INTERNATIONAL STANDARD

ISO 8098

Second edition
2002-08-01

Cycles — Safety requirements for bicycles for young children

Cycles — Exigences de sécurité relatives aux bicyclettes pour jeunes enfants

Reference number
ISO 8098:2002(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

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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.

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

International Standard ISO 8098 was prepared by Technical Committee ISO/TC 149, *Cycles*, Subcommittee SC 1, *Cycles and major sub-assemblies*.

This second edition cancels and replaces the first edition (ISO 8098:1989), which has been technically revised.

Introduction

Safety requirements for bicycles intended to be ridden on public roads by adults and children aged about eight years and older (i.e. bicycles having saddle heights of 635 mm and above) are given in ISO 4210.

While ISO 8098 follows the lines of ISO 4210, it covers requirements for bicycles suitable for young children aged from about four to eight years. These bicycles are not intended to be ridden on public roads and should not be presumed to be suitably equipped for that purpose.

For safety requirements for toy bicycles intended for very young children aged up to about four years (i.e. bicycles having saddle heights up to 435 mm), see EN 71-1:1998[1].

Cycles — Safety requirements for bicycles for young children

1 Scope

This International Standard specifies safety and performance requirements and test methods for the design, assembly and testing of bicycles for young children of from about four to eight years of age, as well as these bicycles' sub-assemblies. It also provides guidelines for instructions on the use and care of the bicycles.

This International Standard is applicable to bicycles with a maximum saddle height of more than 435 mm and less than 635 mm, propelled by a transmitted drive to the rear wheel.

It is not applicable to special bicycles intended for stunting (e.g. BMX bicycles).

2 Terms and definitions

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

2.1
cycle
any vehicle that has at least two wheels and is propelled solely by the muscular energy of the person on that vehicle, in particular by means of pedals

2.2
bicycle
two-wheeled cycle

2.3
saddle height
vertical distance from the ground to the top of the seat surface, measured with the seat in a horizontal position and with the seat pillar set to the minimum insertion depth

2.4
braking force
force tangential to the tyre resisting rotation of the wheel when the brake is applied

2.5
(pedal) tread surface
surface of a pedal that is presented to the underside of the foot

2.6
maximum inflation pressure
maximum tyre pressure recommended by the manufacturer for safe and efficient performance

2.7
stabilizers
removable auxiliary wheels fitted to enable the rider to balance

2.8
exposed protrusion
protrusion which, through its location and rigidity, could present a hazard to the rider, either through heavy contact between it and the rider in normal use or should the rider fall onto it in an accident

3 Subassemblies

3.1 General

3.1.1 Sharp edges

Exposed edges that could come into contact with parts of the rider's body (e.g. hands and legs) during normal riding or normal handling and normal maintenance shall not be sharp.

3.1.2 Protrusions

3.1.2.1 Exposed protrusions

Any rigid, exposed protrusion longer than 8 mm (see L in Figure 1) after assembly, with the exception of

a) the front gear-change mechanism at the chainwheel,

b) the rear gear-change mechanism below the chain-stay,

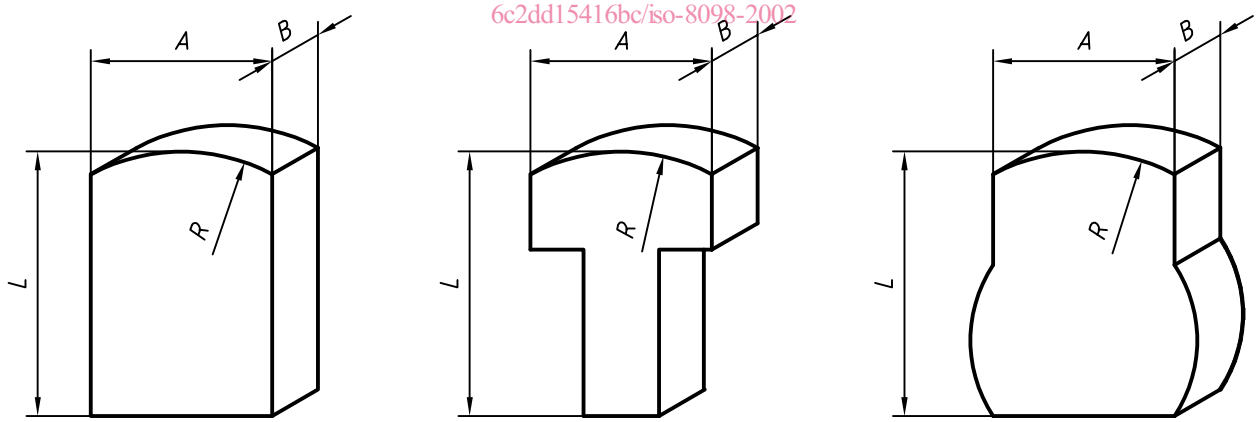
c) the rim-brake mechanism at the front and rear wheels,

