INTERNATIONAL STANDARD

ISO 13215-2

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Road vehicles — Reduction of misuse risk of child restraint systems —

Part 2:
Requirements and test procedures for correct installation (panel method)

Véhicules routiers — Réduction du risque de mauvaise utilisation des systèmes de retenue pour enfants —

Partie 2: Exigences et méthodes d'essai pour une installation correcte (méthode par panel)

Reference number
ISO 13215-2:1999(E)

Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 13215-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 12, *Restraint systems*.

ISO 13215 consists of the following parts, under the general title *Road vehicles — Reduction of misuse risk of child restraint systems:*

— *Part 1: Form for field studies*

— *Part 2: Requirements and test procedures for correct installation (panel method)*

— *Part 3: Prediction and assessment of misuse by Misuse Mode and Effect Analysis (MMEA)*

— *Part 4: Instructions and labels*

Annexes A and B are for information only.

Road vehicles — Reduction of misuse risk of child restraint systems —

Part 2:
Requirements and test procedures for correct installation (panel method)

1 Scope

This part of ISO 13215 specifies the requirements and test methods for judging if user-installed child restraints are correctly installed.

Acceptance criteria are given for the child restraint when tested by the specified methods. These methods provide a measure of the effectiveness of the child restraint in preventing incorrect installation, and also cover the correctness of use of the child harness. The method is intended for technical assessment (see 4.1). The method is not primarily indended for quality assurance or research purposes.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 13215. For dated references, subsequent amendments to, or revisions of, this publication do not apply. However, parties to agreements based on this part of ISO 13215 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 13215-3:1999, *Road vehicles — Reduction of misuse risk of child restraint systems — Part 3: Prediction and assessment of misuse by Misuse Mode and Effect Analysis (MMEA)*.

3 Terms and definitions

For the purposes of this part of ISO 13215, the following terms and definitions apply:

3.1
child restraint system
CRS
any free-standing device intended to provide child vehicle occupants with an approved restraint

NOTE Child restraint systems comprise various categories, such as car beds, infant restraints, toddler seats, booster cushions and booster seats. Combination products may cover two or more of these product categories.

3.2
adult safety belt
approved webbing device used to restrain adults

3.3
child harness assembly
the internal harness, in relevant cases, intended to restrain the child within the child restraint

3.4
tether
any straps and other hardware attachments used to supplement the adult safety belt in installing the child restraint in the vehicle

3.5
correctly fitted
fitted in accordance with manufacturer's instructions and in harmony with nationally accepted measures of goodness of use, for example the tightness of a child restraint system in an adult seat belt

4 General

4.1 Compliance with this part of ISO 13215

A user-installed child restraint tested in accordance with the requirements of this part of ISO 13215 is shown to be capable of being correctly installed, i.e. the test is designed for technical assessment, but could also be used for type approval.

4.2 Restraints for testing

A sufficient number of restraints shall be supplied to allow practical testing and for one sample to be retained for reference. It is not necessary to provide a new sample for each member of the test group.

4.3 Test panels

Enough adults to ensure 200 participants[1)] between the ages of 18 and 45 years, with an even distribution of age and sex, shall be available. As far as possible, they shall represent the social, ethnic and cultural origins of the country as a whole. They shall all be healthy, with no evident physical or mental handicap associated with manual dexterity. Appropriate subjects are parents with children in the age or mass group for which the CRS is approved. It is suggested that parents be allowed to participate as couples, or alone. See annex A.

Each restraint is intended for a given age or mass group, expressed by the manufacturer's marking. Parents with children within the designated age or mass group are selected as subjects.

4.4 Location

The recommended location is within a shopping mall or toy store, in a space selected to prevent extraneous distraction. If a garage is used, it is important to provide good general lighting, and a seating area where the test panel participants can study the installation instructions. Suitable arrangements shall be made for keeping the child amused, and to avoid distracting the adult subjects whilst studying the instructions and during the CRS installation test.

4.5 Vehicle

The panel shall perform the test with a vehicle seat rig or in an actual vehicle. The vehicle shall be selected from the ten most commonly sold vehicles in the country of use. The test agency shall determine which vehicle is to be used by a random choice among the ten most common vehicles. The general layout of an appropriate test rig is shown in annex B.

