
**Walking aids manipulated by both arms —
Requirements and test methods —**

**Part 2:
Rollators**

*Aides à la marche manipulées avec les deux bras — Exigences et
méthodes d'essai —*

Partie 2: Déambulateurs



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Foreword

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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 11199-2 was prepared by Technical Committee ISO/TC 173, *Technical systems and aids for disabled or handicapped persons*.

ISO 11199 consists of the following parts, under the general title *Walking aids manipulated by both arms — Requirements and test methods*:

— *Part 1: Walking frames*

— *Part 2: Rollators*

Annex A of this part of ISO 11199 is for information only

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Walking aids manipulated using both arms — Requirements and test methods —

Part 2: Rollators

1 Scope

This part of ISO 11199 specifies requirements and methods of testing the fatigue, static load capacity and stability of rollators without accessories, unless specified in the particular test procedure. This part of ISO 11199 also gives the requirements relating to safety, ergonomics, performance, marking and labelling.

The requirements and tests are based on everyday usage of rollators as walking aids, manufactured for a user mass of not less than 35 kg.

NOTE Recommendations further to the requirements given in this part of ISO 11199 are given in annex A.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 11199. 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 11199 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 9999:1998, *Technical aids for disabled persons — Classification*.

ISO 10993-1, *Biological evaluation of medical devices — Part 1: Evaluation and testing*.

3 Terms and definitions

For the purpose of this part of ISO 11199, the following terms and definitions apply (see also Figures 1, 2 and 3).

3.1 folded dimensions

height, width and length of the rollator measured with the rollator folded together without the use of tools, the height adjustment at its minimum height and handles positioned as specified in 5.1

3.2 front handgrip reference point

that point on the upper surface of the handgrip located 30 mm from the front end of the handgrip length

See Figure 2.

3.3 handgrip

that part of the rollator which is normally held by the hand when the rollator is in use

**3.4
handgrip length**

dimension of the handgrip measured longitudinally where the hand rests

See Figure 2.

NOTE Where the front end or the rear end of the handgrip is not clear, the full length of the handgrip that can support the weight of the user is defined as the handgrip length.

**3.5
handgrip width**

outside dimension of the handgrip measured horizontally at the thickest point where the hand rests

See Figure 2.

**3.6
handle**

that part of the rollator to which the handgrip is attached

**3.7
maximum length**

maximum outside dimension of a rollator when the height adjustment is at its maximum, measured parallel to the direction of movement when the rollator is in normal use

See Figure 3.

**3.8
maximum width**

maximum outside dimension of a rollator when the height adjustment is at its maximum, measured horizontally at right angles to the direction of movement when the rollator is in normal use

See Figure 3.

**3.9
rear handgrip reference point**

that point on the upper surface of the handgrip located 30 mm from the rear end of the handgrip length

See Figure 2.

NOTE If the grip protrudes further than the handle, the measurement is made from the end of the handle.

**3.10
rollator**

walking aid with wheels, to be pushed forward by the hands

NOTE Classification No. 12 06 06 in accordance with ISO 9999:1998.

**3.11
rollator height**

vertical distance from the rear handgrip reference point to the ground

See Figure 3.

**3.12
tips**

those parts of a two-wheeled rollator's rear supporting points which are in contact with the ground

NOTE Tips are also used as pressure brakes on some four-wheeled rollators.

