

in which an applicant must show that it is a nonprofit organization, the applicant may do so by any of the following means:

(1) Proof that the Internal Revenue Service currently recognizes the applicant as an organization to which contributions are tax deductible under section 501(c)(3) of the Internal Revenue Code;

(2) A statement from a State or other governmental taxing body or the State secretary of State certifying that:

(i) The organization is a nonprofit organization operating within the State; and

(ii) No part of its net earnings may benefit any private shareholder or individual;

(3) A certified copy of the applicant's certificate of incorporation or similar document that clearly establishes the nonprofit status of the applicant; or

(4) Any item described in paragraphs (h)(1) through (3) of this section if that item applies to a State or national parent organization, together with a statement by the State or parent organization that the applicant is a local nonprofit affiliate.

(i) If a State or local government contributes its own funds in excess of those funds required by a matching or grant agreement to supplement Department-supported activities, the State or local government has the option to segregate those additional funds or commingle them with the Federal award funds. If the funds are commingled, the provisions of this section shall apply to all of the commingled funds in the same manner, and to the same extent, as the provisions apply to the Federal funds. With respect to matching funds, the provisions of this section apply irrespective of whether such funds are commingled with Federal funds or segregated.

(j) To the extent otherwise permitted by Federal law, the restrictions on inherently religious activities set forth in this section do not apply where Department funds are provided to religious organizations as a result of a genuine and independent private choice of a beneficiary or through other indirect funding mechanisms, provided the religious organizations otherwise satisfy the requirements of the program. A religious organization may receive such funds as the result of a beneficiary's genuine and independent choice if, for example, a beneficiary redeems a voucher, coupon, or certificate, allowing the beneficiary to direct where funds are to be paid, or through a similar funding mechanism provided to that beneficiary and

designed to give that beneficiary a choice among providers.

Dated: July 9, 2004.

**Tommy G. Thompson,**

*Secretary.*

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## DEPARTMENT OF TRANSPORTATION

### National Highway Traffic Safety Administration

#### 49 CFR Parts 571 and 572

[Docket No. NHTSA-04-18075]

RIN 2127-AI58

#### Child Restraint Systems; Anthropomorphic Test Devices; Hybrid III Six-Year-Old Weighted Child Test Dummy

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

**ACTION:** Final rule, technical amendment.

**SUMMARY:** This document amends 49 CFR Part 572 by adding a new subpart describing a weighted version of the current Hybrid III six-year-old child size dummy (HIII-6C). The weighted dummy weighs 62 pounds, approximately ten pounds more than the current HIII-6C. The dummy will be used in compliance tests under the Federal child restraint standard to test the structural integrity of child restraints recommended for use by children weighing over 50 pounds. This document also makes a technical amendment to the child restraint standard by adding cross-references to the subpart added by today's document.

**DATES:** Effective date: This final rule becomes effective January 12, 2005. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of January 12, 2005.

Petitions for reconsideration must be received by August 30, 2004 and should refer to this docket and the notice number of this document and be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh St., SW., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** For technical and policy issues, Sean Doyle, NHTSA Office of Crashworthiness Standards, at 202-366-1740.

For legal issues, Chris Calamita, NHTSA Office of the Chief Counsel, at 202-366-2992.

Both officials can be reached by mail at the National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

#### SUPPLEMENTARY INFORMATION:

##### I. Background

In June 2003, NHTSA issued a final rule amending Federal Motor Vehicle Safety Standard (FMVSS) No. 213, *Child restraint systems*, to add a weighted (62-pound) dummy to the compliance testing of child restraint systems recommended for use by larger children; *i.e.*, children weighing 50 to 65 pounds (lb) (68 FR 37620; June 24, 2003; Docket No. 03-15351). The rule specified that the agency will use the dummy to test such child restraints that are manufactured on or after August 1, 2005. The weighted dummy will be used as a means of ballast to evaluate the structural integrity of the child restraints; *i.e.*, to ensure that restraints certified up to 65 lb would not structurally fail in a crash.

Over the years, NHTSA has incorporated new and improved child test dummies into the compliance tests of FMVSS No. 213 as a means of ensuring a fuller evaluation of child restraint performance. The June 2003 final rule replaced most of the existing dummies used in the standard with a new 12-month-old Child Restraint Air Bag Interaction dummy, and state-of-the-art Hybrid III 3- and 6-year-old dummies. NHTSA proposed to incorporate the weighted 6-year-old dummy (which is a HIII-6C to which weights have been added) into 49 CFR Part 572, so that the dummy could be used in the dynamic testing of child restraints recommended for children weighing above 50 lb. Without the weighted dummy with which to test such restraints, there would have been little practical effect of extending the application of FMVSS No. 213 to child restraint systems recommended for children above 50 lb.

Incorporation of the weighted 6-year-old dummy (referred to as the "HIII-6CW") was viewed as an interim measure until such time as a Hybrid III 10-year-old dummy (HIII-10C), now under development, becomes available. At the request of NHTSA, the Dummy Family Task Group of the Society of Automotive Engineers (SAE-DFTG) has taken the lead in designing and developing a HIII-10C. Development of the dummy has been further reinforced by Congress, which on December 4, 2002, enacted P.L. 107-318 (Dec. 4, 2002; 116 Stat. 2772) ("Anton's Law"). Section 4 of P.L. 107-318 directs the Secretary of Transportation to "develop and evaluate an anthropomorphic test

device that simulates a 10-year old child for use in testing child restraints used in passenger motor vehicles.”

NHTSA is making progress evaluating the HIII-10C (76 lb) to determine its suitability for incorporation into 49 CFR Part 572, *Anthropomorphic Test Dummies*. In the meantime, prior to completion of that evaluation, the weighted 6-year-old dummy will be used to approximate children in the seven to eight year old age bracket, *i.e.*, children above 50 pounds.

NHTSA originally considered using all the measurement capabilities of the weighted dummy in FMVSS No. 213 compliance tests, including the dummy's instrumentation for measuring the potential for injuries to a child's head, the upper and lower ends of the neck, and the chest, as well as other body regions. However, because of concerns about the biofidelity of the weighted dummy, NHTSA decided to use the weighted dummy only to test the structural integrity of child restraints. 68 FR 37620, *supra*.

## II. Notice Proposing the Weighted Dummy

On May 7, 2003, the agency issued a notice of proposed rulemaking (NPRM) that proposed to add the HIII-6CW (weighted) dummy to 49 CFR Part 572 in order to complement the then-proposed (now required) use of a HIII-6CW in FMVSS No. 213 (68 FR 24417). The NPRM proposed calibration requirements for the test dummy's thorax and lumbar flexion tests.

