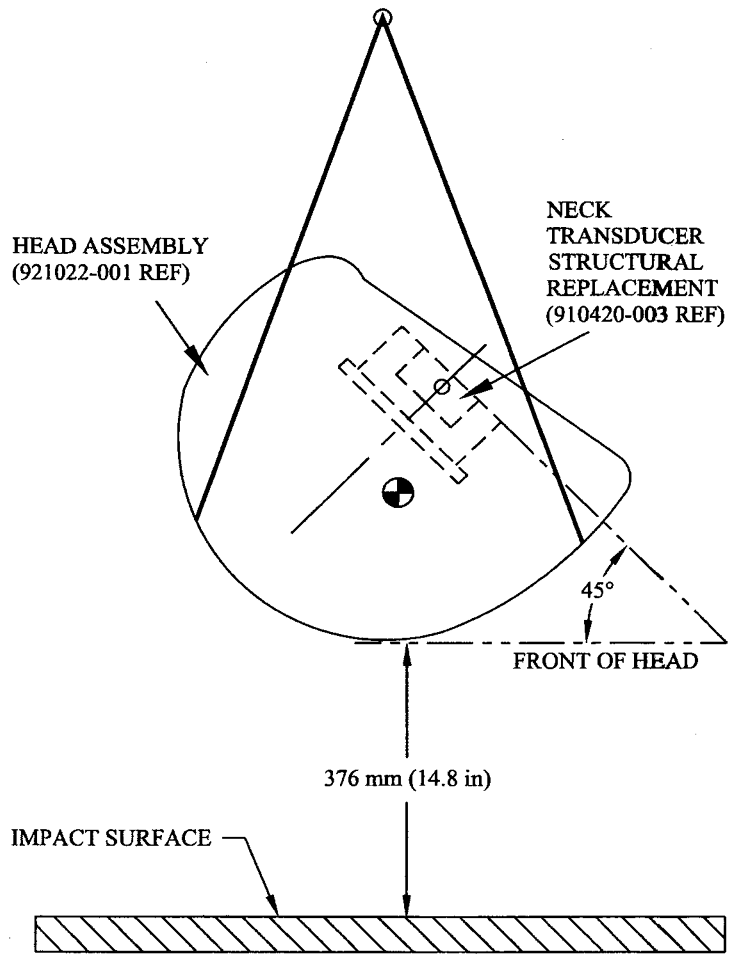


Figure R 2

REAR HEAD DROP TEST SET-UP SPECIFICATIONS

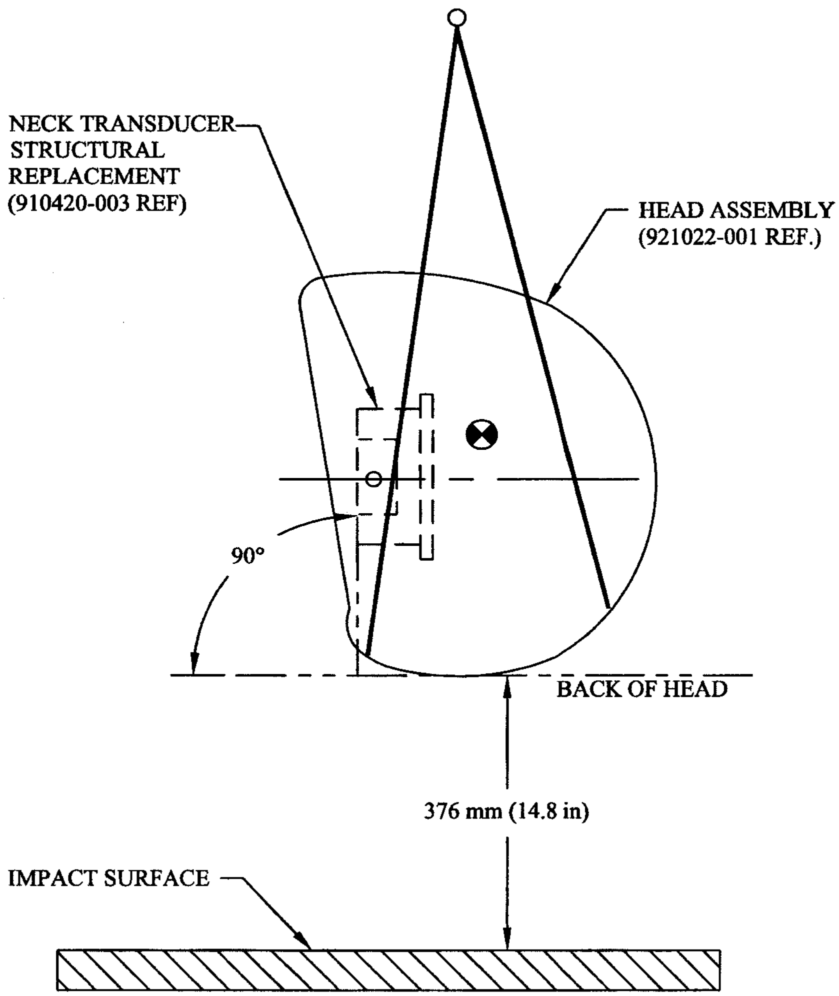
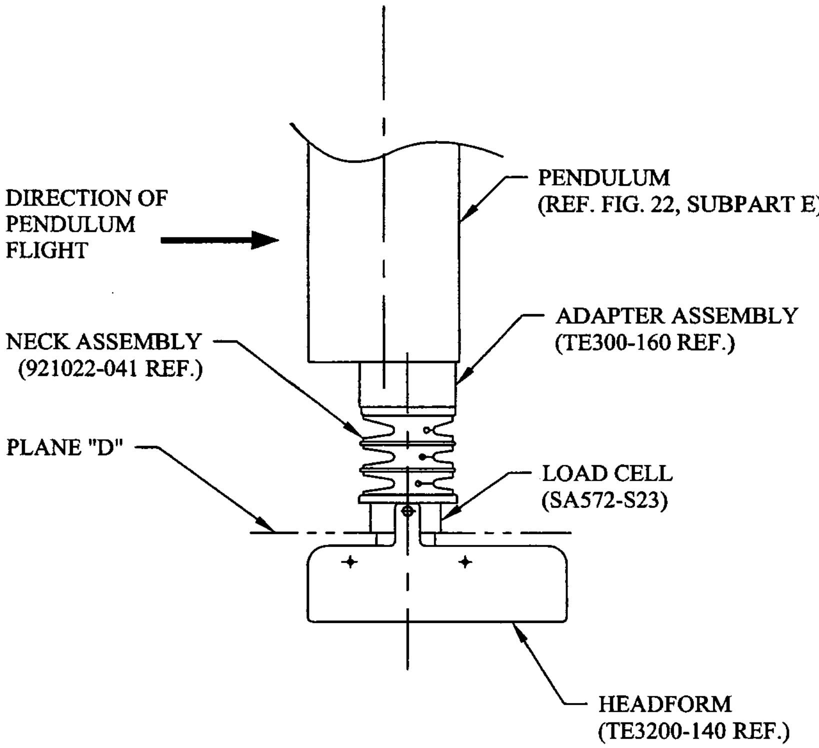


