BS EN 14619:2015

BSI Standards Publication

Roller sports equipment — Kick scooters — Safety requirements and test methods

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National foreword

This British Standard is the UK implementation of EN 14619:2015. It supersedes BS EN 14619:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/136/10, Roller sports equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Roller sports equipment - Kick scooters - Safety requirements and test methods

Équipement de sports à roulettes - Trottinettes - Exigences de sécurité et méthodes d'essai

Rollsportgeräte - Kick-Scooter - Sicherheitstechnische Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 7 February 2015.

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Foreword

This document (EN 14619:2015) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational facilities and equipment”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2015, and conflicting national standards shall be withdrawn at the latest by October 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14619:2004.

In relation to EN 14619:2004 the following main amendments have been made:

a) the Scope has been changed;

b) classification of kick scooters has been added and the requirements have been modified accordingly;

c) requirement that the ends of the handles shall be covered has been added;

d) requirements for the marking on the kick scooter have been modified;

e) requirement for the marking on the packing the maximum weight has been added;

f) an informative annex regarding environmental aspects has been added;

g) a Bibliography has been added.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard applies to kick scooters which can only be propelled by the muscular activity of a user with a body mass of more than 20 kg and less than 100 kg.

It specifies safety requirements, test methods, marking and information supplied by the manufacturer to reduce the risk of injuries to both third parties and the user during normal use.

Kick scooters for use by users of less than 20 kg do not belong to the scope of this European Standard. They are toys.

It should be noted that there are two types of scooters for the weight group 20 kg to 50 kg – those classified as sports equipment for use on public roads and path ways (this European Standard) and those classified as toys for domestic use (according to EN 71-1).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 71-1:2014, *Safety of toys — Part 1: Mechanical and physical properties*

EN 22768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications (ISO 2768-1)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
kick scooter
ride-on equipment comprising at least one deck, at least two wheels of any size, a vertical element to grasp and a mechanism for steering, intended for flat, clean and dry surfaces

3.2
sliding mechanism
sliding components that can be used to vary the height of the steering column or the length of the deck

4 Construction

4.1 General

General tolerances: EN 22768-1 — v

Unless stated otherwise, accuracy tolerances based on the nominal values shall be as follows:

— Forces and torques 0/+5 %

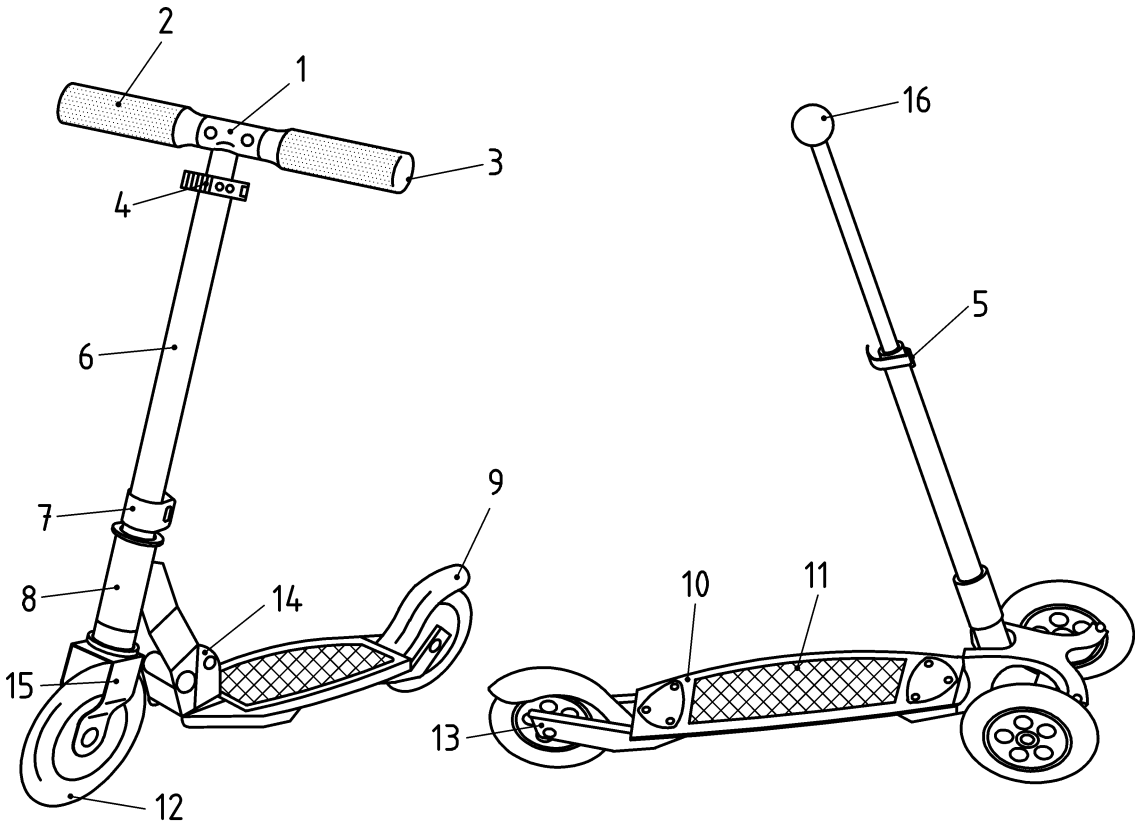
— Masses and weights ± 1 %

— Time duration ± 5 s

— Temperatures ± 2 °C

Typical components of kick scooters are illustrated in Figure 1.

NOTE 1 Figure 1 shows only examples for reference.



a) b)

Key

1	handlebar	9	brake
2	hand grip	10	deck
3	plug	11	deck grip
4	clamp	12	wheel
5	clamp	13	axle
6	steering column	14	folding mechanism
7	clamp	15	wheel support system
8	head tube	16	joy stick

a) Example 1

b) Example 2

Figure 1 — Typical components of kick scooters

NOTE 2 Restrictions on the marketing and use of certain dangerous substances and preparations are addressed in the Regulation (EC) No. 1907/2006.

4.2 Classification of kick scooters

4.2.1 Class A

Kick scooters intended for use by a user mass of more than 20 kg up to 100 kg.

4.2.2 Class B

Kick scooters intended for use by a user mass of more than 20 kg up to 50 kg. The maximum height of the steering column is 80 cm.

4.3 Requirements

4.3.1 Protruding components and edges

All protruding components and edges on the kick scooter that can come into contact with body parts during normal use shall be deburred or constructed in such a way as to prevent injury. The test shall be carried out according to 5.8.

Rigid and protruding parts that may cause entrapment or injuries shall be protected. This protection shall not come loose during tests performed according to Clause 5.

The ends of the handles shall be covered. To prevent from injuries, ends of handlebar have to withstand the test according to 5.4, Figure 3, and remain free of sharp edges.

4.3.2 Parts moving against each other

4.3.2.1 General

The requirements specified in 4.3.2.2 to 4.3.2.5 shall be tested according to 5.8.

4.3.2.2 Distance between the parts

4.3.2.2.1 General

Below requirements do not have to be considered if the customer acts intentionally close to and directly on the component and hurts himself. Then the injury would be caused by his own strength and could be stopped by himself immediately.

4.3.2.2.2 Class A

The distance between accessible moveable parts shall be either smaller than 5 mm or wider than 18 mm in any position. This requirement does not apply to the wheels/spokes/wheel support system or the braking/rear brake system, if provided.

4.3.2.2.3 Class B

a) The space between moving elements, capable of injuring fingers, shall also allow a 12 mm rod to be inserted if it allows a 5 mm rod to be inserted.

b) Accessible openings in moving elements capable of shearing a finger shall not allow the insertion of a 5 mm rod.

This requirement does not apply to the wheels/spokes/wheel support system or the braking/rear brake system, if provided.

4.3.2.3 Folding mechanism

Any folding mechanism shall be designed to fix the kick scooter for use in a simple, rigid and safe way. It shall resist all tests without damage. Fixing components should not have contact with the front wheel in any position. An inadvertent unlocking of the mechanism shall be impossible.