### *Evaluation of the Weighted Dummy*

In developing the NPRM, the agency subjected the weighted dummy to two types of impact evaluations in the laboratory environment: component calibration tests and sled tests. Component calibration tests were conducted to compare the performance of the HIII-6CW dummy with that of the unmodified Hybrid III 6-year-old dummy (“HIII-6C dummy”). The agency followed the calibration test procedures specified for the HIII-6C dummy in 49 CFR Part 572 Subpart N. Since masses were added to the dummy's upper and lower torso, the agency limited its evaluation of the weighted dummy for certification responses to the thorax impact (specified in 49 CFR 572.124) and torso flexion (49 CFR 572.125) tests. Since the added weights will not influence the head drop, neck flexion and extension, and knee impact calibration tests, the agency did not conduct these tests with the weighted dummy.

The agency also conducted ten high acceleration (HYGE) sled tests with both

the HIII-6C and the HIII-6CW (weighted) dummy in seating configurations restrained with three point belts and belt positioning booster seats. All tests were performed using the FMVSS No. 213 pulse (24g, 30 mph) and sled mounted seating buck.

### *Proposed Incorporation of the Weighted Dummy (HIII-6CW)*

Based on the testing and evaluation of the HIII-6CW,<sup>1</sup> the agency tentatively concluded that the weighted dummy would be appropriate to serve as an interim measure for evaluating the safety of child restraint systems designed for children over 50 pounds. Accordingly, the agency proposed to incorporate the HIII-6CW dummy into 49 CFR Part 572 as Subpart S.

The agency proposed the same drawings and specifications for the weighted dummy as the drawings and specifications for the HIII-6C dummy in 49 CFR Part 572 Subpart N, with the following modifications in four main areas affected by the addition of the weights.

First, the drawings for the HIII-6CW (weighted) dummy's upper and lower torso assemblies were modified to include the spine box weighting plates and pelvis weighting spacer. To obtain a more uniform mass distribution and to accommodate sufficient mass within the available space, the agency proposed using a dense Tungsten alloy material. The agency decided against the use of a commercially available weighted vest on the test dummy because of its bulkiness and the potential of rattling or inertial slap<sup>2</sup> during sled tests, with the possibility of affecting the dummy's instrumentation responses. The agency also decided against the use of carbon steel weights because their size would reduce available thorax deflection space, and they would result in the elevation of the dummy's seated height by one inch.

Second, with regard to the thorax assembly and test procedure specifications for the HIII-6C dummy (49 CFR 572.124(b)(1)), the peak force defining the compression corridor was proposed to be changed from 1150–1380 Newtons (N) (259–310 lbf) for the HIII-6C dummy to 1225–1455 N (275–327 lbf) for the HIII-6CW (weighted) dummy. This was in response to test

results that showed the HIII-6CW dummy responding with somewhat higher resistance forces to pendulum impact than the HIII-6C dummy. The higher force range reflected mass changes in the thorax that are needed to convert the HIII-6C to the HIII-6CW dummy. Additionally, § 572.124(b)(1) specifies that peak thoracic response forces for the HIII-6C must occur between 38 and 46 mm of rib cage compression, but that an early first peak transition force is permitted provided that it occurred after 12.5 mm but before 38 mm of sternum displacement and does not exceed by five percent the specified peak force at maximum thorax compression. The agency proposed limiting the transition force for the HIII-6CW to not more than ten percent of the peak specified value at maximum permissible deflection. This change addressed the fact that the weighted dummy did not consistently meet the 5 percent limit during testing.

Third, with regard to the upper and lower torso assemblies flexion test specifications for the HIII-6C dummy (49 CFR 572.125(b)(1)), the specification for the force applied as shown in Figure S2 was proposed to be changed for the HIII-6CW (weighted) dummy from 147–200 N (33–45 lbf) to 85–125 N (18.5–27.5 lbf). The HIII-6CW dummy yielded an average resistance to flexion force of 103 N (23.2 lbf), well below the 147–200 N range permitted for the HIII-6C. The HIII-6CW (weighted) dummy exhibited very good repeatability of resistance force in the flexion tests as well as no signs of related component deterioration in the sled tests. Accordingly, the agency tentatively concluded that lowering the range would impact neither the dummy's durability nor consistency.

Fourth, with regard to the upper and lower torso assemblies test procedure specifications for the HIII-6C dummy (49 CFR 572.125(c)(5)), the initial torso orientation angle specification for the HIII-6CW (weighted) dummy was proposed to be changed from 22 degrees to 32 degrees. The proposed increase in the initial torso orientation angle was to accommodate the additional mass load located on the spine box of the weighted dummy.

Copies of the proposed Procedures for Assembly, Disassembly, and Inspection (PADI) (September 2002) and of the draft Parts List and Drawings for the H-III6CW, Alpha Version (September 13, 2002) were placed in Docket No. 2003–15089–1.

## III. Comments and Agency Decision

The agency received four comments to the NPRM, all of which generally

<sup>1</sup> See the technical report entitled “Evaluation of the Weighted Hybrid III Six-Year-Old Child Dummy,” October 2001. (Docket No. NHTSA–2002–11707–2.)”

<sup>2</sup> Because the weighed vest would permit some movement of the weights independent of the test dummy, the weights could continue to move forward for a brief period after the dummy has fully decelerated and then slap back onto the dummy.

supported the incorporation of the HIII-6CW (weighted) dummy into Part 572. Some of the commenters—Advocates for Highway and Auto Safety (Advocates), Evenflo Company, Inc. (Evenflo), and the Alliance of Automobile Manufacturers (Alliance)<sup>3</sup>—had concerns about the limits of the dummy in providing a full evaluation of child restraints. A dummy manufacturer (Denton ATD, Inc.) suggested technical changes to some of the proposed calibration tests and drawings for the dummy.<sup>4</sup>

This final rule adopts the HIII-6CW dummy into Part 572 generally as proposed, except we have modified some of the performance criteria after considering the comments to the NPRM. A discussion of the issues raised by the comments is set forth below. A copy of the Procedures for Assembly, Disassembly, and Inspection (April 2004) for the dummy, and copies of the Parts List and Drawings for the H-III-6CW, Alpha Version (April 2004) can be found in the docket for this final rule.

#### *Interim Use of the Weighted Dummy*

**Issue No. 1:** Advocates, Evenflo and the Alliance supported incorporation of the weighted dummy to facilitate testing the structural integrity of CRSs recommended for children weighing more than 50 lb, but only as an interim measure until the Hybrid III 10-year-old dummy is adopted. The Alliance encouraged the agency to expedite the development of the 10-year-old test dummy and not to “expend any additional resources toward the establishment of injury assessment capabilities” for the weighted 6-year-old dummy.

