

English Version

## Playing field equipment - Basketball equipment - Functional and safety requirements, test methods

Equipements de jeux - Equipements de basket-ball -  
Exigences fonctionnelles et de sécurité, méthodes d'essais

Spielfeldgeräte - Basketballgeräte - Funktionelle und  
sicherheitstechnische Anforderungen, Prüfverfahren

This European Standard was approved by CEN on 26 September 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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## Foreword

This European Standard (EN 1270:2005) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and other recreational 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of an identical text or by endorsement, at the latest by April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

Regarding types 1 and 2 France asked for a national deviation due to a French national regulation (decree no 96-465 of June 4, 1996), see Annex C.

This document supersedes EN 1270:1998.

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

## 1 Scope

This European Standard specifies functional requirements (see Clause 3) and safety requirements (see Clause 4) for basketball equipment.

This European Standard is applicable to 8 types of basketball equipment within the classes A to E (see 3.1).

This European Standard is not applicable to home basketball equipment, which is considered to be covered by EN 71-1, and to ball throwing equipment.

NOTE The intended use of ball throwing equipment is for the purpose of practising attempts to propel the basketball into the basket.

## 2 Normative references

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

EN 913:1996, *Gymnastic equipment — General safety requirements and test methods*.

EN 10025-1, *Hot-rolled products of structural steels — Part 1: General technical delivery conditions*.

EN 10025-2, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy structural steels*.

EN ISO 2062, *Textiles — Yarns from packages — Determination of single-end breaking force and elongation at break (ISO 2062:1993)*.

## 3 Requirements

### 3.1 Classification

Basketball equipment shall be classified by the design (types) and the free space (see Table 2) as typical performance criterion (classes) as shown in Tables 1 and 2.

**Table 1 — Types**

Type	Description	Example
1	freestanding 3 250 mm and 2 250 mm extension	figure 1
2	freestanding (other extensions)	figure 2
3	folding	figure 3
4	fixed wall mounted	figure 4
5	ceiling mounted	figure 5
6	removable with sockets	figure 6
7	fixed in the ground	figure 7
8	adjustable with height setting from 2 600 mm to 3 050 mm	
NOTE Specifications concerning fixing are under preparation		



**Table 2 — Classes**

Dimensions in millimetres

Class	Free space min.	Remark
A	3 250	a
B	2 250	
C	1 650	
D	1 200	
E	600 to 1 200	
<sup>a</sup> in line with/with interpretation of FIBA (Fédération Internationale de Basketball) rules		

Rings shall be classified as either:

- a) fixed rings; or
- b) pressure release rings.