If the distance as specified in 4.3.2.2 is not met, other designs to protect the user from unintentional injuries shall be provided.

4.3.2.4 Sliding mechanism others than the steering system

Sliding mechanisms shall be protected against unintentional opening or collapse during normal use.

4.3.2.5 Springs

Springs shall not be accessible if the gap between two consecutive spirals or turns allows a 5 mm diameter rod to be inserted on a 10 mm depth.

4.3.3 Steering system

The steering system shall be constructed:

a) to avoid contact between wheels and other parts of the kick scooter during usual riding;

b) that the length adjustment fixing avoids unintentional opening;

   1) For class B, the height shall be adjustable with the use of a tool or have at least one main locking device and one secondary locking device of which at least one shall automatically be engaged when the height is adjusted.

c) that the steering column, if it is sliding, shall be adjusted for height, and have a permanent mark that indicates the minimum insertion depth of the column; this mark shall be positioned at a distance equivalent to and not less than two and a half times the diameter of the column and shall not affect its strength;

d) that the end of the handlebar is equipped with hand grips or plugs, which withstand a tensile load of 70 N in the loosening direction.

When tested according to Clause 5, there shall be no break or functional damage of the steering system.

4.3.4 Deck

The deck shall resist all tests specified in Clause 5 without any functional damage. It shall be equipped with an anti-slide surface with an area of at least 200 cm^2.

4.3.5 Bearings

The bearings shall be designed in such a way as to be functional after performing all the tests according to Clause 5. They shall be constructed in such a way as to permit servicing according to the information supplied by the manufacturer without impairment of their operational safety.

4.3.6 Axles

The axles shall be attached and designed in such a way as to ensure that they cannot become loose, displaced or deformed during use. The wheels shall be secured on the axles against unintentional loosening. These requirements are considered to be fulfilled if the axles are not loosened, deformed or displaced to such

an extent as to impair proper functioning, and the wheels have not become loose after the tests according to Clause 5.

4.3.7 Wheels

The wheels shall be constructed from non-slip material. This requirement is considered to be fulfilled if a coefficient of adhesion, μ_0, of at least 0,30 is achieved in the test according to 5.3.

After the tests according to Clause 5, the wheels shall not show tearing. They shall not have further loosened or been deformed to the extent that there exists a risk of their becoming locked.

If a rear wheel and its axle differ from those at the front, they shall be tested according to 5.7 in an adapted way.

The diameter of the front wheel(s) on class B kick scooters shall be 120 mm or greater.

4.3.8 Self-locking fixings

Where self-locking nuts are used, the entire thread, including the locking section, shall be in contact with the bolt. Self-locking nuts and other self-locking fixings that are loosened several times for the purpose of modification or servicing shall be suitable for this purpose.

4.3.9 Mechanism to reduce the speed

If a kick scooter is equipped with a mechanism to reduce the speed, this mechanism shall continue to make contact with the surface to which it is intended and no fasting devices shall have loosened when tested according to Clause 5.

The mechanism shall effectively and smoothly reduce the speed without coming to an abrupt stop.

4.3.10 Strength

All functional parts after testing according to Clause 5 shall not collapse or fail to comply with the relevant requirements specified in this European Standard.

5 Test methods

5.1 General

The kick scooter to be tested shall be assembled and adjusted according to the information supplied by the manufacturer.

Two test specimens (two kick scooters) of the same type shall be tested according to the order described in 5.2.

5.2 Order of tests

5.2.1 Specimen A

The specimen shall be subjected to the test in the following order:

a) test of external finish (see 5.9);

b) wheel adhesion test (see 5.3);

c) endurance test (see 5.8).

5.2.2 Specimen B

The specimen shall be subjected to the test in the following order:

a) static load test of the deck (see 5.5.1);

b) static load test of the steering column (see 5.5.2);

c) drop test (see 5.6);

d) impact test against front wheel (see 5.7).

5.3 Wheel adhesion test

The wheel adhesion shall be tested by pulling a clean(ed) wheel along a steel plate with a fine brushed and degreased surface of arithmetical mean roughness R_a of 1,5 µm to 2,0 µm (see Figure 2).