**Response:** Based on the results from testing and evaluation, the agency has concluded that the weighted dummy is appropriate for evaluating certain aspects of the dynamic performance of child restraint systems designed for children over 50 lb. In particular, the weighted dummy is representative of

children who would be using child restraints recommended for children weighing up to 65 lb, and the dummy has demonstrated the durability required to assess the structural integrity of these child restraints. Accordingly, the agency is incorporating the weighted 6-year-old dummy into 49 CFR Part 572 as Subpart S. As the agency stated in the June 24, 2003 final rule, the agency is seeking to use a HIII-10C dummy eventually to test booster seats certified for use by children with higher weights. While the development of the HIII-10C dummy proceeds at the quickest possible pace, the HIII-6CW will provide the agency with an interim test device for evaluating child restraint systems recommended for children weighing more than 50 lb.<sup>5</sup>

**Issue No. 2:** Advocates expressed concern that a 62-lb dummy will be used to test child restraints recommended for children weighing up to 65 lb. Advocates stated that a child who weighs 65 lb is 5 percent heavier than the maximum weight of the weighted dummy. Advocates requested that the agency demonstrate there to be no practical difference in real-world performance between the weighted dummy and a 65-lb child.

**Response:** The commenter raised this identical comment in the agency’s recently-completed rulemaking on FMVSS No. 213 (68 FR 37620, *supra*). As we responded to Advocates in the FMVSS No. 213 rulemaking, we are confident in the ability of the 62-pound dummy to test restraints recommended for children weighing up to 65 lb. There will be less than a 3-lb difference between the dummy weight and the maximum certification weight of the child restraint; a difference of roughly 4.5 percent. The 33-lb Hybrid III three-year-old test dummy that has been long-used in FMVSS No. 213 has proven efficient at testing restraints certified to a maximum weight of 40 lb. This is a difference of 7 lb, or 17.5 percent.

#### *Performance Specifications*

Under FMVSS No. 213, child restraints manufactured on or after August 1, 2005 and recommended for children weighing over 50 lb will be tested with the HIII-6CW (weighted) dummy. The dummy will be used to evaluate the structural integrity of the restraints and will not be used to ascertain the performance of the restraints in limiting forces to the child dummy. However, while the HIII-6CW

dummy’s instrumentation will not be used at this time to determine compliance with the child restraint standard, the dummy may be instrumented to collect data for use in research. Data collected on the weighted dummy may provide assistance in the future development of injury criteria for this age group. Accordingly, this final rule includes procedures for calibration tests to ensure that the results are repeatable and reproducible.

#### *Issue No. 1 (Frequency of calibration):*

Evenflo requested that the agency amend the Laboratory Test Procedure (LTP) for FMVSS No. 213 (TP-213) to require confirmation of the dummy’s calibration each time it is changed between the weighted and non-weighted set-up. Evenflo stated that evaluation of the dummy did not address the effects of multiple tests or conversions between normal and weighted mode over several months. As such, Evenflo recommended that the calibration of dummy be assessed more frequently.

**Response:** We do not believe there is a need to amend LTP to include a requirement that the dummy be calibrated each time the weights are added or removed. The frequency of calibration is generally dependant on the type of test being run. The certification process typically requires re-calibration of the test dummy if the test dummy is disassembled and then reassembled. In order to change a 6-year-old dummy from weighted to unweighted, or visa versa, it is necessary to dismantle the dummy. Therefore, under the existing procedures it must be recalibrated before use.

**Issue No. 2 (Thorax impact test):** In developing the NPRM, the agency performed seven thorax impacts with a single weighted dummy. In these tests, the peak pendulum force responses in the dummy’s thoracic deflection range of 38–46 mm met the specifications for the HIII-6C dummy in all tests. However, the average response was close to the upper limit of the specified corridor. In response to these results, the agency proposed changing the corridor from 1150–1380 N (for the unmodified HIII-6C dummy) to 1225–1455 N for the HIII-6CW dummy. The shift in the corridor was to assure better centering of the response specification.

Denton commented that the agency evaluation of the HIII-6CW dummy was insufficient to justify proposing a corridor different from those in the thorax impact test required for the unmodified HIII-6C. Denton was concerned that only a single dummy was tested to develop a new corridor. Denton suggested that either the agency

<sup>3</sup> The members of Alliance are BMW Group, DaimlerChrysler, Ford Motor Company, General Motors, Mazda, Mitsubishi Motors, Nissan, Porsche, Toyota, and Volkswagen.

<sup>4</sup> On August 8, 2003, Denton ATD petitioned the agency for reconsideration of a final rule that amended FMVSS No. 213 to adopt the III-6C dummy into the standard’s compliance test procedures (68 FR 37620; June 24, 2003; Docket No. NHTSA-03-15351). In part, Denton asked NHTSA to amend the specifications for the clothing and shoes for the dummy. The agency will be responding to the petition in the near future. We note that today’s final rule for the weighted dummy relies on the clothing and shoes specifications of the unweighted dummy. Therefore, any future changes to the clothing and shoe specifications for the HIII-6C dummy will also amend the clothing and shoes specifications for the HIII-6CW dummy.

<sup>5</sup> Even if the HIII-10C dummy were added to FMVSS No. 213’s compliance test procedures, there may still be a need for the weighted 6-year-old to represent children between the ages of six and ten.

propose the same corridor used for the unmodified HIII-6C in 49 CFR Part 572 subpart N, or generate more data to justify the change.

The commenter submitted data from seven tests that it performed on a single dummy with and without the weights.<sup>6</sup> According to Denton's data, both the HIII-6CW (weighted) dummy and the HIII-6C dummy passed the 49 CFR Part 572 subpart N requirements. Denton's data from the weighted dummy demonstrated a slight difference in performance as compared to the unmodified dummy, but Denton stated that this was insignificant in relation to the corridor. Further, the weighted dummy tested by Denton performed close to the lower margin of the proposed corridor.

**Response:** In reviewing the data submitted by Denton, the agency has determined that Denton's data should be pooled with the agency's data to generate a larger sample size. Denton stated that, before the weights were added, the test dummies met the certification procedures for the HIII-6C test dummy as specified in 49 CFR Part 572 subpart N. NHTSA reviewed the data and has determined that the results indicate that the test dummies were biofidelic and appropriate for consideration.

With regards to the thorax impact test, Denton supplied the agency with three more thorax impact tests performed on a weighted dummy.<sup>7</sup> The dummy tested by Denton fit within the thorax corridors proposed by the agency, although with slightly lower values than generated by the agency's testing. Based on the results of Denton's thorax impact tests, the agency was able to generate a larger sample size to evaluate the HIII-6CW dummy.

