INTERNATIONAL STANDARD

ISO 7176-2

Second edition
2001-06-15

Wheelchairs —

Part 2: Determination of dynamic stability of electric wheelchairs

Fauteuils roulants —

Partie 2: Détermination de la stabilité dynamique des fauteuils roulants électriques

Reference number
ISO 7176-2:2001(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

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.

Attention is drawn to the possibility that some of the elements of this part of ISO 7176 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 7176-2 was prepared by Technical Committee ISO/TC 173, *Technical systems and aids for disabled or handicapped persons*, Subcommittee SC 1, *Wheelchairs*.

This second edition cancels and replaces the first edition (ISO 7176-2:1990), which has been technically revised.

ISO 7176 consists of the following parts, under the general title *Wheelchairs*:

— *Part 1: Determination of static stability*

— *Part 2: Determination of dynamic stability of electric wheelchairs*

— *Part 3: Determination of effectiveness of brakes*

— *Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range*

— *Part 5: Determination of overall dimensions, mass and turning space*

— *Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs*

— *Part 7: Measurement of seating and wheel dimensions*

— *Part 8: Requirements and test methods for static, impact and fatigue strengths*

— *Part 9: Climatic tests for electric wheelchairs*

— *Part 10: Determination of obstacle-climbing ability of electric wheelchairs*

— *Part 11: Test dummies*

— *Part 13: Determination of coefficient of friction of test surfaces*

— *Part 14: Power and controls systems for electric wheelchairs — Requirements and test methods*

— *Part 15: Requirements for information disclosure, documentation and labelling*

— *Part 16: Resistance to ignition of upholstered parts — Requirements and test methods*

— *Part 22: Set-up procedures*

— *Part 23: Attendant-operated stair-climbing devices*

The following parts are also on the programme of work:

— *Part 17: Serial interface for electric wheelchair controllers*

— *Part 19: Wheeled mobility devices for use in motor vehicles*

— *Part 20: Determination of the performance of stand-up type wheelchairs*

— *Part 21: Electromagnetic compatibility of electrically powered wheelchairs and motorized scooters — Requirements and test methods*

— *Part 24: User-operated stair-climbing devices*

Annex A forms a normative part of this part of ISO 7176. Annex B is for information only.

Wheelchairs —

Part 2:
Determination of dynamic stability of electric wheelchairs

1 Scope

This part of ISO 7176 specifies test methods for determining the dynamic stability of electrically powered wheelchairs.

This part of ISO 7176 is applicable to electrically powered wheelchairs including scooters with a maximum nominal speed not exceeding 15 km/h, intended to carry one person.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 7176. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 7176 are encouraged to investigate the possibility of applying the most recent editions of the normative documents 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 6440:1985, *Wheelchairs — Nomenclature, terms and definitions.*

ISO 7176-11:1992, *Wheelchairs — Part 11: Test dummies.*

ISO 7176-13:1989, *Wheelchairs — Part 13: Determination of coefficient of friction of test surfaces.*

ISO 7176-15:1996, *Wheelchairs — Part 15: Requirements for information disclosure, documentation and labelling.*

ISO 7176-22:2000, *Wheelchairs — Part 22: Set-up procedures.*

3 Terms and definitions

For the purposes of this part of ISO 7176, the terms and definitions given in ISO 6440 and the following apply.

3.1
antitip device
device which limits the extent of tipping of a wheelchair

NOTE 1 These may include fixed or removable wheels, posts, skids or footrests. They may operate in forwards, rearwards or lateral directions of instability.

NOTE 2 Auxiliary wheels on which, in certain conditions, the wheelchair is intended to run are not included.

3.2
auxiliary wheels
integral wheels onto which the manufacturer intends the wheelchair to be capable of being tipped and run

NOTE If auxiliary wheels are optional, the wheelchair should at least be tested in its standard configuration. The wheelchair may also be tested in an optional configuration in a separate test report.

3.3
direct steering
means by which the direction of travel of a wheelchair is controlled by the user operating a linkage which acts directly on the alignment of one or more wheels

EXAMPLE Tiller controls, often found on scooters.