3.13 turning diameter

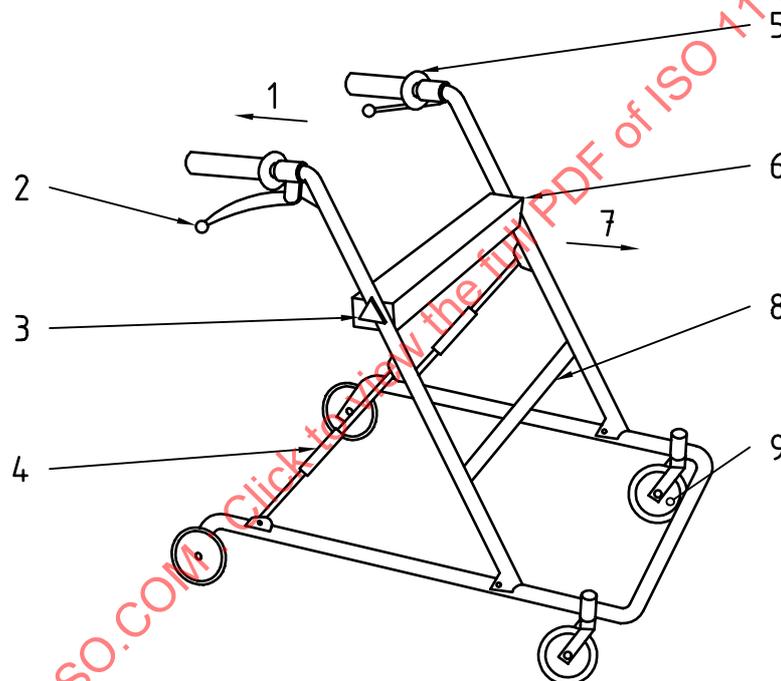
diameter of the largest circle described by a rollator when its height adjustment is at maximum and the rollator is turned through 360° about its own central vertical axis

See Figure 3.

3.14 user weight

body mass of the person using the product as a walking aid

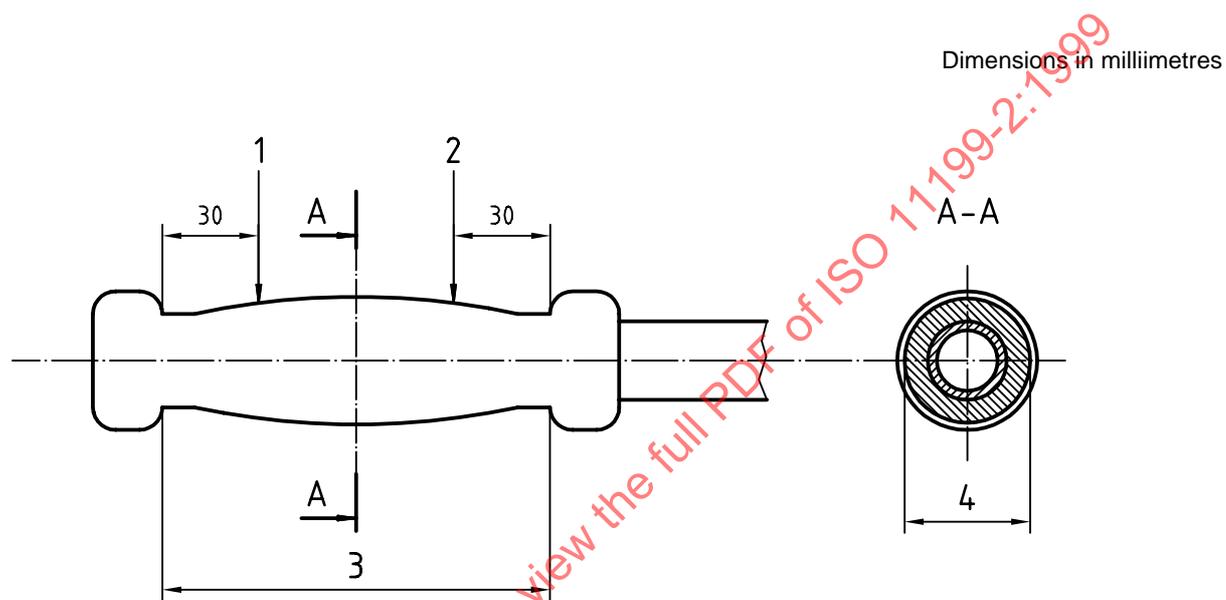
NOTE Standard user weight is 100 kg for adults and 35 kg for children.