d) a lamp-bracket fitted on the head-tube,

e) reflectors, and

f) toe-clips and toe straps,

shall terminate in a radius, R of not less than 6,3 mm. Such protrusions shall have a major end dimension, A, of not less than 12,7 mm, and a minor dimension, B, of not less than 3,2 mm. See Figure 1.



These shall apply when L is greater than 8 mm.

Figure 1 — Examples of min. dimensions of exposed protrusions

3.1.2.2 Exclusion zone, protective devices and screw threads

There shall be no protrusions on the top tube of a bicycle frame between the saddle and a point 300 mm forward of the saddle, with the exception that control cables no greater than 6,4 mm in diameter and cable clamps made from material no thicker than 4,8 mm may be attached to the top tube.

Foam pads attached to the bicycle frame to act as protective cushions are permitted, provided that the bicycle meets the requirements for protrusions when the pads are removed.

A screw thread that is an exposed protrusion shall be limited to a protrusion length of one major diameter of the screw beyond the internally threaded mating part.

3.1.2.3 Location of exposed protrusions

The location of exposed protrusions shall be established using a test-cylinder (simulating a limb) conforming to the dimensions shown in Figure 2.

Manoeuvre the cylinder in any convenient attitude toward any rigid protrusion on the bicycle. If the central 75 mm long section of the test cylinder comes into contact with any protrusion, that protrusion shall be considered an exposed protrusion and shall comply with the requirements of 3.1.2.1.

Dimensions in millimetres

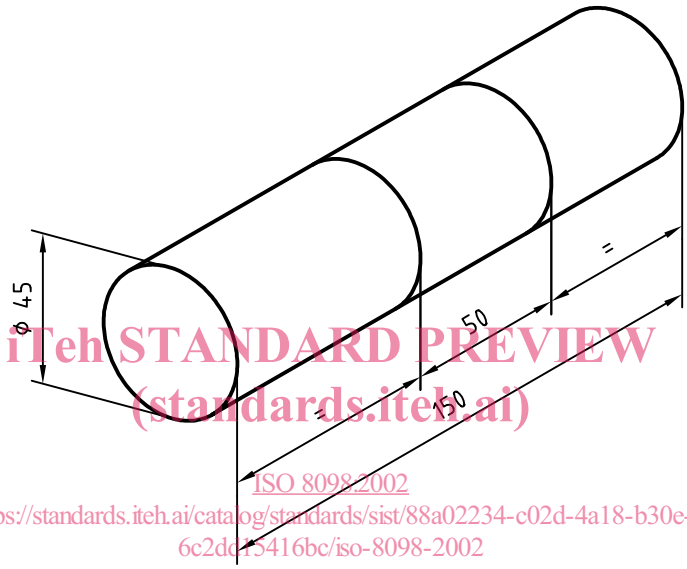


Figure 2 — Exposed protrusion test cylinder

Examples of exposed protrusions which do, and do not, need to comply with the requirements of 3.1.2.1 are shown in Figure 3.