NOTE 1 Wheelchairs using this mechanism normally do not have freely pivoting castors.

NOTE 2 Hybrid wheelchairs may include electronic controls which move an actuator to mechanically steer wheels.

3.4
input control device
means by which the user directs the wheelchair to move at the desired speed and/or direction of travel

3.5
lifting wheel(s)
wheel(s) which lose contact with the test plane under conditions of instability

3.6
user adjustable
component which can be adjusted in position or magnitude with or without the use of tools

3.7
wheel lift
loss of contact between a wheel and test surface occurring during conditions of instability

NOTE 1 This does not include transient loss of contact due to surface irregularity or transitions.

NOTE 2 This does not include deliberate loss of contact such as a transition onto auxiliary wheels or rotation of cluster wheels.

4 Principle

The wheelchair is subjected to a number of driving tests simulating normal use of a wheelchair while its movements are observed for the occurrence of a range of defined conditions of instability.

5 Apparatus

5.1 Rigid, flat, horizontal test plane with coefficient of friction as specified in ISO 7176-13 and of sufficient size to conduct the tests.

The test plane shall be long enough to allow the wheelchair to reach maximum speed.

NOTE An area of approximately 10 m × 3 m is normally of sufficient size but the testing of larger chairs may need a larger test plane.

5.2 Rigid, flat, inclined test ramp with inclination adjustable to 3° ± 0,2°, 6° ± 0,2° and 10° ± 0,2° relative to the horizontal. The test ramp shall run immediately from the horizontal test plane via a transition with a radius of less than 12 mm. The overall slope of the test ramp shall be measured top to bottom with an accuracy of ± 0,2° by checking with a transit, water level or electronic instrumentation with ± 0,2° accuracy to compare the height at the bottom with that at the top.

The test ramp shall be long enough to allow the wheelchair to reach maximum speed.

NOTE 1 Alternatively, three separate fixed ramps may be used to provide the three required inclinations.

NOTE 2 A ramp approximately 10 m × 3 m is normally of sufficient area, but the testing of larger chairs may need a larger ramp.

5.3 Rigid vertical step transition, with the following properties:

a) immediately adjacent to a horizontal test plane and followed by a further horizontal plane onto which a wheelchair can be driven via the step from the horizontal test plane;

b) step heights of 12 mm, 25 mm, 50 mm, and multiples of 25 mm above that if claimed by the manufacturer;

c) a top edge of the step with a radius of 6 mm ± 1 mm;

d) the tolerance on total step height shall be ± 1 mm.

NOTE 1 This may be either a single step with adjustable height or five separate fixed steps.

NOTE 2 An area of approximately 1 m × 5 m is normally of sufficient size for the higher plane.

5.4 Test dummy in accordance with ISO 7176-11, or a human test driver.

If a dummy is used, remote control may be used to operate the wheelchair controls. This may be done by a telemetry system, by an operator running along side the wheelchair or by other similar means.

5.5 Supplementary weights to add to the wheelchair to give the mass distribution equivalent to the relevant dummy (only required if a human test driver is used).

6 Initial set-up of test wheelchair

6.1 General

Prepare the test wheelchair in accordance with ISO 7176-22, with the exceptions given in 6.2 to 6.7.

6.2 Seat height

If the seat height is adjustable by the user, set it to the maximum height at which the wheelchair can be driven at maximum speed.

NOTE Some wheelchairs have a means to reduce the maximum speed automatically when the seat is raised.

6.3 Adjustable controllers

For wheelchairs with adjustable controllers, set all user-accessible adjustments for speed and acceleration to their maximum and set all other adjustable features to the factory settings specified by the manufacturer, including those features that can be adjusted by the dealer or therapist.

6.4 Antitip devices

If antitip devices are fitted and are adjustable by the user and/or his/her attendant, set them to their least effective but still operative position through touching the ground during instability. Record if the wheelchair can accept antitip devices to be fitted, and whether the wheelchair is tested with or without antitip device(s). The wheelchair shall be tested with antitip devices if they are provided. The wheelchair shall also be tested without antitip devices if they are removable with or without tools.