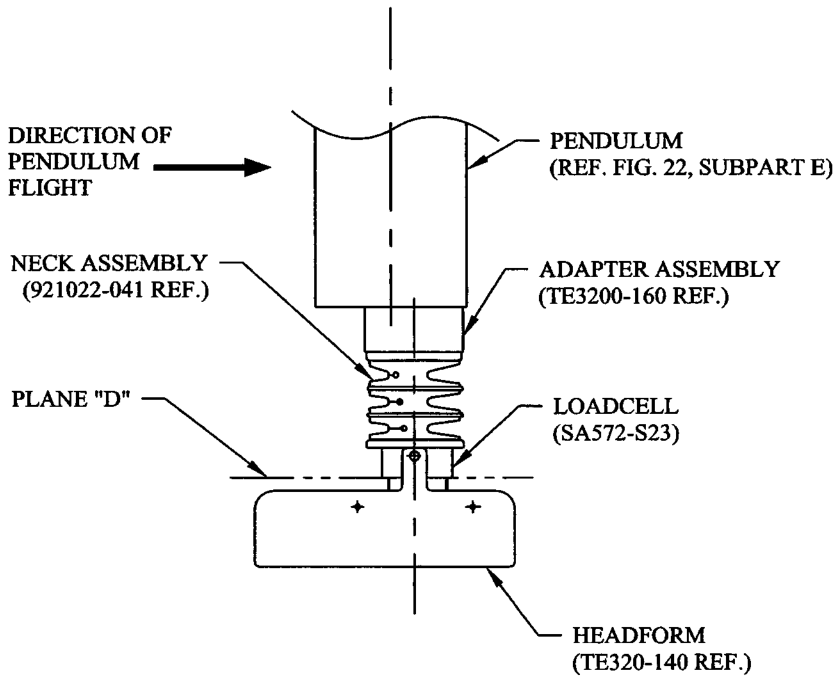
Figure R3

NECK FLEXION TEST SET-UP SPECIFICATIONS



NOTE: MOUNT NECK AT LEADING EDGE OF PENDULUM TO AVOID INTERFERENCE.