Key

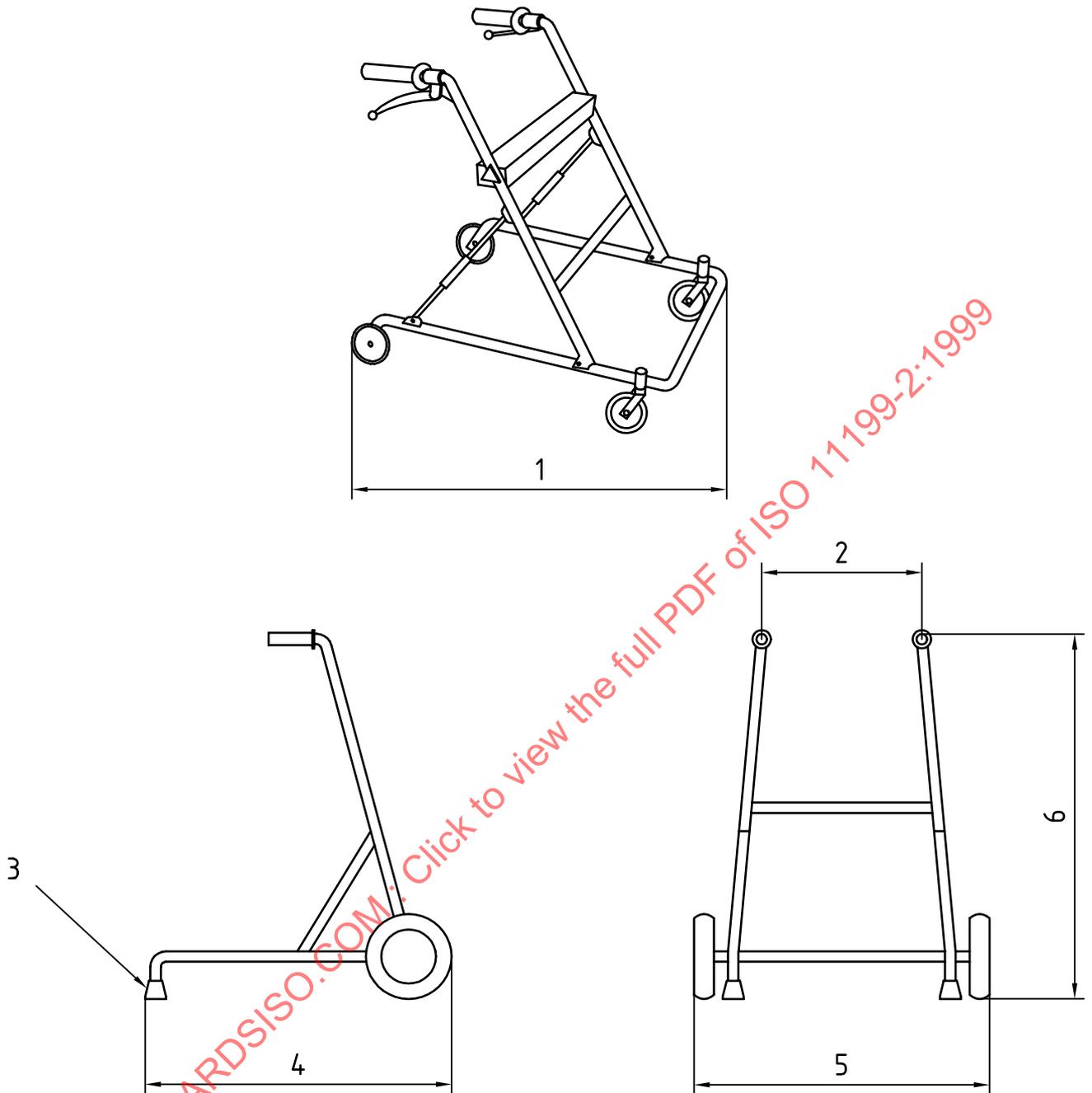
- 1 Rear
- 2 Brake handle
- 3 Height adjustment mechanism
- 4 Folding mechanism
- 5 Handle/handgrip
- 6 Resting seat
- 7 Front
- 8 Bracing member
- 9 Wheels

Figure 1 — Example of a rollator

**Key**

- 1 Rear handgrip reference point
- 2 Front handgrip reference point
- 3 Handgrip length
- 4 Handgrip width

Figure 2 — Details of a handgrip



Key

- 1 Turning diameter
- 2 Width between handles
- 3 Tip
- 4 Length
- 5 Width
- 6 Height

Figure 3 — Dimensions of a rollator

4 Requirements

4.1 Mechanical durability

When tested according to the fatigue test (5.3), no part of the rollator shall crack or break.