6.5 Kerb climbing devices

The wheelchair shall be tested with kerb climbing devices if they are provided. They shall be set to their normal position for climbing kerbs as specified by the manufacturer. The wheelchair shall also be tested without kerb climbing devices if they are removable with or without tools.

6.6 Test load

6.6.1 General

Select the test load to be either a test dummy or human test driver and set up as specified in 6.6.2 and 6.6.3.

6.6.2 Test dummy

a) Select, position and secure the appropriate dummy in accordance with ISO 7176-22.

b) Set up the means to remotely control the wheelchair.

6.6.3 Human test driver

If a human test driver is used, add weights to the wheelchair or the person to give a total mass equivalent to the relevant dummy mass ± 2 kg and a distribution similar to that of the dummy.

This testing is potentially hazardous to a human test driver and test personnel. Appropriate safety precautions should be taken to avoid injury. Any additional weights should be firmly secured to the wheelchair or the test driver. An overhead harness can be used to protect the wheelchair driver. Mats can be used to catch the wheelchair. Assistants can be used to catch the wheelchair driver.

During the tests, care should be taken to minimize any body movement of the driver which may take place either willingly or unwillingly to stabilize the wheelchair.

6.7 Batteries

The wheelchair should be equipped with batteries as specified by the manufacturer. Batteries containing liquid acid, however, may be hazardous if spilled during these tests and may be replaced by the nearest equivalent gel or sealed batteries with supplementary weights to give an equivalent mass distribution.

7 Test procedure

Conduct the tests specified in clauses 8, 9 and 10 using the scoring system specified in annex A to quantify the dynamic response of the wheelchair.

The tests may be performed in any sequence.

If the stability is found to be 0 at a certain slope or step height, stop testing and record a 0 for more difficult tests in that section. There is no need to continue with the testing as this could be dangerous for the tester and damaging to the wheelchair.

For safety reasons, each test should initially be performed at slow speed and gradually increased until a score of 0 or a maximum speed is reached.

NOTE Video recordings of the movement of the wheelchair, replayed in slow motion and stop action, can assist observing and scoring the wheelchair responses.

8 Tests for rearward dynamic stability

8.1 Wheelchair preparation

Prepare the wheelchair as specified in clause 6 with the following additions: set the rear-wheel position, castor attachment to frame, seat position, back position, seat-to-back angle and leg-to-seat angle in their least stable configuration for the wheelchair in the rearward direction according to Table 1.

Table 1 — Rearward stability

Adjustable wheelchair component	Least stable
Rear-wheel position, fore-aft	Forward
Castor attachment to frame, fore-aft	Back
Seat position, fore-aft	Back
Seat position, vertical	High
Seat-back position, recline	Back
Seat position, tilt	Back
Back position, fore-aft	Back
Leg to seat angle	Minimum

8.2 Starting forwards

NOTE This test determines stability when a wheelchair starts on a horizontal surface and on an uphill slope.

a) Position the wheelchair on the horizontal test plane.

b) From a stationary position, operate the input control device to give maximum acceleration in the forward direction.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat b) to c) on the 3°, 6° and 10° ramps starting with the wheelchair on each ramp facing uphill.

8.3 Stopping after travelling forwards

NOTE This test determines stability when a wheelchair stops on a horizontal surface and rocks backwards as a counter movement. This test also determines stability when stopping on an uphill slope if the wheelchair rolls or rocks backwards before coming to a complete stop.

a) Run the wheelchair at maximum forward speed on the horizontal test plane.

b) Apply retardation by releasing the input control device.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat a) to c) applying retardation by turning the wheelchair power off.

e) Repeat a) to c) applying retardation by quickly applying full speed command in the opposite direction, keeping the control device at maximum retardation until the wheels turn in the opposite direction.

f) Record the lowest score from the three methods of a) to e) and the method which gave this result.

g) Repeat a) to f) travelling forwards uphill on the 3°, 6° and 10° ramps.