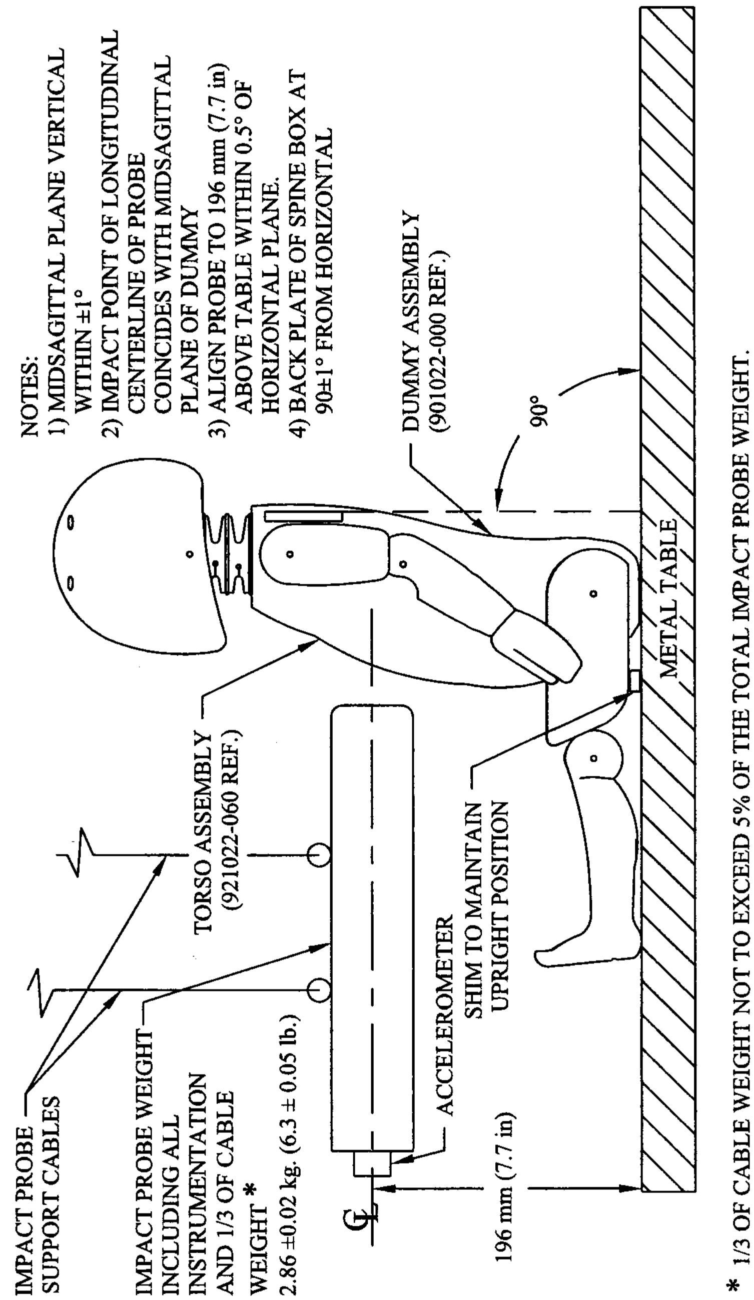
Figure R4
NECK EXTENSION TEST SET-UP SPECIFICATIONS



NOTE: MOUNT NECK AT LEADING EDGE OF PENDULUM TO AVOID INTERFERENCE.

Figure R 5

THORAX IMPACT TEST SET-UP SPECIFICATIONS



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Rosalyn G. Millman,

Acting Administrator.

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DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 587

[Docket No. NHTSA–2000–7142]

RIN 2127–AH93

Offset Deformable Barrier

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation.

ACTION: Final rule.

SUMMARY: This document amends 49 CFR Part 587 by adding specifications for an offset deformable barrier. This barrier is used in offset deformable barrier tests to evaluate the crashworthiness of vehicles. In this type of test, one side of a vehicle's front end is crashed into a barrier with a deformable face that absorbs some of the crash energy.

Adding the offset deformable barrier to Part 587 is the first step toward using it to evaluate the crashworthiness of vehicles. The issue of specifying use of the barrier as part of the performance requirements of specific safety standards is being addressed in separate