When tested according to the static loading test (5.4), no part of the rollator shall crack or break.

4.2 Stability

When tested according to the forward stability test (5.5), the angle of the plane at the point of rollator tilting shall be not less than $15,0^\circ$ from the horizontal.

When tested according to the backward stability test (5.6), the angle of the plane at the point of rollator tilting shall be not less than $7,0^\circ$ from the horizontal.

When tested according to the sideways stability test (5.7), the angle of the plane at the point of rollator tilting shall be not less than $3,5^\circ$ from the horizontal.

4.3 Manoeuvrability

The front wheel diameter shall be not less than 75 mm.

The front wheel diameter of rollators manufactured for outdoor use shall be not less than 180 mm.

The wheel width of rollators manufactured for outdoor use shall be not less than 28 mm.

The maximum width of rollators manufactured for use in private homes shall be not more than 650 mm.

4.4 Handgrip

The handgrip width shall be not less than 20 mm and not more than 50 mm.

NOTE This requirement does not apply to anatomic handgrips.

The handgrip shall be replaceable or easy to clean.

4.5 Leg section and tip

Where there is no wheel, the leg section shall end in a tip of a design which will prevent the leg section from piercing through it when used as intended by the manufacturer. See 4.1.

Where there is no wheel, the tip shall be replaceable.

Where there is no wheel, the tip shall not cause discolouring of the walking surface, as verified by visual inspection.

That part of the tip that contacts the walking surface shall have a minimum diameter of 35 mm. Compliance shall be verified by visual inspection.

4.6 Brakes

All rollators with more than two wheels shall have brakes which are easy to operate by the user when the rollator is in motion.

All rollators with more than two wheels and which have a resting seat or are designed for outdoor use shall have parking brakes, which may be integrated with the brakes operated by the user when the rollator is in motion.

4.7 Adjusting devices

Each of the height adjustments shall be clearly marked with its maximum allowable elongation.

After the fatigue test (5.3), the adjustment/folding mechanisms shall operate as intended by the manufacturer.

Folding rollators shall lock into working position when unfolded.

4.8 Materials and finish

Taking into account the intended use and contact by those involved in user care or transportation and storage of the product, rollator materials which come into contact with the human body shall be assessed for biocompatibility using the guidance given in ISO 10993-1.

The rollator materials shall not cause discolouring of skin or clothing when the rollator is in normal use.

All parts of the rollator shall be free from burrs, sharp edges or projections that could cause damage to clothing or discomfort to the user.

5 Test methods

5.1 General

Rollators are grouped into six sizes, as given in Table A.1.

All tests, unless otherwise specified, shall be performed at an ambient temperature of $21^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

If not otherwise specified, all tests shall be performed with the height adjustments at their maximum and swivelling wheels in the least stable position. The handles shall be positioned at their maximum angles as specified by the manufacturer relative to the direction of motion. When the longitudinal centreline of the handle and the direction of forward motion are parallel, the angle is 0° . The angle shall always be recorded.

During the stability tests, the rollator shall be prevented from sliding or rolling before tilting occurs. The results of the tests shall not be influenced by the means used.

5.2 Sampling and inspection

One rollator shall be tested. The sequence of the tests shall be as follows: stability, static load and fatigue.

Immediately before testing, the rollator shall be inspected to check compliance with this part of ISO 11199. Any apparent defects shall be noted so that they shall not later be recorded as having been caused by the tests.