A vertical force F_1 of 100 N shall be applied to the wheel which is moved along the steel plate perpendicular to the kick scooter's longitudinal axis and perpendicular to the surface brush direction by a horizontal force F_2, applied at the height of the wheel's axis. The maximum force shall be recorded. The test shall be repeated 10 times and the mean value of F_2 shall be calculated. The test shall be carried out at a speed of approximately 1 mm/s.

The coefficient of adhesion shall be calculated according to Formula (1):

$$\mu_0 = \frac{F_2}{m_E \cdot g + F_1} \tag{1}$$

where

μ_0 is the coefficient of adhesion;

F_1 is the load applied to wheel, in N;

F_2 is the adhesive force, in N;

m_E is the mass of the wheel, in kg;

g is the standard acceleration due to gravity (g = 9,81 m/s^2).

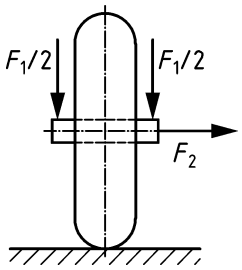
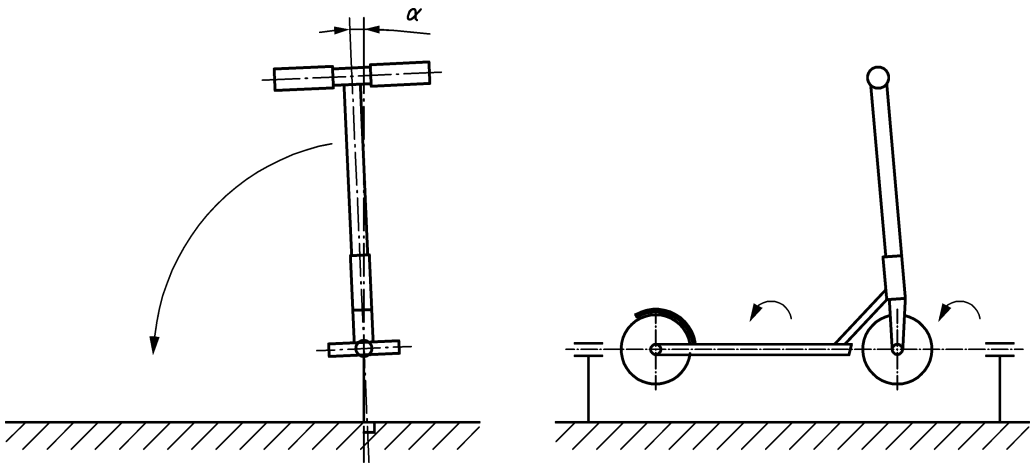


Figure 2 — Adhesion of wheels

5.4 Handlebar ends impact test

The steering column shall be extended to the maximum, then the weakest area of the handlebar ends has to impact the solid surface 10 times according to the test shown in Figure 3.



Key

α angle of steering with vertical origin: 5°± 2°(neutral position) > α > 90°±2° (impact position)

Figure 3 — Impact test

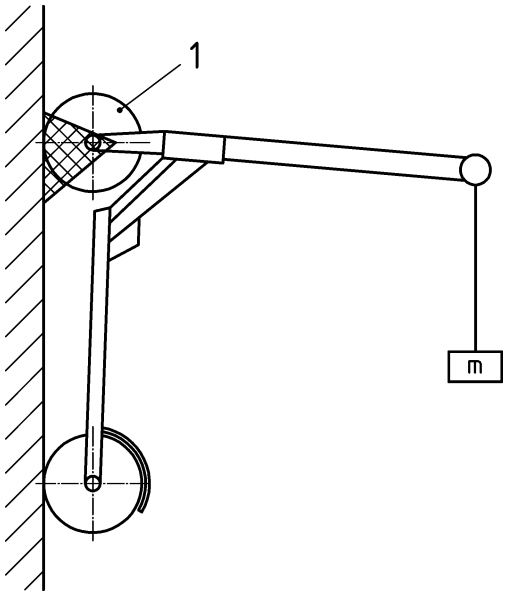
5.5 Static load test

5.5.1 Deck

A test load of 200 kg for class A and 100 kg for class B with a surface of 100 mm × 100 mm shall be applied on the centre of the deck (see Figure 9).