8.4 Braking when travelling backwards

NOTE This test determines stability when a wheelchair stops suddenly from maximum reverse speed travelling on the horizontal and downhill.

a) Run the wheelchair at maximum reverse speed on the horizontal test plane.

b) Apply retardation by releasing the input control device.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat a) to c) applying retardation by turning the wheelchair power off.

e) Repeat a) to c) applying retardation by quickly applying full speed command in the opposite direction, keeping the control device at maximum retardation until the wheels turn in the opposite direction.

f) Record the lowest score from the three methods of a) to e) and the retardation method which gave this result.

g) Repeat a) to f) travelling backwards downhill on the 3°, 6° and 10° ramps.

8.5 Travelling forward up a step transition from a standing start

a) Position the wheelchair on the horizontal test plane with its front wheels in contact with the 12 mm step and in the trailing position for forward motion.

b) Operate the input control device to give maximum acceleration in the forward direction until all wheels are up the step.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat a) to c) with step heights of 25 mm and 50 mm.

e) If the manufacturer claims that the wheelchair is capable of handling higher step transitions, repeat a) to c) at intervals that are multiples of 25 mm, increasing step heights until the wheelchair can no longer travel up the step transition with a score of 2 or greater. At each height, score the response of the wheelchair according to annex A.

Any kerb-climbing devices should be set in their normal position for driving the wheelchair up a kerb.

8.6 Travelling backward down a step transition from a standing start

a) Position the wheelchair on the horizontal test plane with its rear wheels at the edge of the 12 mm step.

b) Operate the input control device at minimum speed in the reverse direction to travel down the step.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat a) to c) with step heights of 25 mm and 50 mm.

e) If the manufacturer claims that the wheelchair is capable of handling higher step transitions, repeat a) to c) at intervals that are multiples of 25 mm, increasing step heights until the wheelchair can no longer travel down the step transition with a score of 2 or greater. At each height, score the response of the wheelchair according to annex A.

9 Tests for forward dynamic stability

9.1 Wheelchair preparation

Prepare the wheelchair as specified in clause 6 with the following additions: set the rear-wheel position, castor attachment to frame, seat position, back position, seat-to-back angle and leg-to-seat angle in their least stable configuration for the wheelchair in the forward direction according to Table 2.

Table 2 — Forward stability

Adjustable wheelchair component	Least stable
Rear-wheel position, fore-aft	Forward
Castor attachment to frame, fore-aft	Back
Seat position, fore-aft	Forward
Seat position, vertical	High
Back position, fore-aft	Forward
Seat-back position, recline	Upright
Seat position, tilt	Upright
Leg to seat angle	Greatest

9.2 Braking when travelling forwards

a) Run the wheelchair at maximum speed forward on the horizontal test plane.

b) Apply retardation by releasing the input control device.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat a) to c) applying retardation by turning the wheelchair power off.

e) Repeat a) to c) applying retardation by quickly applying full speed command in the opposite direction, keeping the control device at maximum retardation until the wheels turn in the opposite direction.

f) Record the lowest score from the three methods of a) to e) and the retardation method which gave this result.

g) Repeat a) to f) on the 3°, 6° and 10° ramps travelling forwards downhill.

9.3 Travelling forward down a slope onto a horizontal surface

a) Run the wheelchair forward down the 3° test ramp to reach the horizontal test plane at maximum speed.

b) Observe the dynamic response of the wheelchair at the transition and score it according to annex A.

c) Repeat a) and b) using the 6° and 10° ramps.

9.4 Travelling forward up a step transition at maximum speed

NOTE The intent of this test is to use the impact with the step to induce a tip. The wheelchair may or may not climb the step.