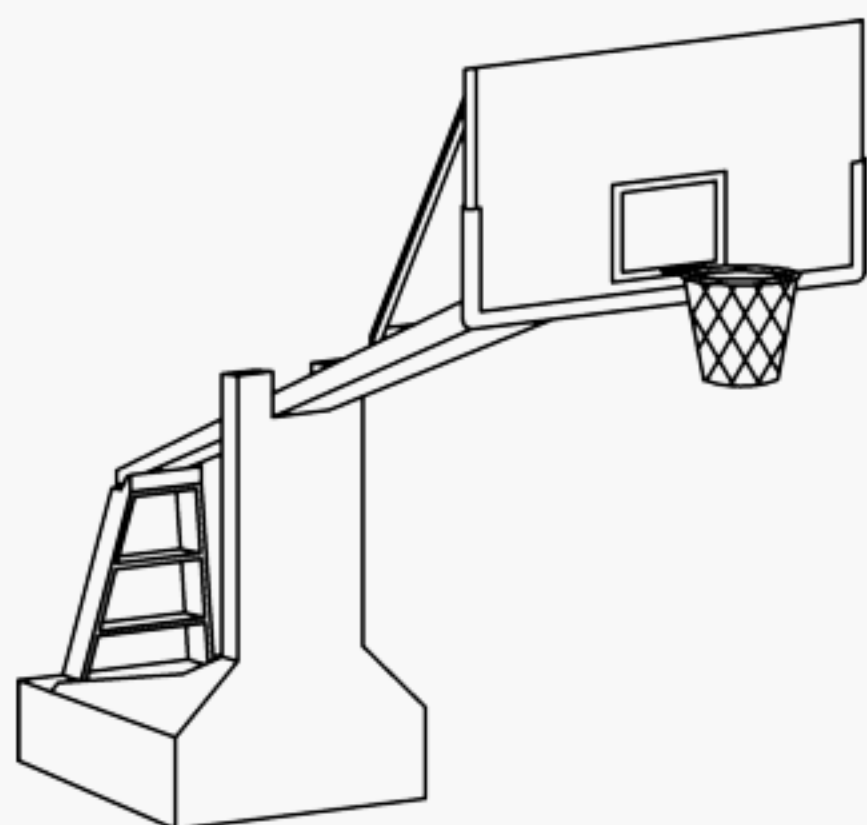
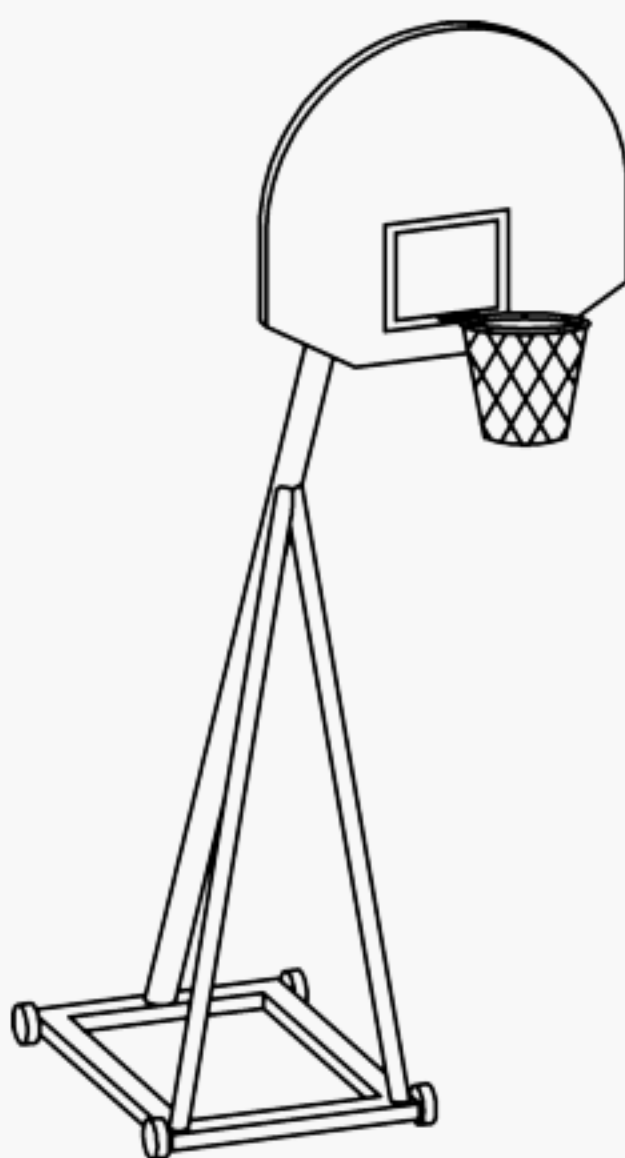
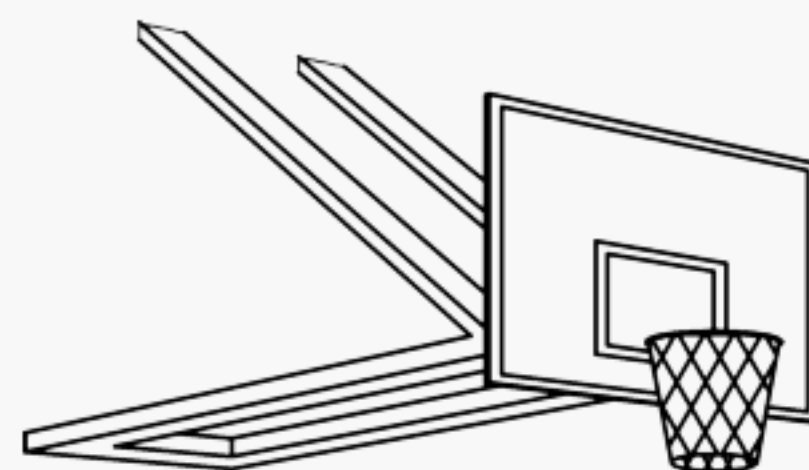
**Figure 1 — Example of type 1****Figure 2 — Example of type 2****Figure 3 — Example of type 3**