The average of the pooled sample still results in a corridor higher than that used for the HIII-6C dummy, but lower than that originally proposed for the weighted dummy. Based on the average of the larger sample size, the agency is adopting a peak pendulum force corridor of 1205–1435 N (270.9–322.6 lbf) during the maximum allowed deflection range of 38 to 46 mm.

**Issue No. 3 (Peak pendulum force):** The NPRM proposed that the peak pendulum force during the thoracic deflection range of 12.5 and 38 mm not exceed by more than 10 percent the value of the peak force during the deflection range of 38 to 46 mm. The proposal was based on the agency's data indicating that the dummy it tested did

not pass the 5 percent limit specified by 49 CFR Part 572 subpart N.

Denton recommended that the final rule retain the force limit between 12.5 mm and 38 mm currently in subpart N. Denton stated that since the issuance of the original technical report in October 2001, subpart N has been amended to change the force limit between 12.5 mm and 38 mm to an upper limit of 1500 N (67 FR 47328; July 18, 2002). Denton stated that the 1500 N limit is five standard deviations above the average measured on the weighted dummy evaluated for the proposal. Denton was concerned that keeping the proposed 10 percent limit could lead to the weighted dummy requiring special ribs.

**Response:** The agency agrees that the current upper limit of 1500 N has eliminated the need to permit a 10 percent exceedance during the thoracic deflection range of 12.5–38 mm. Subsequent to the development of the HIII-6CW (weighted) dummy technical report, the agency increased the peak force limit for the sternum displacement test to 1500 N (67 FR 47321; July 18, 2002). All of the data submitted by Denton and generated by the agency for the sternum displacement test was below the 1500 N maximum, demonstrating that the increased maximum limit of 1500 N is valid for the HIII-6CW dummy as well as for the un-weighted dummy. Further, adoption of this maximum maintains consistency with HIII-6C dummy specifications.

**Issue No. 4 (Torso flexion test):** In developing the NPRM, the agency performed six torso flexion tests with the weighted dummy. The results indicated that the durability and structural integrity of the weighted dummy were not compromised by the added weight. However, the weighted dummy did not meet the established flexion force corridors for the HIII-6C dummy.

Agency testing demonstrated that the additional mass located on the spine box of the weighted dummy is responsible for an increase in the initial torso setup angle; an average of 31.2 degrees as opposed to the maximum of 22 degrees specified for the HIII-6C test dummy. As a result the agency proposed that the initial torso orientation angle must not exceed 32 degrees.

Denton stated that the agency evaluation of the single dummy was insufficient to propose shifting the force and initial angle corridors for the torso flexion test prescribed in 49 CFR Part 572 subpart N. Denton submitted data from its evaluation of one dummy tested with abdomens having different stiffness attributes: A "hard" abdomen

and a "soft" abdomen. (Denton states that the hard abdomen is about 20 percent stiffer in a quasi-static compression test than the soft abdomen.)<sup>8</sup>

Denton's results showed that the weighted dummy with both the hard and the soft abdomens could pass the proposed 32 degree initial angle. However, while the weighted dummy with the hard abdomen passed the return angle test, the weighted dummy with the soft abdomen failed. Based on these results, Denton suggested that the final angle may need to be increased slightly if existing dummy's are to be retrofitted with weights.

**Response:** The dummy tested by Denton was certified to the subpart N requirements prior to the addition of the weights. The agency has thus determined that Denton's data are valid and should be considered by the agency. Based on the additional data provided by Denton, the final rule requires that for the 45-degree flexion test the torso of the weighted dummy must return within 9 degrees of the initial torso position upon removal of the flexion force. Denton tested both a soft and a hard abdomen, which permits the agency to better consider the range of HIII-6C dummies that exist in the field. Relying on the pooled data, the increase from the 8 degrees proposed by the NPRM addresses the slightly higher return angle average of Denton's data.

**Issue No. 5 (Dummy resistance force specification):** In pre-NPRM agency testing, the HIII-6CW (weighted) dummy torso in 45-degree flexion tests yielded an average resistance force of 103 N (23.2 lbf) with a standard deviation of 4 N (0.9 lbf). This was lower than the resistance force of 173.5 ± 26.5 N (39 ± 6 lbf) specified for the HIII-6C dummy. The result was attributed to the addition of the weights and was not seen as an indication that the durability or structural integrity of the dummy was compromised. Accordingly, the agency proposed a dummy resistance force specification of 105 ± 20 N (23 ± 4.5 lbf) for the weighted dummy.

Denton commented that it disagreed with the proposed force corridor based on its tests of weighted dummies with the hard and soft abdomens. Denton explained that it had expected the weighted dummy with the hard abdomen to perform at the middle of the proposed corridor and the dummy with the soft abdomen to perform at the lower end of the proposed corridor. Denton stated, however, that both

<sup>6</sup> See Denton's comments to the docket.

<sup>7</sup> See footnote 6.

<sup>8</sup> For the data submitted by Denton, see Docket No. NHTSA-2003-15089-4.

dummies tested below the minimum force of the corridor proposed in the NPRM. The commenter concluded that the proposed corridor was too high. The commenter believed that, because the dummy used in the agency's evaluation was not tested without weights, it cannot be determined if the dummy may have simply performed at the upper limit of the standard. Denton urged the agency to do more testing on multiple dummies in multiple laboratories to develop and validate a force corridor before incorporating a corridor into the standard.

*Response:* Denton provided a total of six test results from torso flexion tests that it performed on two different weighted dummies. As explained above, the agency has determined that both the data from agency testing and testing performed by Denton are appropriate for pooling to generate a larger sample size.

The dummies in Denton's testing did not meet the proposed resistance force corridor. (Denton's data ranged from 69 to 80 N. See, Docket No. NHTSA-2003-15089-4.) The agency recognizes that test response variation can result from variations in the abdominal stiffness and the abdomen's interaction with the ribcage. The average of the larger sample size is 88.6 N. Based on the larger sample size of data, the agency is adopting a resistance force specification of  $88.6 \pm 20$  N ( $20.0 \pm 4.5$  lbf) for the 45-degree flexion test.