5.5.2 Steering column

The steering column shall be extended to the maximum and centrally loaded with a 50 kg mass for class A and 33 kg for class B, applied in directions A and B, each for 5 min, as shown in Figures 4 and 5.

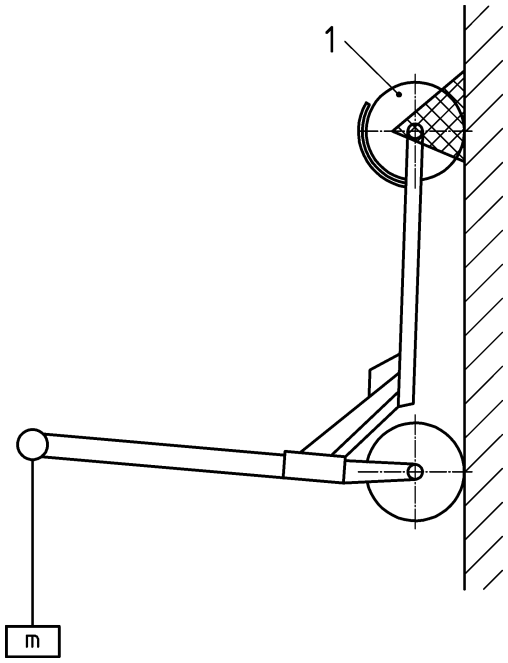


Key

1 example of a fixation of the front wheel (the axle is fixed and the kick scooter is free for rotating)

m mass of 50 kg (class A) or 33 kg (class B)

Figure 4 — Static load test in direction A



Key

1 example of a fixation of the rear wheel (the axle is fixed and the kick scooter is free for rotating)

m mass of 50 kg (class A) or 33 kg (class B)

Figure 5 — Static load test in direction B

5.6 Drop test

A cylindrical mass is dropped on the centre of the deck.

The test apparatus shall consist of:

a) a cylindrical solid mass of 20 kg and a diameter of 100 mm;

b) a sheet of rubber, fitted to the mass, with 17 mm thickness and 70 shore A;

c) a guide tube.

Drop the cylindrical mass, in free fall, down the guide tube on to the centre of the deck of the kick scooter three times. During the test, hold the scooter to prevent it from rolling away.

Drop the mass from 300 mm (measured from the deck) for class A and 220 mm (measured from the deck) for class B on the centre of the deck (see Figure 8).

If plastic material is used for the deck or steering system the kick scooter has to be conditioned for at least 6 h at a temperature of (−5 ± 1) °C. Start the test within 1 min of removing the kick scooter from the conditioning environment and complete it within 5 min.

5.7 Impact against front wheel

A kick scooter shall be impacted in the forward direction onto the front wheel with an energy of 135 J and an impact velocity, v_1, of (4,5 ± 0,5) m/s, against solid-steel part. Either test configuration of Figure 6 or Figure 7 can be considered.