5.3 Fatigue test

5.3.1 Loading geometry

The height adjustment and the handles shall be positioned as given in 5.1.

The loading force shall be applied vertically to the rollator as shown in Figure 4. The loading line shall pass through the midpoint of the line joining the rear handgrip reference points of the two handgrips.

5.3.2 Testing surface

The rollator shall be placed with its wheels on a surface travelling at a speed not less than 0,4 m/loading cycle, and with its tips on a horizontal stationary surface.

5.3.3 Loading force

A cyclic force of $800\text{ N} \pm 2\%$ shall be applied. If the maximum user weight specified for the rollator deviates from the standard maximum user weight of 100 kg, a force of 8,0 N per kilogram of maximum user weight $\pm 2\%$ shall be applied. The load shall be not less than $280\text{ N} \pm 2\%$.

5.3.4 Loading frequency

The frequency of the cyclic loading shall not exceed 1 Hz.

5.3.5 Loading cycles

The number of cycles shall be 200 000.

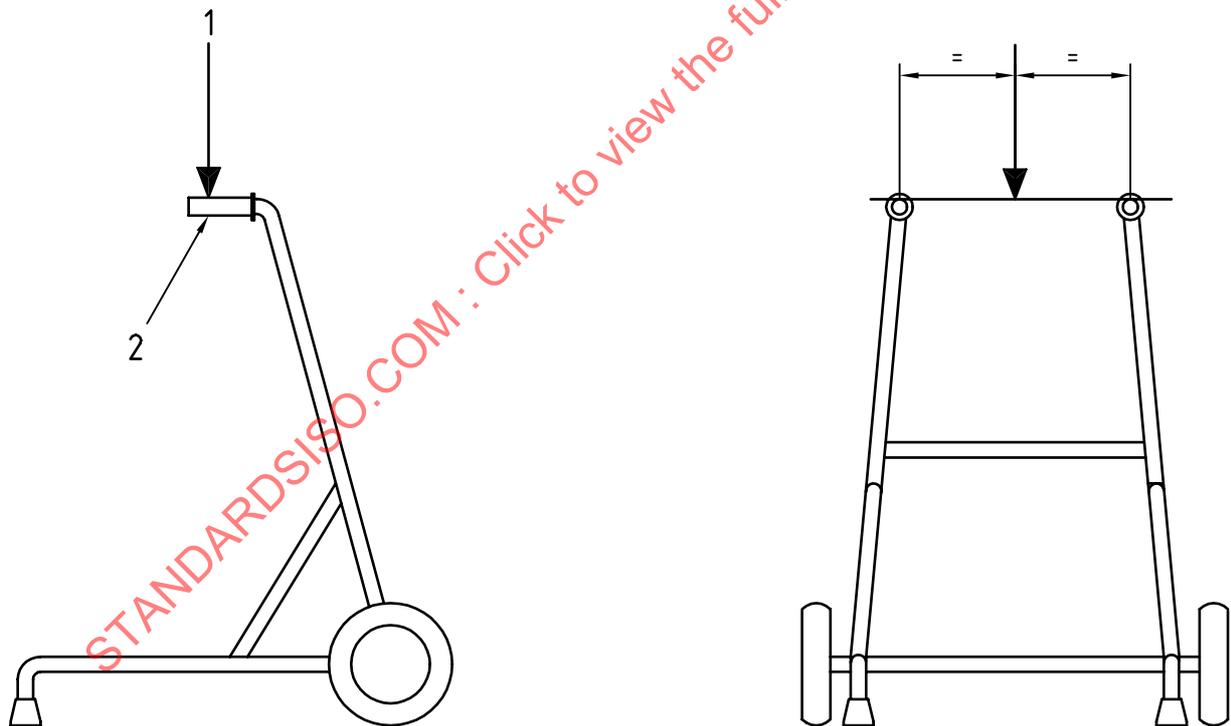
5.4 Static loading test

5.4.1 Loading geometry

A vertical loading force shall be applied to the rollator as specified in 5.3.1 and as shown in Figure 4.