#### *Method of Adding Weights to the Dummy*

To minimize the increase in seated height of the dummy and to obtain a more uniform mass distribution, NHTSA proposed to use a dense Tungsten alloy material to add the additional weight to the HIII-6C test dummy. The higher density of the Tungsten alloy allowed the lumbar base weight to be fabricated thinner than what would have been required to achieve a similar mass increase by using carbon steel, allowing the dummy's seating height to be increased by only 0.72 inches (instead of a one-inch height increase resulting from use of carbon steel spacers). The design of the Tungsten alloy plates distributed the added weight more uniformly between the upper and lower torso halves. The Tungsten alloy material also allowed the agency to increase the added weight at the bottom of the lumbar spine (hereinafter referred to as "pelvis") from 3.8 lb to 4.9 lb while maintaining the thoracic spine weight increase at 5.2 lb.<sup>9</sup>

<sup>9</sup> The spine weights consist of two 2.6-pound plates, one on each lateral side of the thoracic spine. The Tungsten alloy weights also only

*Issue No. 1:* The proposed dimensions for the holes to attach the weights, the distance between these holes in the vertical dimension, and the overall size dimensions on the weights all have two decimal place dimensions. Denton commented that this implies a standard  $\pm 0.01$  inch tolerance. Denton stated that the proposed tolerances would result in potential problems aligning the holes in the weights with the corresponding holes in the dummy's spine box. Denton recommended that: "the specifications incorporate a Geometric Dimension and Tolerancing (GD & T) true position tolerance of  $\pm 0.002$  inches at maximum material condition on one hole with the centerline of the other hole as the datum[.]"

Denton indicated that this would assure that any combination of parts made according to the specifications would always fit together. Denton further stated that under the proposed tolerance for the distance between holes in the vertical dimension, the mating parts would not match at nominal, further exacerbating the fit problem. Denton recommended that the distance dimensions be specified to three decimal places.

Denton also stated that the  $\pm 0.01$  inch tolerance for the weight measurements could give a variation in weight of up to 0.26 lb total for the thorax. To avoid potential problems with this weight variance in the spine box weights, Denton recommended using three decimal place dimensioning.

*Response:* The agency agrees with Denton that three-decimal-place dimensions are required to define the location of the holes in 167-2020-1&2. The corresponding hole locations in the 127-series drawing utilize three-decimal place dimensions and thus, in order to maintain consistency, the 167-series drawing will adopt the same scheme. The agency does not believe that a true position tolerance is necessary and in order to maintain consistency with the 127-series drawings, the agency is not adopting the dimension tolerancing recommended by Denton. The tolerances used in the 127-series drawings have not utilized the true position callout and the agency has not encountered any resulting mating problems for the dummy components therefore the agency does not expect any fit problems with the spine box. The agency also disagrees with Denton's proposal to change the length, width, and height dimensions to three-decimal-place dimensions. This change would

increase the dummy's seated height by 0.7 inch, compared to carbon steel weights, which would increase the dummy's seated height by 1 inch.

only reduce the possible weight variation to .07 pounds per piece, a relatively insignificant amount. Furthermore, the tungsten alloy is a relatively difficult material to machine and holding tighter tolerances may increase the machining costs.

*Issue No. 2:* The proposed design of the spine box plate used a counterbore for the screw heads so that there are left and right weights. Denton recommended replacing the counterbore with a through hole, which would allow a single weight to be made and used. Denton stated that a single design for the spine box plate would reduce manufacturing and inventory costs.

*Response:* We agree. The agency is adopting a spine box plate design with a through hole as opposed to a counterbore for mounting. The through hole will be suitable for mounting the plate on either the left or right side of the dummy's spine, while reducing the confusion with multiple parts. We agree with Denton that by allowing use of a through hole, the manufacturing and inventory costs may be reduced.

The use of the through hole does not result in any interference. The new design will at a maximum, result in a difference in weight of 0.027 lb per spine box weight or a total of 0.054 lb overall. The nominal weight of the upper torso is 17.33 lb, thus the proposed elimination of the counterbore feature would only change the total mass of the upper torso by 0.31 percent. In relation to the weight of the entire dummy, this change is insignificant.

#### **IV. Technical Amendment**

This document also makes a technical amendment to FMVSS No. 213 by adding cross-references to 49 CFR Part 572, Subpart S (the subpart added by today's document) to various paragraphs in FMVSS No. 213 that refer to the "weighted" 6-year-old dummy. This amendment clarifies FMVSS No. 213 and makes no substantive change to the standard. The June 24, 2003 final rule that adopted the weighted 6-year-old dummy into FMVSS No. 213 referenced this rulemaking on the HIII-6CW in referring to the weighted dummy (see 68 FR at 37652, col. 2). Because today's final rule completes the addition of Subpart S into 49 CFR Part 572, we are amending S5(d), S7.1.2(e), S9.1(f) and S9.3.2 of FMVSS No. 213 to refer to the weighted dummy as the Subpart S dummy.<sup>10</sup>

<sup>10</sup> We are also correcting S7.1.1(e) of FMVSS No. 213 by deleting paragraph (e) of that section. S7.1.1 sets forth requirements that apply to child restraints manufactured before August 1, 2005. The requirement of S7.1.1(e) apply to child restraints

## V. Costs

The agency estimates that the base cost of the new weighted 6-year-old child size dummy would be \$31,170. The cost of an uninstrumented HIII-6C test dummy is approximately \$30,000.<sup>11</sup> The cost difference of \$1,170 is as follows: Raw tungsten alloy materials for the weights are approximately \$270 for the lumbar spacer weight and \$240 for each of the two spine weights. The fabrication of the parts requires approximately 12 hours of machinist labor at a cost of \$35 per hour, for a total of \$420. Instrumentation would add approximately \$25,000 to \$41,000 to the cost of an uninstrumented dummy, depending on the amount of data desired.

## VI. Benefits

The agency has not quantified any benefits to the public from this rulemaking. There are qualitative benefits. The weighted 6-year-old child size dummy provides a suitable, repeatable, and objective test tool to the automotive safety community for development of improved safety systems for older children. In the absence of the dummy, the structural integrity of booster seats and child restraint systems designed for children from 50 to approximately 65 pounds was not evaluated. With the dummy, this aspect of performance can be appraised under FMVSS No. 213 in a meaningful manner.

## VII. Lead Time

This final rule is effective in 180 days. The agency believes that lead time is not a major factor for upweighting the HIII-6C. The weights can be attached relatively easily. The HIII-6CW dummy will be used in FMVSS No. 213 compliance tests to test child restraints (typically booster seats) manufactured on or after August 1, 2005.

## VIII. Rulemaking Analyses and Notices

### A. Executive Order 12866 and DOT Regulatory Policies and Procedures

Executive Order 12866, "Regulatory Planning and Review" (58 FR 51735, October 4, 1993), provides for making determinations whether a regulatory action is "significant" and therefore subject to Office of Management and Budget (OMB) review and to the requirements of the Executive Order. The Order defines a "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

NHTSA has considered the impact of this rulemaking action under Executive Order 12866 and the Department of Transportation's (DOT) regulatory policies and procedures (44 FR 11034, February 26, 1979). The Office of Management and Budget did not review this rulemaking document under Executive Order 12866. This rulemaking action has been determined not to be significant under the DOT's Regulatory Policies and Procedures.