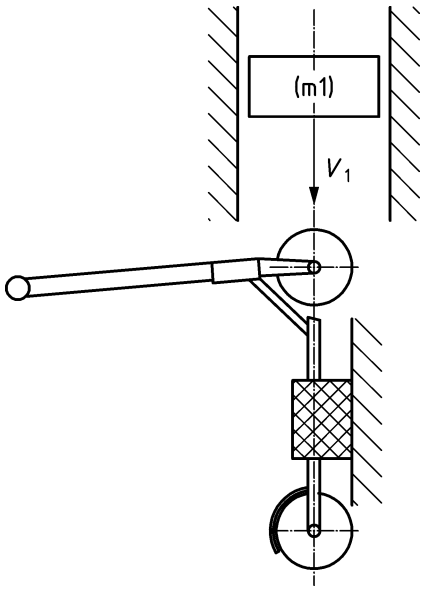


Figure 6 — Example 1 for test configuration

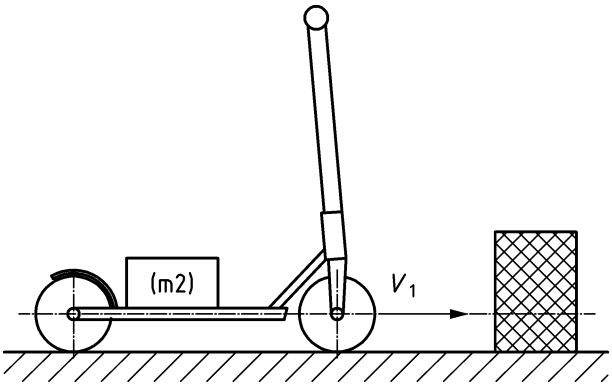


Figure 7 — Example 2 for test configuration

The type of suspension shall ensure that this energy is absorbed by the front wheel.