Figure 4 — Example of type 4

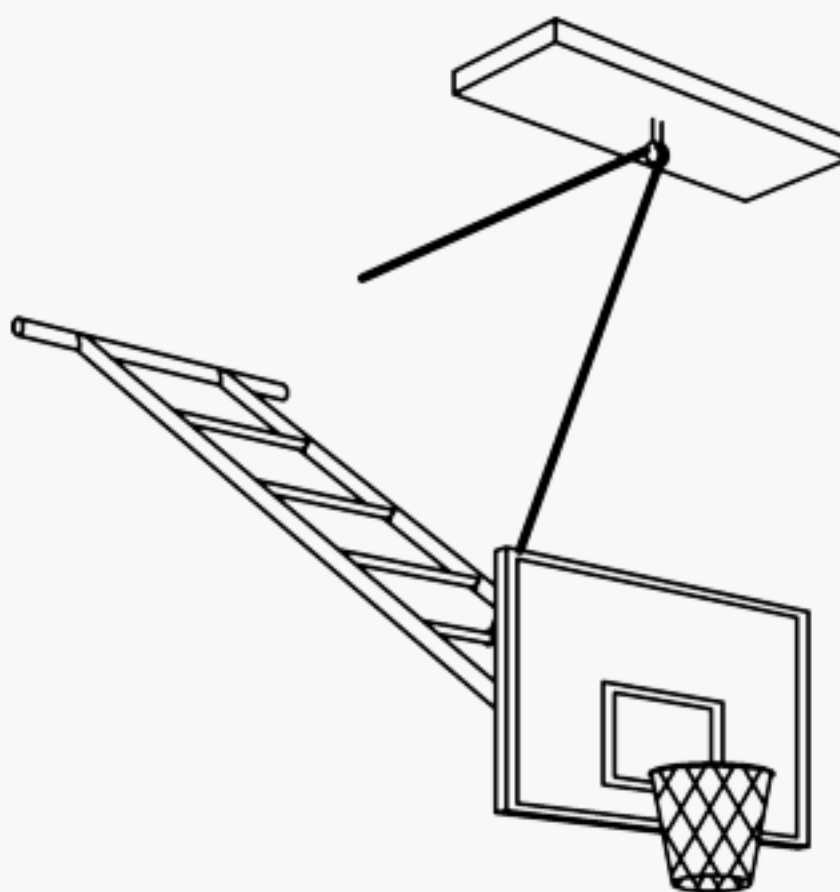


Figure 5 — Example of type 5

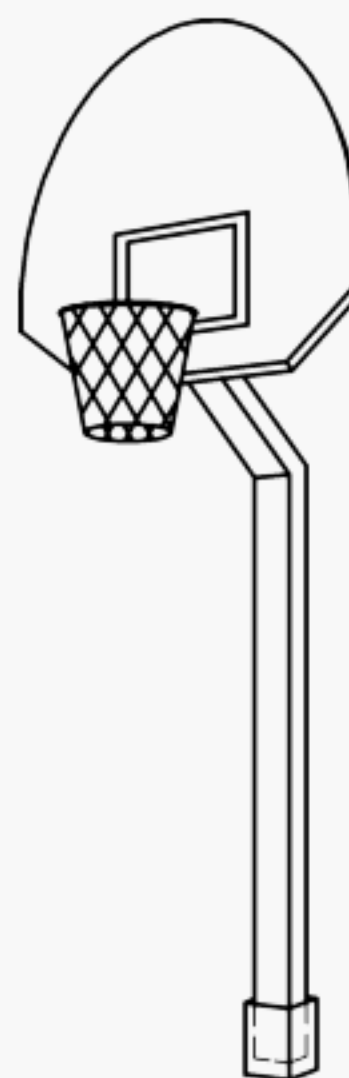


Figure 6 — Example of type 6

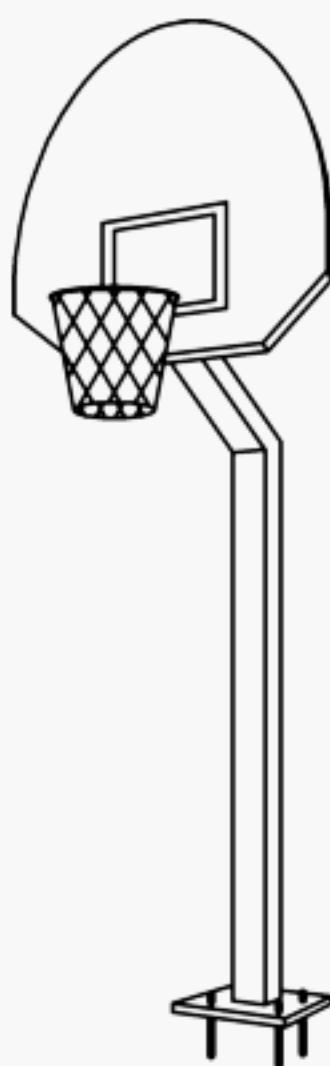