This document amends 49 CFR Part 572 by adding design and performance specifications for a weighted 6-year-old child dummy that the agency will use in conducting its tests under FMVSS No. 213. If this final rule affects only those businesses that choose to manufacture or test with the dummy. It does not require anyone to manufacture or use the dummy.

The cost of an uninstrumented H-III6C dummy is approximately \$30,000.<sup>12</sup> The cost of the raw tungsten alloy materials for the weights is \$270 for the lumbar spacer weight and \$240 for each spine weight. The fabrication of the parts requires approximately 12 hours of machinist labor at a cost of \$35 per hour. Accordingly, the agency estimates that the cost of an H-III6CW dummy is \$31,170. Instrumentation would add approximately \$25,000 to \$41,000 to the cost of the dummy, depending on the amount of instrumentation.

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

### B. 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). The Small Business Administration's regulations at 13 CFR Part 121 define a small business, in part, as a business entity "which operates primarily within the United States." (13 CFR 121.105(a)). 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.

NHTSA has considered the effects of this rulemaking under the Regulatory Flexibility Act. I hereby certify that the amendment does not have a significant economic impact on a substantial number of small entities. The amendment does not impose any requirements on anyone. Therefore, it does not have a significant economic impact on a substantial number of small entities.

### C. National Environmental Policy Act

NHTSA has analyzed this rule for the purposes of the National Environmental Policy Act and determined that it does not have any significant impact on the quality of the human environment.

### D. Executive Order 13132 (Federalism)

Executive Order 13132 requires NHTSA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, the agency may not issue a regulation with Federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, the agency consults with State and local governments, or the

manufactured on or after August 1, 2005 and thus does not belong in S7.1.1.

<sup>11</sup> See the H-III6C dummy final rule at 65 FR 2064 (January 13, 2000).

<sup>12</sup> See the H-III6C dummy final rule at 65 FR 2064 (January 13, 2000).

agency consults with State and local officials early in the process of developing the proposed regulation. NHTSA also may not issue a regulation with Federalism implications and that preempts State law unless the agency consults with State and local officials early in the process of developing the proposed regulation.

NHTSA has analyzed this final rule in accordance with the principles and criteria set forth in Executive Order 13132. The agency has determined that this rule does not have sufficient federalism implications to warrant consultation and the preparation of a Federalism Assessment.

#### *E. Civil Justice Reform*

This rule will not have any retroactive effect. Under 49 U.S.C. 30103, whenever a Federal motor vehicle safety standard is in effect, a State may not adopt or maintain a safety standard applicable to the same aspect of performance which is not identical to the Federal standard, except to the extent that the state requirement imposes a higher level of performance and applies only to vehicles procured for the State's use. 49 U.S.C. 30161 sets forth a procedure for judicial review of final rules establishing, amending, or revoking Federal motor vehicle safety standards. That section does not require submission of a petition for reconsideration or other administrative proceedings before parties may file suit in court.

#### *F. 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 control number from the Office of Management and Budget (OMB). This rule does not have any requirements that are considered to be information collection requirements as defined by the OMB in 5 CFR Part 1320.

#### *G. 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 NHTSA 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 NHTSA to provide Congress, through OMB, explanations when the agency decides not to use available and applicable voluntary consensus standards.

The H-III6C dummy, which is the dummy upon which the weighted dummy is based, 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 H-III6C dummy and the weighted dummy adopted in today's document: SAE Recommended Practice J211-1995 Instrumentation for Impact Tests—Parts 1 and 2, dated March, 1995; and SAE J1733 Information Report, titled "Sign Convention for Vehicle Crash Testing", dated December 1994.

#### *H. Unfunded Mandates Reform Act*

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104-4, Federal requires 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 annually (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 the agency 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 final rule does not impose any unfunded mandates under the UMRA. This final rule does not meet the definition of a Federal mandate because it does not impose requirements on anyone. It amends 49 CFR Part 572 by adding design and performance specifications for a weighted 6-year-old child dummy that the agency will use in FMVSS No. 213 and could use in other Federal motor vehicle safety standards. This final rule affects only those businesses that choose to manufacture or test with the dummy. It does 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.

#### *I. Regulation Identifier Number*

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.

#### *J. Privacy Act Statement*

Anyone is able to search the electronic form of all comments or petitions received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477-78) or you may visit <http://dms.dot.gov>.

#### **List of Subjects**

##### *49 CFR Part 571*

Imports, Incorporation by reference, Motor vehicle safety, Reporting and recordkeeping requirements, Tires.

##### *49 CFR Part 572*

Motor vehicle safety, Incorporation by reference.

■ In consideration of the foregoing, NHTSA amends 49 CFR Chapter V as follows:

#### **PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS**

■ 1. The authority citation for Part 571 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. Section 571.213 is amended by revising S5(d), S7.1.2(e), S9.1(f) and S9.3.2, and removing S7.1.1(e), to read as follows:

##### **§ 571.213 Standard No. 213; Child restraint systems.**

\* \* \* \* \*

S5 \* \* \*  
(d) Each child restraint tested with a Part 572 Subpart S dummy need not meet S5.1.2 and S5.1.3.

\* \* \* \* \*

S7.1.2 \* \* \*  
(e) A child restraint that is manufactured on or after August 1, 2005, that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children



having a mass greater than 22.7 kg or by children in a specified height range that includes any children whose erect standing height is greater than 1100 mm is tested with a part 572 subpart S dummy.

\* \* \* \* \*

#### S9.1 \* \* \*

(f) *Hybrid III 6-year-old dummy (49 CFR Part 572, Subpart N) and Hybrid III 6-year-old weighted dummy (49 CFR Part 572, Subpart S).* When used in testing under this standard, the dummies specified in 49 CFR Part 572, Subpart N and Subpart S, are clothed in a light-weight cotton stretch short-sleeve shirt and above-the-knee pants, and size 12½ M sneakers with rubber toe caps, uppers of dacron and cotton or nylon and a total mass of 0.453 kg.

\* \* \* \* \*

S9.3.2 When using the test dummies conforming to Part 572 Subparts N, P, R, or S, prepare the dummies as specified in this paragraph. Before being used in testing under this standard, dummies must be conditioned at any ambient temperature from 20.6° to 22.2° C and at any relative humidity from 10 percent to 70 percent, for at least 4 hours.

\* \* \* \* \*

## PART 572—ANTHROPOMORPHIC TEST DUMMIES

■ 3. 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.

■ 4. 49 CFR part 572 is amended by adding a new subpart S, consisting of §§ 572.160–572.167, to read as follows:

### Subpart S—Hybrid III Six-Year-Old Weighted Child Test Dummy

Sec.