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1) Smaller samples can be used with the sequential method (see 7.2).

5 Requirements

5.1 General safety requirements

This part of ISO 13215 may be used for the evaluation of currently approved CRSs or for prototype CRSs.

5.2 Requirements concerning installation

When the restraint is tested in accordance with 6.3, the following requirements shall be met:

a) At least 85 % of the adults in the test panel shall be able to install the restraint correctly in the vehicle within 10 minutes;

b) At least 85 % of the adults in the test panel shall be able to fit the harness correctly to the child within 5 minutes.

Supplementary requirements:

For height-adjustable harness systems, at least 85 % of the adults in the test panel shall be able to correctly adapt the harness from the lower position to the upper position within 5 minutes.

For combination products, at least 85 % of the adults in the test panel shall be able to alter a CRS correctly from its initial mode to its alternative mode within 10 minutes, insofar as this installation constitutes a new installation.

6 Test procedures

6.1 Test supervision

All procedures shall be carried out under the supervision of (an) impartial and appropriately qualified person(s). Guidance for observers carrying out the tests is given in annex B.

Panel testing shall be led by a person who has

— knowledge of the panel testing method and statistical methods and how to combine them according to the circumstances;

— knowledge of how to conduct interviews and how to guide the panel participants without influencing them in any specific direction;

— at least basic knowledge in the physiology of the senses, perception and psychology.

The observer shall not be personally involved in the design, production or marketing of the products under evaluation.

6.2 Preliminary checking and preparation

The observer shall inspect the restraint prior to testing, in order to determine if the instructions correspond to the product. The supervisor shall also perform the installation, determining that the installation is in accordance with the manufacturer's specification.

6.3 CRS installation test

6.3.1 Procedure

The test may be carried out on all 200 panel participants or by a sequential procedure. If the latter is used, the panel size will depend on the results. When testing sequentially, the age and sex constraints specified in 4.3 shall be adhered to. It must be noted that a small sample will not be representative of the entire population, and any distinct

bias in terms of age, socio-economic group, ethnic origin, earlier product experience or otherwise shall be clearly stated in the presentation of the results.

The permanent instructions associated with the product shall be drawn to the attention of the subjects. Demonstrations or other instructions, such as pamphlets or printed instruction leaflets, shall not be given to the subjects. It is however allowed to present the permanent labels in enlarged form, in the shape of an A4 plastic card or poster and placed in a position visible to the user.

The participants shall not be able to observe the efforts of others to install the restraint. The observer shall check the restraint prior to giving it to each participant to ensure that it is not worn or damaged in any way that may affect its ease of installation.

Each participant shall be given a restraint with the request that the participant first study the permanent instructions and then install the restraint. The participants are allowed to re-examine the instructions at will.

6.3.2 Expression of results

Record the time needed by the subject to install the seat, and whether the allotted time was used without being able to install the seat. Note how much time was used to study the instructions and to perform the installation. In the case of restraints requiring the use of tethers, record whether the tether was correctly fitted.

6.4 Harness installation test (for CRSs that use an internal harness only)

6.4.1 Procedure

Ask each subject to study the installation instructions, in order to be able to fit the child into the harness or webbing used by the restraint.

In the case of integral restraints, in which the child is kept within the restraint by means of internal webbing, the object of the test is to fit the webbing correctly to the child. In the case of non-integral restraints, in which the child is restrained by the adult webbing, the object of the test is to fit the adult webbing correctly to the child.

6.4.2 Expression of results

Record the time needed to fit the harness correctly, or whether the webbing was fitted to the child correctly, as defined in the drawings or representations provided by the manufacturer, in the allotted time. If the subjects do not succeed in closing the buckle, record this information as well.

7 Assessment of results

7.1 Success/failure

The result of the CRS installation test is a failure if the subjects do not correctly install the restraint within the allowed time. The result of the harness installation test is a failure if the subjects do not fit correctly or close the harness in the allowed time.

7.2 Sequential method

The sequential procedure allows relatively secure conclusions to be based on a small sample if the outcome is below the lower limit line 1 in Figure 1. In principle, a sample as small as 30 can support a conclusion of no misuse risk, with a 15 % AQL (which means with a 15 % probability that this conclusion is incorrect). However, in many cases larger samples will be needed for statistically acceptable confidence, and to achieve a representative sample.