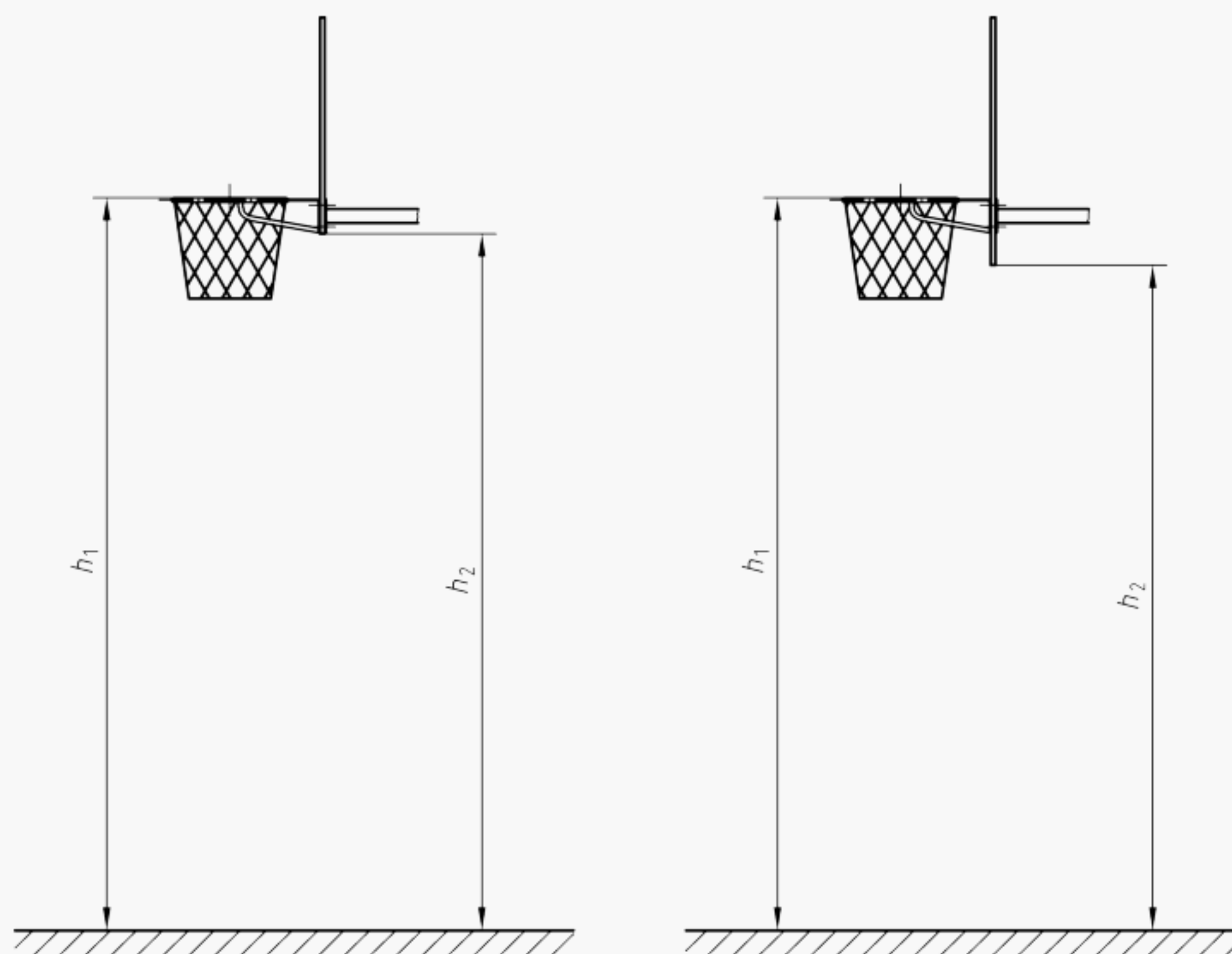
Figure 7 — Example of type 7

### 3.2 Dimensions

Basketball equipment shall comply with the dimensions shown in Figures 8 to 11 and Tables 3 and 4.