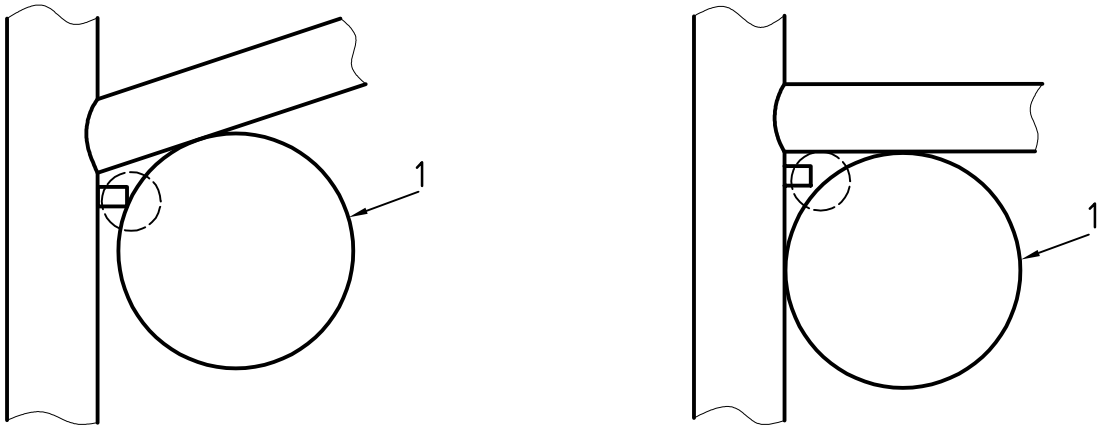
3.1.3 Security and strength of safety-related fasteners

3.1.3.1 Security of screws

Any screws used in the assembly of suspension systems, or screws used to attach generators, brake-mechanisms and mudguards to the frame, fork or handlebars, shall be provided with suitable locking devices (e.g. lock-washers, lock-nuts, stiff nuts).

3.1.3.2 Minimum failure torque

The minimum failure torque of bolted joints for the fastening of handlebars, handlebar-stems, bar-ends, seats and seat-pillars shall be at least 50 % greater than the manufacturer's recommended tightening torque.



a) Needs to comply **b) Does not need to comply**

Key

1 Test cylinder

Figure 3 — Examples of exposed protrusions

3.2 Brakes

3.2.1 Braking system

3.2.1.1 Bicycles with max. saddle height 560 mm or more

Bicycles with a maximum saddle height of 560 mm or more, whether or not they are fitted with a fixed transmitted drive, shall be equipped with two independent braking systems, one system operating on the front wheel and one on the rear.

It is recommended that the decision as to whether the rear braking system is operated by the rider's hand or foot be made in accordance with the legislation (or preference) of the country to which the bicycle is to be supplied.

3.2.1.2 Bicycles with maximum saddle height less than 560 mm

Bicycles with a maximum saddle height of less than 560 mm, whether or not they are fitted with a fixed transmitted drive, shall be equipped with at least one braking system. The system shall operate on either the front or the rear wheel.

It is recommended that, where a single braking system is used, the decision as to whether it operates on the front or the rear wheel be made in accordance with the legislation (or preference) of the country to which the bicycle is to be supplied.

Bicycles with two independent braking systems shall have one system operating on the front wheel and one on the rear.

It is recommended that the decision as to whether the rear braking system is operated by the rider's hand or foot be made in accordance with the legislation (or preference) of the country to which the bicycle is to be supplied.

3.2.2 Hand-operated brake

3.2.2.1 Brake lever position

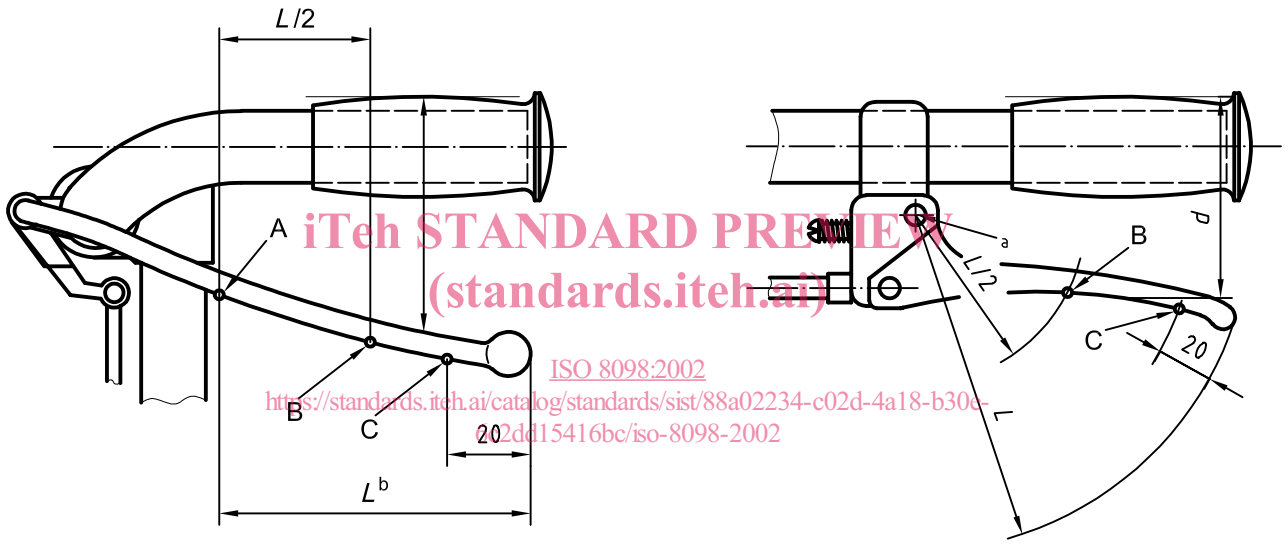
Brake levers for front and rear brakes shall be positioned on the side of the handlebar conventional to the country of use.