5.4.2 Testing surface

The rollator shall be placed with its wheels and tips on a horizontal stationary surface.



Key

- 1 Load
- 2 Rear handgrip reference point

Figure 4 — Loading geometry for fatigue and static loading tests

5.4.3 Loading force

The loading force shall be $1\,200\text{ N} \pm 2\%$. If the maximum user weight specified for the rollator deviates from the standard maximum user weight of 100 kg, a force of 12,0 N per kilogram of maximum user weight $\pm 2\%$ shall be applied. The load shall be not less than $420\text{ N} \pm 2\%$.

5.4.4 Loading time

The loading force shall be gradually applied over a minimum period of 2 s up to maximum force. This maximum force shall be applied for a minimum of 5 s.

5.5 Forward stability test

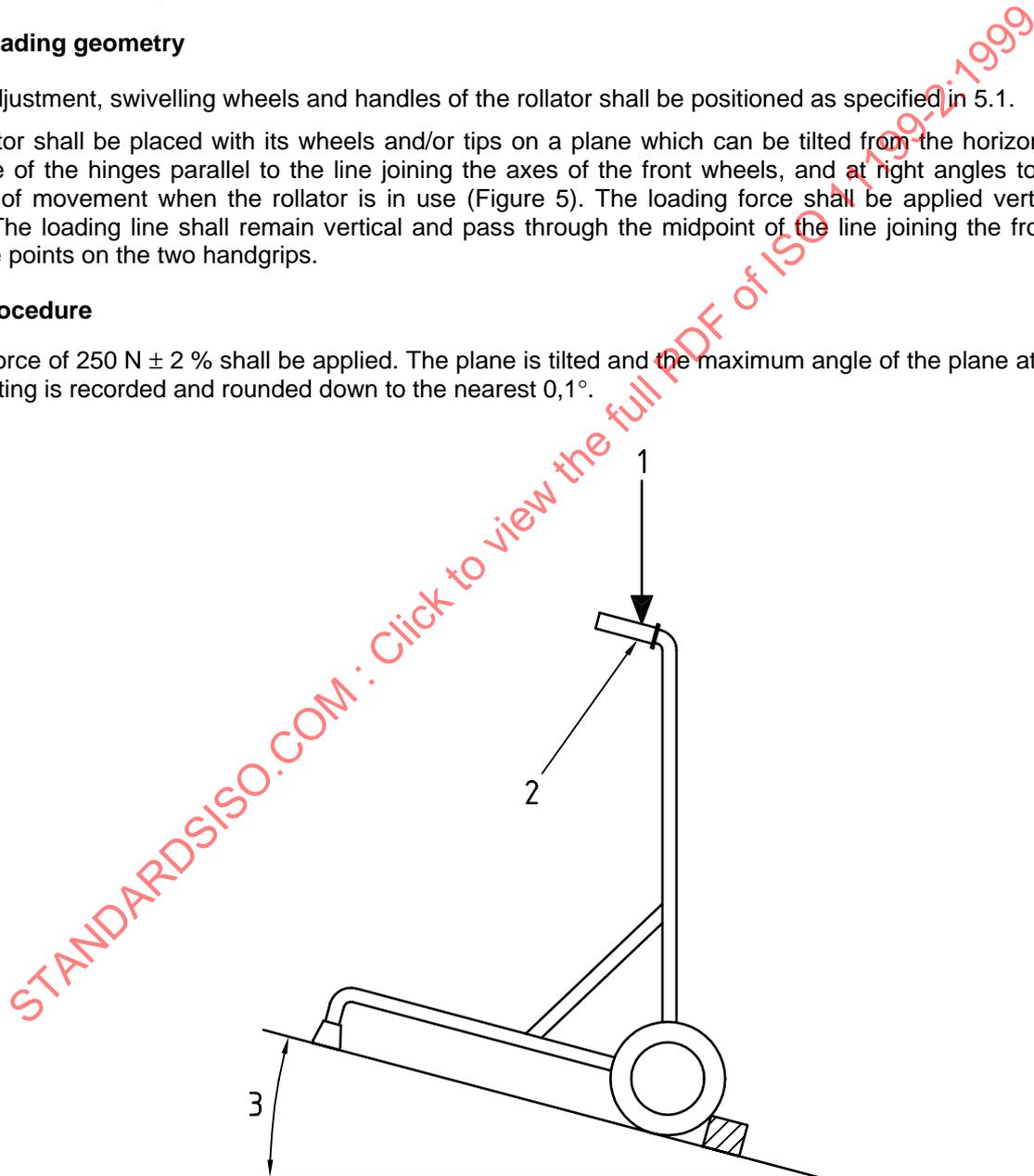
5.5.1 Loading geometry

Height adjustment, swivelling wheels and handles of the rollator shall be positioned as specified in 5.1.

The rollator shall be placed with its wheels and/or tips on a plane which can be tilted from the horizontal with the centreline of the hinges parallel to the line joining the axes of the front wheels, and at right angles to the normal direction of movement when the rollator is in use (Figure 5). The loading force shall be applied vertically to the rollator. The loading line shall remain vertical and pass through the midpoint of the line joining the front handgrip reference points on the two handgrips.