As each result is obtained, plot it on the appropriate chart by filling in a square as follows:

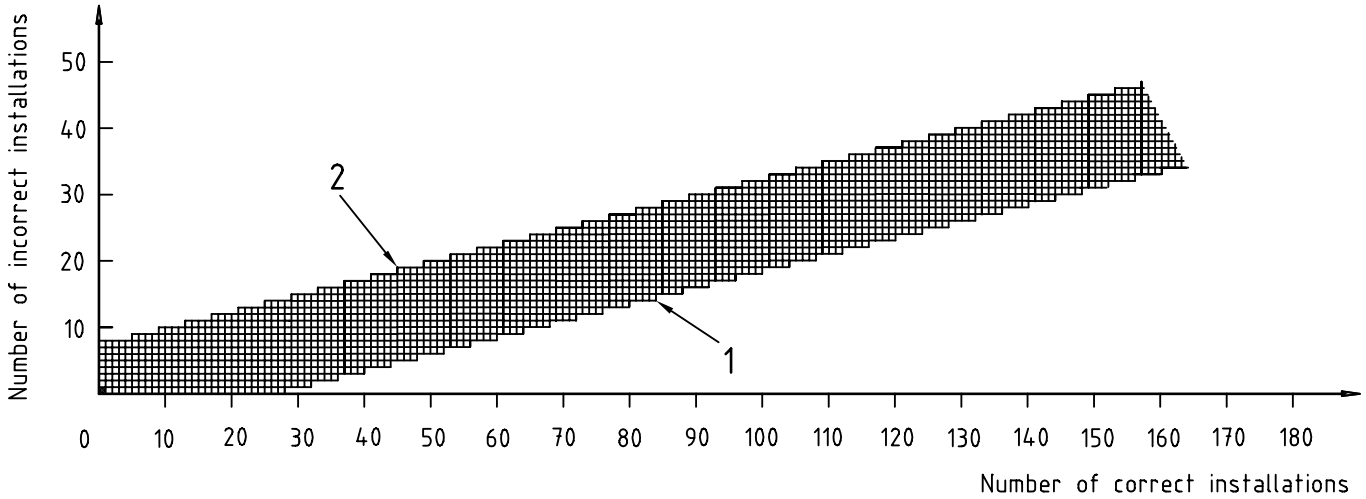
a) fill in a square immediately to the right of the previous result in Figure 1 if the subject installed the restraint correctly;

b) fill in a square immediately above the previous result in Figure 1 if the subject failed to install the restraint correctly.

Plot a second chart in the same way for the results of the harness test.

NOTE In the case of the first result to be plotted, the blanked out square is regarded as the "previous result".

The restraint shall be deemed to have failed the test as soon as the trail of filled squares passes above limit line 2 in Figure 1, or to have passed the test as soon as the trail passes below limit line 1. If neither outcome occurs, the results shall be assessed in accordance with the requirements laid down in 5.2.



Key

1 Limit line 1
2 Limit line 2

Figure 1 — Chart for sequential test procedure

7.3 Full test

If a sequential procedure is not used and the full number of children is tested, the results shall be assessed in accordance with the requirements laid down in 5.2.

8 Test report

8.1 General information

The observer shall record at least the following information:

a) the name of the agency carrying out the test;

b) the date(s) on which the test was carried out;

c) the name and address of the manufacturer and/or supplier of the restraint tested;

d) the name(s) of the person(s) supervising the test;

e) the specification number, the drawing numbers and a complete description of the package tested;

f) a direct quotation of the exact instructions, etc., given to the subjects during the test;

g) a copy of the manufacturer's restraint installation instructions given to the subjects during the test;

h) a description of the rig or vehicle used in the test;

i) a description of the locale used for the test.

8.2 Outcome

The observer shall record at least the following information on the outcome:

j) the number of subjects, and their age and sex;

k) the age/mass of the child subjects;

l) the number of subjects who correctly installed the restraint;

m) the number of subjects who correctly installed the harness;

n) if the sequential method was used, the charts produced in accordance with Figure 1.

8.3 Additional (optional) information

Any other information deemed to be useful in assessing the interpretation of the result, such as the time required for the subjects to install the restraint and the harness, may also be recorded.