3.2.2.2 Brake lever dimensions

The maximum grip dimension, d, measured between the outer surfaces of the brake lever and the handlebar, or the handlebar grip or other covering if present, shall not exceed 60 mm between points A and B, and shall not exceed 75 mm between points B and C. See Figure 4.

The range of adjustable brake levers should permit these dimensions.

Dimensions in millimetres



[a] Pivot A.

[b] Lever length (= 80 mm).

Figure 4 — Hand-operated brake lever dimensions

3.2.2.3 Cable brake assembly

The braking system shall operate without binding.

The cable pinch bolt shall not sever the cable strands when assembled in accordance with the manufacturer's instructions.

The wires shall be protected against inner corrosion, for example, by a suitable, impervious liner to the outer casing.

The cable end shall be protected with a cap able to withstand a removal force of 20 N.

3.2.2.4 Brake block and holder assembly

The brake block shall be securely attached to the brake block holder and there shall be no failure of the brake block and holder assembly when tested to the method specified in 4.2. After completion of the test, the braking system shall be capable of meeting the braking performance requirements of 3.2.5.

3.2.2.5 Brake adjustment

The brakes shall be adjustable to an efficient operating position until the brake blocks have worn to the point of requiring replacement as recommended by the manufacturer.

When correctly adjusted, the brake block shall not come into contact with anything other than the intended braking surface.

3.2.3 Back-pedal brake

Back-pedal brakes shall be actuated by the rider's foot pedalling in the direction opposite to that of the drive force. The brake mechanism shall function independently of any drive gear positions or adjustments. The differential between the drive and brake positions of the crank shall not exceed 60° (the measurement shall be taken with the crank held against each position with a torque of 14 N · m).

3.2.4 Strength of braking system

3.2.4.1 Hand-operated brake

When tested using the method specified in 4.3.1, there shall be no failure of the hand-operated braking system or any of its components.

3.2.4.2 Back-pedal brake

When tested using the method specified in 4.3.2, there shall be no failure of the back pedal braking system or any of its components.

3.2.5 Braking performance

3.2.5.1 Hand-operated brake performance test

When tested in accordance with 4.4, the average braking force of hand-operated braking systems shall increase progressively as the lever force is increased from 50 N to 90 N.

For front brakes, with the appropriate lever forces, the minimum and maximum braking forces shall conform to Table 1.

For rear brakes, with the appropriate lever forces, the minimum braking forces shall conform to Table 1.

Table 1 — Brake-lever-input forces and braking forces at the tyre

Brake lever input force	Braking force at the tyre	
	min.	max. (front brake only)
N	N	N
50	40	120
90	60	200

3.2.5.2 Back-pedal brake performance test

When tested in accordance with 4.5, the average braking force of back-pedal braking systems transmitted to the rear wheel shall increase progressively as the pedal force is increased from 20 N to 100 N. The ratio of pedal force to braking force shall not exceed 2.

NOTE A braking force of 46,3 N equates to a theoretical braking distance of less than 2,5 m from a speed of 10 km/h with a total mass of bicycle and rider of 30 kg.