- 572.160 Incorporation by reference.
- 572.161 General description.
- 572.162 Head assembly and test procedure.
- 572.163 Neck assembly and test procedure.
- 572.164 Thorax assembly and test procedure.
- 572.165 Upper and lower torso assemblies and torso flexion test procedure.
- 572.166 Knees and knee impact test procedure.
- 572.167 Test conditions and instrumentation.

### Subpart S—Hybrid III Six-Year-Old Weighted Child Test Dummy

#### § 572.160 Incorporation by reference.

(a) The following materials are hereby incorporated into this subpart S by reference:

(1) A drawings and specifications package entitled “Parts List and Drawings, Part 572 Subpart S, Hybrid III

Weighted Six-Year Old Child Test Dummy (H–III6CW, Alpha Version) April 13, 2004”, incorporated by reference in § 572.161 and consisting of:

(i) Drawing No. 167–0000, Complete Assembly, incorporated by reference in § 572.161;

(ii) Drawing No. 167–2000, Upper Torso Assembly, incorporated by reference in §§ 572.161, 572.164, and 572.165 as part of a complete dummy assembly;

(iii) Drawing No. 167–2020, Spine Box Weight, incorporated by reference in §§ 572.161 and 572.165 as part of a complete dummy assembly;

(iv) Drawing No. 167–3000, Lower Torso Assembly, incorporated by reference in §§ 572.161, and 572.165 as part of a complete dummy assembly;

(v) Drawing No. 167–3010, Lumbar Weight Base, incorporated by reference in §§ 572.161 and 572.165 as part of a complete dummy assembly; and

(vi) The Hybrid III Weighted Six-Year-Old Child Parts/Drawing List, incorporated by reference in § 572.161.

(2) A procedures manual entitled “Procedures for Assembly, Disassembly, and Inspection (PADI) of the Hybrid III Six-Year-Old Weighted Child Test Dummy (H–III6CW), April 2004,” incorporated by reference in § 572.161;

(3) 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 Technical Reference Library, 400 Seventh Street, SW., room 5109, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(b) The incorporated materials are available as follows:

(1) The Drawings and Specifications for the Hybrid III Six-Year-Old Weighted Child Test Dummy referred to in paragraph (a)(1) of this section are available in electronic format through the NHTSA docket center and in paper format from Leet-Melbrook, Division of New RT, 18810 Woodfield Road, Gaithersburg, MD 20879, (301) 670–0090.

(2) [Reserved]

#### § 572.161 General description.

(a) The Hybrid III Six-Year-Old Weighted Child Test Dummy is defined by drawings and specifications containing the following materials:

(1) “Parts List and Drawings, Part 572 Subpart S, Hybrid III Weighted Six-Year

Old Child Test Dummy (H–III6CW, Alpha Version) April 13, 2004” (incorporated by reference, see § 572.160),

(2) The head, neck, arm, and leg assemblies specified in 49 CFR 572 subpart N; and

(3) “Procedures for Assembly, Disassembly, and Inspection (PADI) of the Hybrid III Six-Year-Old Weighted Child Test Dummy, April 2004” (incorporated by reference, see § 572.160).

TABLE A

Component assembly <sup>1</sup>	Drawing No.
Complete assembly .....	167–0000
Upper torso assembly .....	167–2000
Spine box weight .....	167–2020
Lower torso assembly .....	167–3000
Lumbar weight base .....	167–3010

<sup>1</sup> Head, neck, arm, and leg assemblies are as specified in 49 CFR 572 subpart N.

(b) Adjacent segments 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.

(c) The structural properties of the dummy are such that the dummy must conform to Subpart S in every respect and Subpart N as applicable, before use in any test similar to those specified in Standard 208, “Occupant Crash Protection” (49 CFR 571.208), and Standard 213, “Child Restraint Systems” (49 CFR 571.213).

#### § 572.162 Head assembly and test procedure.

The head assembly is assembled and tested as specified in 49 CFR 572.122 (Subpart N).

#### § 572.163 Neck assembly and test procedure.

The neck assembly is assembled and tested as specified in 49 CFR 572.123 (Subpart N).

#### § 572.164 Thorax assembly and test procedure.

(a) *Thorax (upper torso) assembly.* The thorax consists of the part of the torso assembly shown in drawing 167–2000 (incorporated by reference, see § 572.160).

(b) When the anterior surface of the thorax of a completely assembled dummy (drawing 167–2000) that is seated as shown in Figure S1 is impacted by a test probe conforming to 49 CFR 572.127(a) at  $6.71 \pm 0.12$  m/s ( $22.0 \pm 0.4$  ft/s) according to the test procedure specified in 49 CFR 572.124(c):



(1) The maximum sternum displacement relative to the spine, measured with chest deflection transducer (specified in 49 CFR 572.124(b)(1)), must be not less than 38.0 mm (1.50 in) and not more than 46.0 mm (1.80 in). Within this specified compression corridor, the peak force, measured by the probe in accordance with 49 CFR 572.127, must be not less than 1205 N (270.9 lbf) and not more than 1435 N (322.6 lbf). The peak force after 12.5 mm (0.5 in) of sternum displacement, but before reaching the minimum required 38.0 mm (1.46 in) sternum displacement limit, must not exceed an upper limit of 1500 N.

(2) The internal hysteresis of the ribcage in each impact as determined by the plot of force vs. deflection in paragraph (b)(1) of this section must be not less than 65 percent but not more than 85 percent.

(c) *Test procedure.* The thorax assembly is tested as specified in 49 CFR 572.124(c).

**§ 572.165 Upper and lower torso assemblies and torso flexion test procedure.**

(a) *Upper/lower torso assembly.* The test objective is to determine the

stiffness effects of the lumbar spine (specified in 49 CFR 572.125(a)), including cable (specified in 49 CFR 572.125(a)), mounting plate insert (specified in 49 CFR 572.125(a)), nylon shoulder bushing (specified in 49 CFR 572.125(a)), nut (specified in 49 CFR 572.125(a)), spine box weighting plates (drawing 167–2020), lumbar base weight (drawing 167–3010), and abdominal insert (specified in 49 CFR 572.125(a)), on resistance to articulation between the upper torso assembly (drawing 167–2000) and the lower torso assembly (drawing 167–3000). Drawing Nos. 167–2000, 167–2020, 167–3000 and 167–3010 are incorporated by reference, see § 572.160.

(b)(1) When the upper torso assembly of a seated dummy is subjected to a force continuously applied at the head to neck pivot pin level through a rigidly attached adaptor bracket as shown in Figure S2 according to the test procedure set out in 49 CFR 572.125(c), the lumbar spine-abdomen assembly must flex by an amount that permits the upper torso assembly to translate in angular motion until the machined surface of the instrument cavity at the back of the thoracic spine box is at 45

± 0.5 degrees relative to the transverse plane, at which time the force applied as shown in Figure S2 must be within 88.6 N ± 20 N (20.0 N ± 4.5 N), and

(2) Upon removal of the force, the torso assembly must return to within 9 degrees of its initial position.