8.4 Overall test result

Record whether the overall result of the test was a pass or a failure.

Annex A
(informative)

Notes for guidance in panel testing

A.1 General

Each potential subject should be screened before testing and should give a negative answer to the following questions:

— Are you professionally concerned with the design or manufacture of child restraints?

— Are you professionally concerned with the sale or use of child restraints?

NOTE In order to elicit this information and, at the same time, to ascertain that the individual is literate, it is possible to present the question on a typed or printed form and to give this to the person to read. Persons with obvious physical handicaps likely to affect their performance should not be approached.

A.2 Purpose of the test

The purpose of the test should be explained in reasonable detail but no demonstration should be given.

Annex B
(informative)

A brief guideline for observers

B.1 Checklist

1. Read closely the requirements in subclauses 8.1 and 8.2. You will need to write a short report on each test series. Make sure that your report is introduced by all the information required in 8.1.

2. To do your actual panel testing, you will need to have a report sheet for each subject that you observe. This report form lets you note an answer for the questions listed in 8.2. You can copy the sample included here, or do your own.

3. It is a good idea to give each participant a letter that presents the purpose of the study, and the names and positions of the people who are performing the study.

4. Try to make sure that your participants are varied in ethnic origin, age and background. If you think that you have not been able to do this, make sure to note this clearly in your report.

5. You will need a stopwatch or large, clearly visible clock. Do not let the participants watch the clock.

6. Decide if you want your participants to work singly or in pairs, and make sure that you are consistent in this regard. Note this on your report form for each trial.

7. Make sure that each set of participants does not watch the earlier trails.

8. Check the restraint before each trial to make sure that it is complete and functions correctly.

B.2 Drawing of test rig

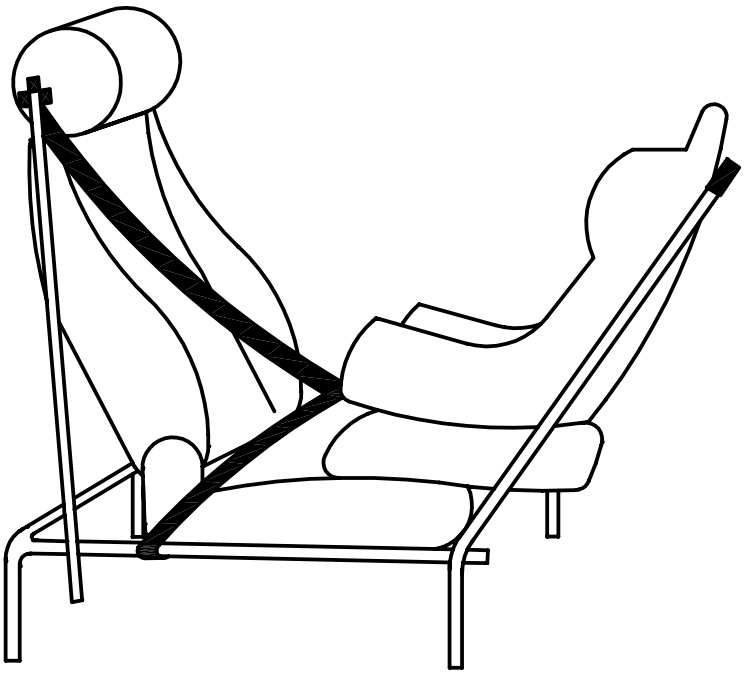


Figure B.1 — Sample test rig

B.3 Sample report form

Panel test of _____ (restraint name and number)

Approved for _____ usage for children of (age/mass)

Date _____ Locale _____

Observer's initials _____

1. Participant number _____

Participant single _____ couple _____

sex _____ age(s) _____

2. Child's age in months _____ sex _____

3. Did the participants study the instructions? Or just look at them? _____

4. Did they fit the restraint correctly, in accordance with the instructions? How long did they work?

Make sure to use the stop watch! Time _____ Correct? _____

5. How long did they try to install the harness? Time _____ Correct?_____

6. What comments did the participants make as they worked?

_____

_____

7. If the participants failed to install correctly, in what way did they fail? Make careful and full notes, in order to understand better the causes of this failure.

_____

_____

8. How did the child react to the situation?

_____

9. Any other notes:

_____

_____

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