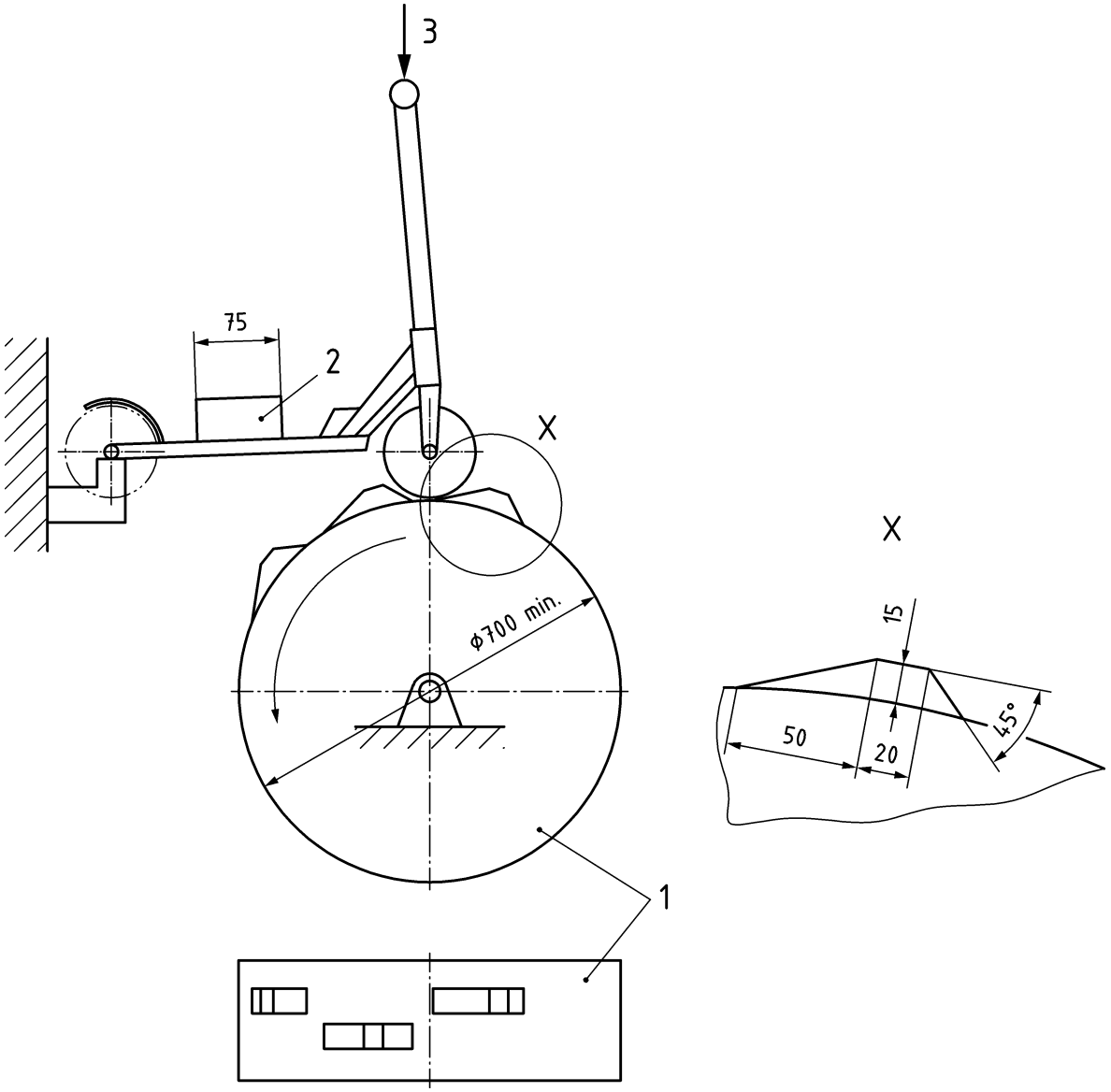
5.8 Endurance test

A complete kick scooter shall withstand the endurance test. This test is carried out on a test apparatus as shown in Figure 8 and at a circumferential speed of 0,5 m/s for a distance of 12 km. A mass of 90 kg for class A and 45 kg for class B shall be placed centrally on the free space of the deck (see Figure 9). 10 kg for class A and 5 kg for class B shall be placed on the handlebar or joy stick in maximum extended position.

The distance between the raised sections shall be such that the kick scooter passes over one ramp every 1,5 s.

For testing multi-track kick scooters, the raised sections shall be displaced so that the wheels do not travel over these raised sections simultaneously. The sections shall be spaced so that each wheel travels over two sections per second.

Dimensions in millimetres



Key

1 drum

2 mass: 90 kg for class A and 45 kg for class B

3 mass: 10 kg for class A and 5 kg for class B (applied in the centre of the handlebar or joy stick)

Figure 8 — Test device for endurance test

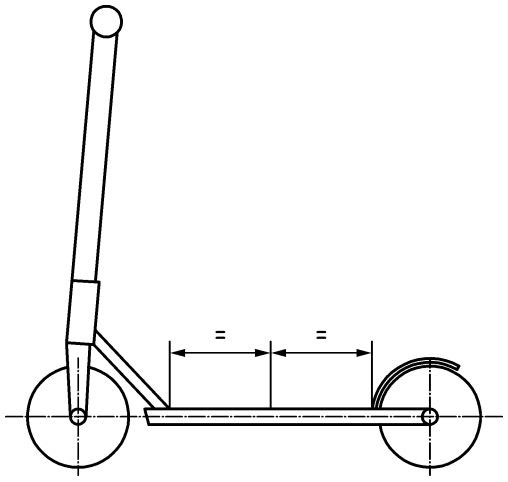


Figure 9 — Centre of the deck

5.9 External finish

Test by measurement and/or visual/tactile examination according to EN 71-1:2014, 8.11.

6 Marking

6.1 On the kick scooter

Each kick scooter shall be legibly and durably marked with the following:

a) name, trademark or other means of identification of the manufacturer, or his authorized representative within the European Community, or the importer;

b) means of identification of the model;

c) warning text "Read the information supplied by the manufacturer" or a pictogram (e.g. Figure 10);

Figure 10 — Read the information supplied by the manufacturer

d) maximum weight: 100 kg for class A and 50 kg for class B;

e) warning text: “Wear personal protective equipment” or the mandatory action sign “Wear personal protective equipment” according to Figure 11.

Figure 11 — ISO 7010 — (M049), Wear personal protective equipment

6.2 On the package

The following information shall be provided on the package:

a) all information given on the kick scooter (see 6.1);

b) number of this European Standard and class of kick scooter.

7 Information supplied by the manufacturer

7.1 General

All kick scooters shall be supplied with information supplied by the manufacturer.

This document shall contain, in text or picture form, at least the information in accordance with 7.2 and 7.3 as well as the information given in Clause 6.