Any kerb-climbing devices should be set in their normal position for driving the wheelchair up a kerb.

a) Position the wheelchair on the horizontal test plane far enough from the step transition to allow the wheelchair to achieve maximum speed.

b) Run the wheelchair forward at maximum speed along the horizontal test plane to hit the 12 mm step at 90° ± 5°.

c) Observe the dynamic response of the wheelchair at the transition and score it according to annex A.

d) Repeat a) and b) with the step heights of 25 mm and 50 mm.

e) If the manufacturer claims that the wheelchair is capable of handling higher step transitions, repeat a) to c) at intervals that are multiples of 25 mm, increasing step heights until the wheelchair can no longer travel up the step transition with a score of 2 or greater. At each height, score the response of the wheelchair according to annex A.

9.5 Travelling forward down a step transition from a standing start

NOTE This test determines stability when a wheelchair very slowly drops down a step.

a) Position the wheelchair on the horizontal test plane above the step, so that the front wheels are at the edge of the step.

b) Run the wheelchair at the lowest practical speed, forward down the 12 mm step and in a direction 90° ± 5° to the front of the step.

c) Observe the dynamic response of the wheelchair at the transition and score it according to annex A.

d) Repeat a) and b) with the step height of 25 mm and 50 mm.

e) If the manufacturer claims that the wheelchair is capable of handling higher step transitions, repeat a) to c) at intervals that are multiples of 25 mm, increasing step heights until the wheelchair can no longer travel down the step transition with a score of 2 or greater. At each height, score the response of the wheelchair according to annex A.

10 Tests for dynamic stability in lateral directions

10.1 Wheelchair preparation

Prepare the wheelchair as specified in 6 with the following additions: set the rear-wheel position, castor attachment to frame, seat position, seat-to-back angle and leg-to-seat angle in their least stable configuration for the wheelchair in the lateral direction according to Table 3.

Table 3 — Lateral stability

Adjustable wheelchair component	Least stable
Rear-wheel position, camber	Narrowest track
Castor attachment to frame, fore-aft	Back
Castor attachment to frame, inside-outside	Inside
Seat position, fore-aft	Forward
Seat position, vertical	High
Seat position, tilt	Upright
Seat-back position, recline	Upright

10.2 Turning on a slope

a) Position the wheelchair on the horizontal test plane.

b) From a stationary start, apply maximum speed command turning to the left in a minimum turning radius until the wheelchair is facing in the reverse direction. If the wheelchair has direct steering, turn the steering control for a minimum radius turn and then apply maximum forward power.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat a) to c) turning to the right and record the lower score together with the side toward which this occurs.

e) Repeat b) to d) on the 3°, 6° and 10° test ramps, starting with the wheelchair facing downhill and finishing with the wheelchair facing uphill.

10.3 Turning in a circle at maximum speed

a) Run the wheelchair at maximum speed in the forward direction on the horizontal test plane.

b) Turn the wheelchair in circles of decreasing radius while continuing to command maximum possible speed. For each circle, note the score as in annex A.

c) Determine the minimum diameter circle to the nearest 100 mm in which the wheelchair will run at maximum possible speed with a score of 2 or greater.

d) Measure the diameter of the circle traced by the centreline of the wheelchair.

e) Repeat a) to d) turning in the opposite direction.

f) Record the larger diameter together with the corresponding direction in which the wheelchair is turning.

NOTE A wand with chalk attached and projecting from the wheelchair may assist in following a circle.

10.4 Turning suddenly at maximum speed

Most wheelchairs with direct steering will not remain stable during this test. Caution should be exercised during the testing process.

a) Run the wheelchair at maximum speed in the forward direction in a straight path on the horizontal test plane.

b) Operate the input control device to produce a 90° turn with a minimum turning radius.

c) Observe the dynamic response of the wheelchair and score it according to annex A.

d) Repeat a) to c) turning in the opposite direction.

e) Record the lower score together with the corresponding direction in which the wheelchair is turning.