(c) *Test procedure.* The upper and lower torso assemblies are tested as specified in 49 CFR 572.125(c), except that in paragraph (c)(5) of that section, the initial torso orientation angle may not exceed 32 degrees.

**§ 572.166 Knees and knee impact test procedure.**

The knee assembly is assembled and tested as specified in 49 CFR 572.126 (Subpart N).

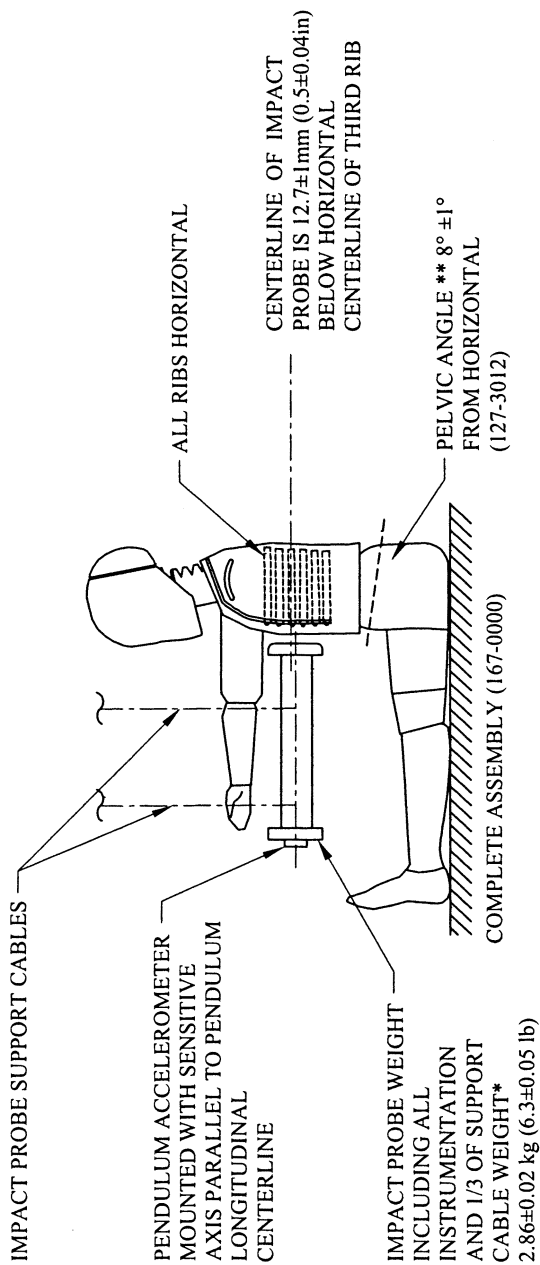
**§ 572.167 Test conditions and instrumentation.**

The test conditions and instrumentation are as specified in 49 CFR 572.127 (Subpart N).

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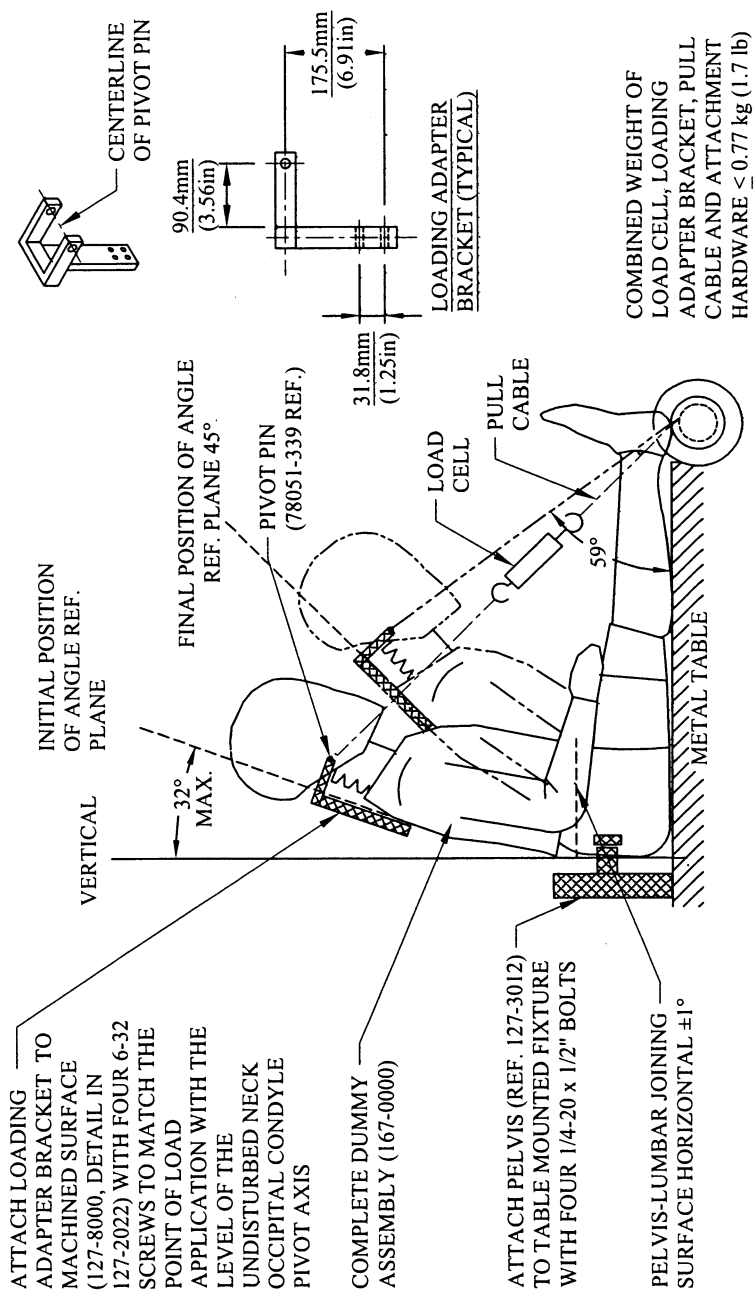
**Figures to Subpart S**

FIGURE S1  
THORAX IMPACT TEST SET-UP SPECIFICATIONS



\* 1/3 CABLE WEIGHT NOT TO EXCEED 5% OF THE TOTAL IMPACT PROBE WEIGHT  
\*\* PELVIS LUMBAR JOINING SURFACE

FIGURE S2  
TORSO FLEXION TEST SET-UP SPECIFICATIONS



Issued: July 7, 2004.

Otis G. Cox,

Deputy Administrator.

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