5.5.2 Procedure

A static force of $250\text{ N} \pm 2\%$ shall be applied. The plane is tilted and the maximum angle of the plane at the point of rollator tilting is recorded and rounded down to the nearest $0,1^\circ$.



Key

- 1 Load
- 2 Front handgrip reference point
- 3 Tilt angle

Figure 5 — Loading geometry for forward stability test

5.6 Backwards stability test

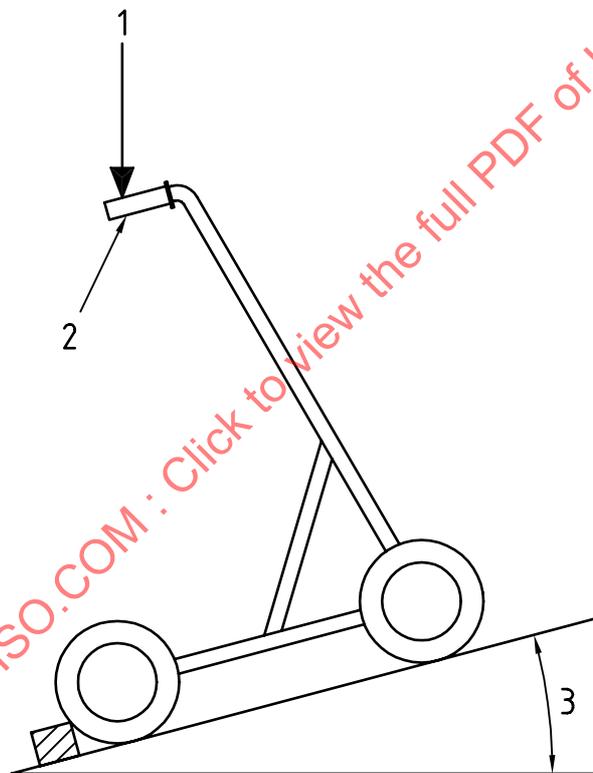
5.6.1 Loading geometry

Height adjustment and handles of the rollator shall be positioned as specified in 5.1. Swivelling rear wheels shall be positioned as though the rollator is reversing.

The rollator shall be placed with its wheels and/or tips on a plane which can be tilted from the horizontal with the centreline of the hinges parallel to the line joining the axes of the rear wheels or tips of the rear legs, and at right angles to the normal direction of movement when the rollator is in use (Figure 6). The loading force shall be applied vertically to the rollator. The loading line shall be vertical and pass through the midpoint of the line joining the rear handgrip reference points on the two handgrips.

5.6.2 Procedure

A static force of $250 \text{ N} \pm 2\%$ shall be applied. The plane is tilted and the maximum angle of the plane at the point of rollator tilting is recorded and rounded down to the nearest $0,1^\circ$.