7.2 Instructions for use

The following advice shall be included:

a) advice to the user to check the limitation of use according to regulations of road safety;

b) recommendations regarding or descriptions of suitable surfaces (flat, clean, dry and where possible away from other road users);

c) use of at least the following protective equipment: hand/wrist, knee, head and elbow protection;

d) instruction to check that the steering system is correctly adjusted and that all connection components are firmly secured and not broken;

e) description of the correct techniques for use and for braking;

f) advice on making ready for use in order to avoid pitching or entrapment;

g) always wear shoes;

h) do not ride in the darkness;

i) mechanism to reduce speed will get hot from continuous use, do not touch after braking.

7.3 Servicing and maintenance instructions

Clear advice stating that regular maintenance enhances the safety of the kick scooter. This includes:

a) note regarding bearing maintenance;

b) replacement of wheels, if applicable;

c) no modifications other than to the manufacturer's instructions shall be made;

d) note indicating when self-locking nuts and other self-locking fixings may lose their effectiveness.

Annex A
(informative)

Environmental aspects

Every product has an impact on the environment during all stages of its life-cycle, e.g. extraction of resources, acquisition of raw materials, production, testing, distribution, use (application), reuse, end-of-life treatment, including final disposal. These impacts range from slight to significant; they can be short-term or long-term; and they occur at global, regional or local level. Provisions in product standards have an influence on environmental impacts of products.

The need to reduce the potential adverse impacts on the environment of a product that can occur during all stages of its life is recognized around the world. The potential environmental impacts of products can be reduced by taking into account environmental issues in product standards.

During the life-cycle of a given product, different environmental aspects can be determined.

The aim is to promote a reduction of potential adverse environmental impacts caused by products.

(For information, an environmental checklist is given in Table A.1. The purpose of the environmental checklist is to explain whether the standard covers relevant product environmental aspects and, if so, how they are dealt with in the draft.)

By no means shall these environmental aspects interfere with the basic health and safety requirements in this standard. In any case, the requirement of this standard prevails any environmental aspect that might be related to this product.

The following environmental aspects should be considered:

a) Materials should be selected to optimize product durability and lifetime and consideration should be made to avoiding the selection of rare or hazardous materials.

b) Consideration should be made to using recycled or reused materials, and to the selection of materials which can then be subsequently recycled.

c) The possibility of marking components to aid to their sorting for disposal/recycling at end of life should also be reviewed.

d) Packaging design should consider using recycled materials, and materials that need little energy for their manufacture, and should minimize waste.

e) Packaging design should consider subsequent reuse and recycling.

f) The size and weight of packaging should be minimized whilst protecting the products to minimize waste through damage. Packaging should be designed to optimize capacity of transportation vehicles whilst facilitating safe loading and unloading.

g) Test materials should be used and disposed of properly, according to their manufacturer instructions and to the enforced law in respect of environmental protection.

h) Test facility, test equipment and tools must be designed to minimize the risk of leak into the environment.

i) Maximum use should be made of high efficiency motors, lighting and displays.

j) The design should facilitate the manufacturing of the product and packaging, using tools which minimize the generation of noise and vibration.

Table A.1 — Environmental Checklist

Environmental Issue	Stages of the life cycle										All stages
	Acquisition		Production		Use			End-of-Life			
	Raw materials and energy	Pre-manufactured materials and components	Production	Packaging	Use	Maintenance and repair	Use of additional products	Reuse/ Material and Energy Recovery	Incineration without energy recovery	Final disposal	Transportation
Inputs											
Materials											
Water											
Energy											
Land											
Outputs											
Emissions to air											
Discharges to water											
Discharges to soil											
Waste											
Noise, vibration, radiation, heat											
Other relevant aspects											
Risk to the environment from accidents or unintended use											
Customer information											
Comments:											
NOTE 1 The stage of packaging refers to the primary packaging of the manufactured product. Secondary or tertiary packaging for transportation, occurring at some or all stages of the life cycle, is included in the stage of transportation.											
NOTE 2 Transportation can be dealt with as being a part of all stages (see checklist) or as separate sub-stage. To accommodate specific issues relating to product transportation and packaging, new columns can be included and/or comments can be added.											

Bibliography

[1] Regulation of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

[2] EN 82079-1, *Preparation of instructions for use — Structuring, content and presentation — Part 1: General principles and detailed requirements*

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