10.5 One side of the wheelchair drops down a step transition

a) Run the wheelchair at the slowest practical speed in the forward direction with the centre line of the wheelchair at an angle of 10° ± 2° relative to the edge of the 12 mm step transition until the wheels of one side of the wheelchair run off the edge.

b) Observe the dynamic response of the wheelchair and score it according to annex A.

c) Repeat a) and b) using the opposite side of the wheelchair to drop down the step.

d) Record the lower score together with the side at which this occurs.

e) Repeat a) to d) with the step heights of 25 mm and 50 mm.

f) If the manufacturer claims that the wheelchair is capable of handling higher step transitions, repeat a) to c) at intervals that are multiples of 25 mm, increasing step heights until the wheelchair can no longer travel down the step transition with a score of 2 or greater. At each height, score the response of the wheelchair according to annex A.

11 Test report

The test report shall contain the following information:

a) a reference to this part of ISO 7176;

b) the name and address of the test institution;

c) the name and address of the manufacturer of the wheelchair;

d) the date of issue of the test report;

e) the wheelchair type and any serial and batch numbers;

f) the size of the dummy used or, if a person is used, the mass of the driver and weights;

g) details of the set-up of the wheelchair as specified in ISO 7176-22, including equipping and adjustments; and any additional details of the set-up of the wheelchair as specified in clause 6.

h) a photograph of the wheelchair as equipped during the test;

i) if the wheelchair has provision to accept antitip devices and/or kerb climbing devices and if the wheelchair was tested with or without such devices;

j) details of the wheelchair's input control device, indicating if it includes direct steering;

k) the results of the tests specified in 8.2 to 10.5. Annex B gives a recommended format for recording these results.

12 Disclosure of results

The following results shall be disclosed in the manufacturer's specification sheets according to the format specified in ISO 7176-15:

"Rearward dynamic stability on ramp: x°"

where x is the value of the maximum slope (e.g. 0°, 3°, 6°, 10°) on which the wheelchair achieves a score of 2 or greater (according to annex A) in tests 8.2, 8.3 and 8.4.

"Forward dynamic stability on ramp: x°"

where x is the value of the maximum slope (e.g. 0°, 3°, 6°, 10°) on which the wheelchair achieves a score of 2 or greater (according to annex A) in tests 9.2 and 9.3.

“Lateral dynamic stability on ramp: x°”

where x is the value of the maximum slope (e.g. 0°, 3°, 6°, 10°) on which the wheelchair achieves a score of 2 or greater (according to annex A) in test 10.2.

“Lateral dynamic stability while turning in circles: x m”

where x is the minimum diameter of the turning circle at which the wheelchair achieves a score of 2 or greater (according to annex A) in test 10.3.

“Lateral dynamic stability while turning suddenly: x”

where x is “Yes” or “No” to the question of whether the wheelchair achieves a score of 2 or greater (according to annex A) in test 10.4.

“Rearward dynamic stability traversing step forward: x mm”

where x is the value of the maximum step height (e.g. 12 mm, 25 mm, 50 mm or higher, if specified by the manufacturer) on which the wheelchair achieves a score of 2 or greater (according to annex A) in test 8.5.

“Rearward dynamic stability traversing step backward: x mm”

where x is the value of the maximum step height (e.g. 12 mm, 25 mm, 50 mm or higher, if specified by the manufacturer) on which the wheelchair achieves a score of 2 or greater (according to annex A) in tests 8.6.

“Forward dynamic stability traversing forward up a step: x mm”

where x is the value of the maximum step height (e.g. 12 mm, 25 mm, 50 mm or higher, if specified by the manufacturer) on which the wheelchair achieves a score of 2 or greater (according to annex A) in test 9.4.

“Forward dynamic stability traversing forward down a step: x mm”

where x is the value of the maximum step height (e.g. 12 mm, 25 mm, 50 mm or higher, if specified by the manufacturer) on which the wheelchair achieves a score of 2 or greater (according to annex A) in tests 9.4 and 9.5.

“Lateral dynamic stability traversing step: x mm”

where x is the value of the maximum step height (e.g. 12 mm, 25 mm, 50 mm or higher, if specified by the manufacturer) on which the wheelchair achieves a score of 2 or greater (according to annex A) in test 10.5.