Key

- 1 Load
- 2 Rear handgrip reference point
- 3 Tilt angle

Figure 6 — Loading geometry for backwards stability test

5.7 Sideways stability test

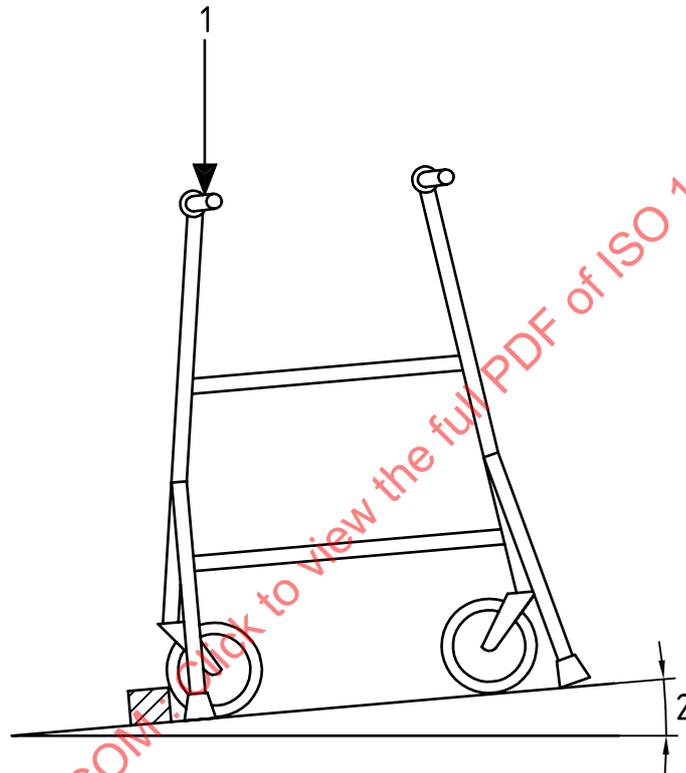
5.7.1 Loading geometry.

Height adjustment, swivelling wheels and handles of the rollator shall be positioned as specified in 5.1.

The rollator shall be placed with its wheels and/or tips on a plane which can be tilted from the horizontal with the centreline of the hinges parallel to the line through the centre of the area of contact between the surface of the plane and the wheels or tips on the same side of the rollator as is the loaded handgrip (see Figure 7). The loading force shall be applied vertically to the rollator through a point half way between the front and the rear reference points of that handgrip nearest to the hinges of the tilting plane.

5.7.2 Procedure

A static force of $250 \text{ N} \pm 2 \%$ shall be applied. The plane is tilted and the maximum angle of the plane at the point of rollator tilting is recorded to $\pm 0,1^\circ$. Sideways stability shall be tested on both handgrips in this manner, and the lower value found shall be rounded down to the nearest $0,1^\circ$ and recorded as the sideways stability of the rollator.



Key

- 1 Load
- 2 Tilt angle

Figure 7 — Loading geometry for sideways stability test

6 Marking and labelling

Each rollator shall be clearly and indelibly marked with the following information:

- a) maximum user weight;
- b) maximum allowed angle between the longitudinal centreline of the handle and the direction of motion, if the handles are sideways adjustable;
- c) manufacturer's name or tradename and address;
- d) manufacturer's model identification name and/or number;
- e) month and year of manufacture;
- f) maximum extension of the height adjustment, marked on the adjusting members.

7 Test report

The test report shall contain the following information:

- a) name and address of the manufacturer;
- b) name and address of the supplier;
- c) name and address of the testing institution;
- d) classification code and name in accordance with ISO 9999;
- e) maximum user weight;
- f) maximum allowed angle between the longitudinal centreline of the handle and the direction of motion, if the handles are sideways adjustable;
- g) manufacturer's type and model identification name and/or number;
- h) supplier's type and model identification name and/or number;
- i) photograph of the rollator;
- j) month and year when the test was performed;
- k) whether or not the product complies with the requirements of this part of ISO 11199;
- l) diameter of that part of the tip which is in contact with the walking surface.

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