A complete set of basketball equipment shall have the following components:

- a) 1 backboard;
- b) 1 ring;
- c) 1 net;
- d) the supporting frame;
- e) stability devices.



a) Backboard 1 800 mm × 1 050 mm

b) Backboard 1 800 mm × 1 200 mm

**Figure 8 — Main functional dimensions for classes A to D****Table 3 — Main functional dimensions for classes A to D**

Dimensions in millimetres

Nominal size	Nominal dimension $h_1$ $\pm 6$	$h_2$ $\pm 6$	Type
3 050	3 050	2 900 (2 750) <sup>a</sup>	1 to 7
3 050/2 600	2 600	2 450 (2 300) <sup>a</sup>	8
<sup>a</sup> for backboard height = 1 200 mm			

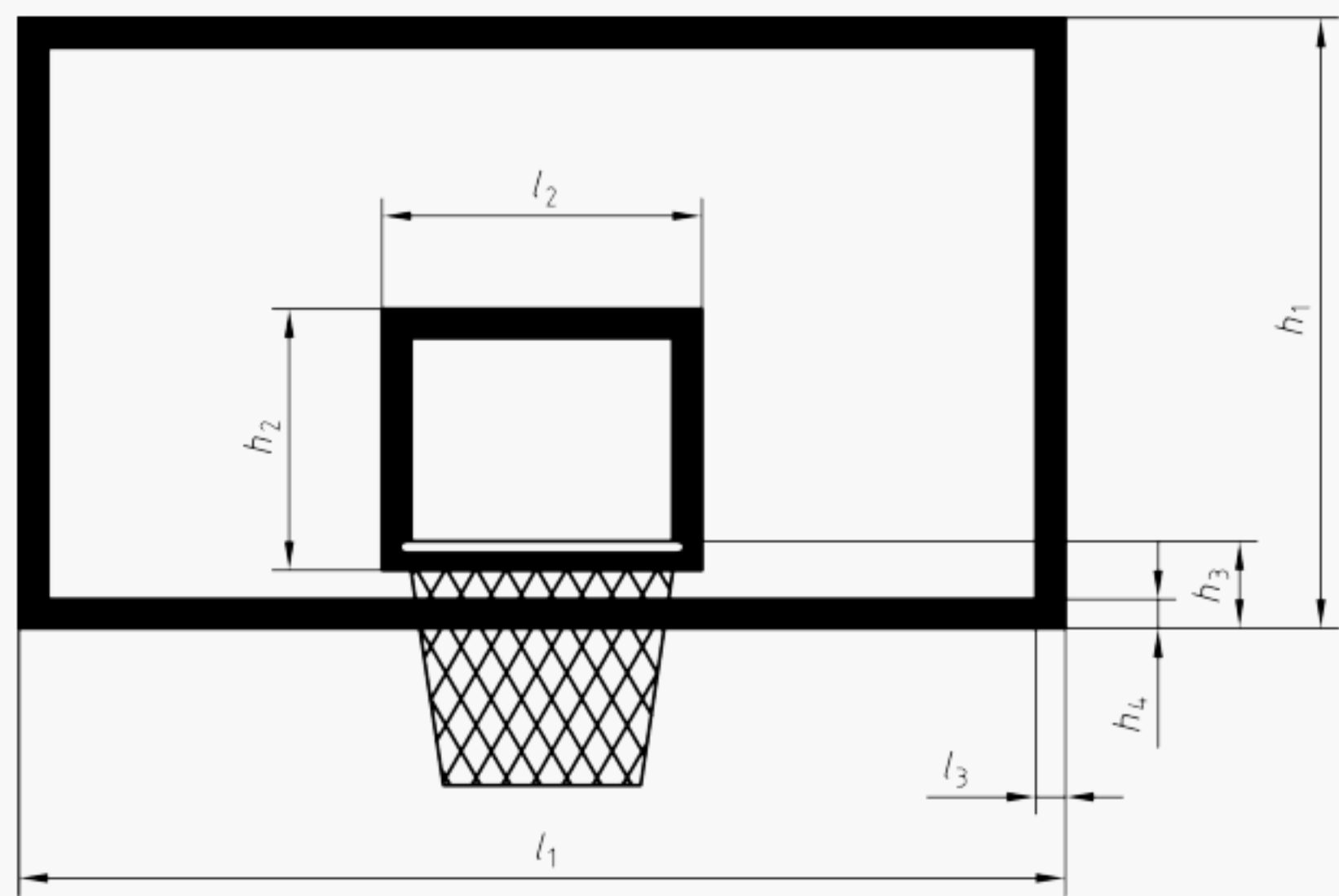


Figure 9 — Dimensions of backboard and markings

Table 4 — Dimensions of backboard and markings

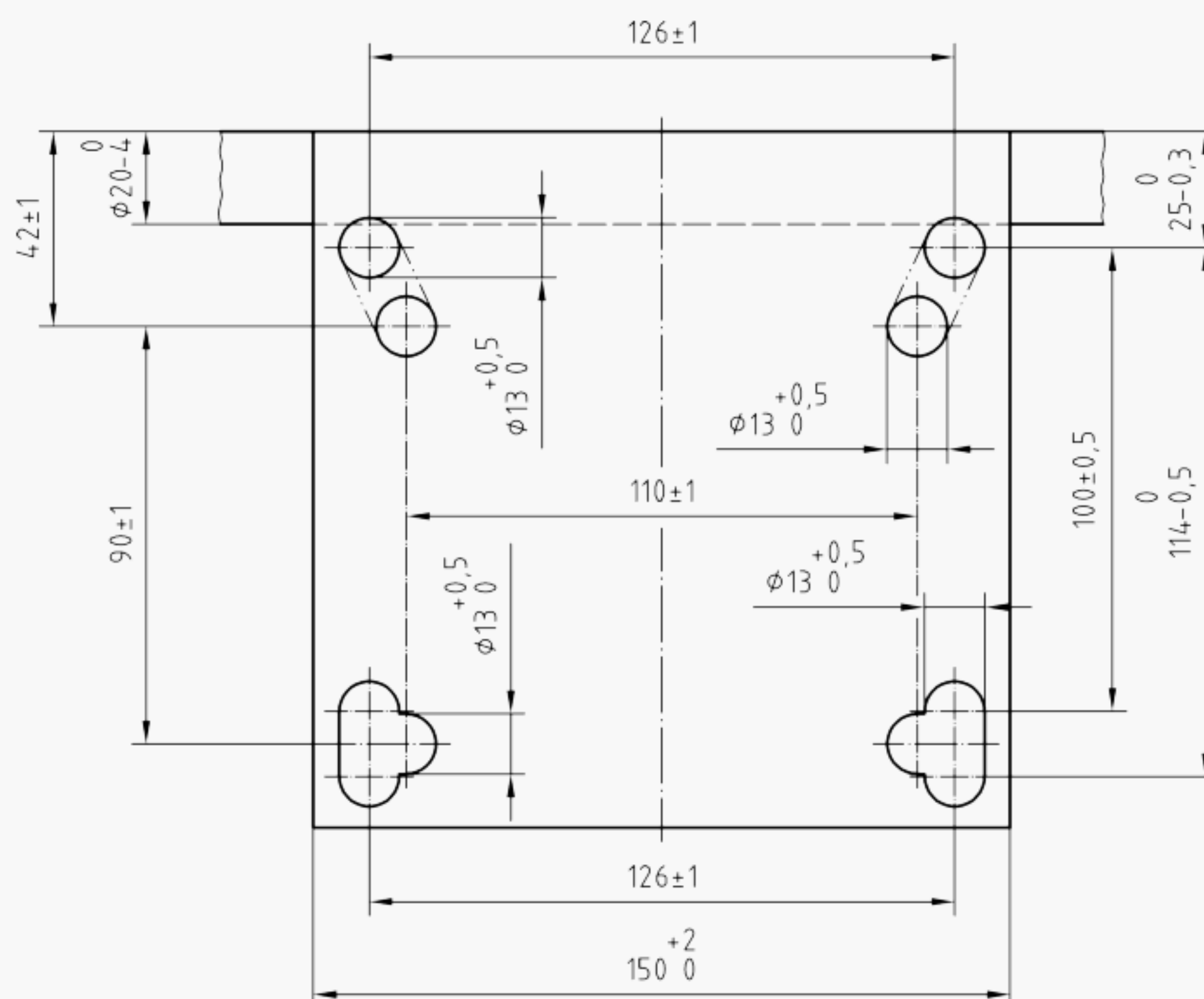
Dimensions in millimetres

Backboard		Markings				
$l_1$	$h_1$	$l_2$	$h_2$	$h_3$	$h_4$	$l_3$
1 800	1 050	590	450	150	50	50
(1 800) <sup>a</sup>	(1 200) <sup>a</sup>	590	450	300	50	50
1 200	900	—	—	—	—	—
1 100	700	—	—	—	—	—
900	600	—	—	—	—	—
any other	any other	—	—	—	—	—

<sup>a</sup> For replacement only. Since 1998-07-26 not permitted according to the official rules of FIBA



Dimensions in millimetres

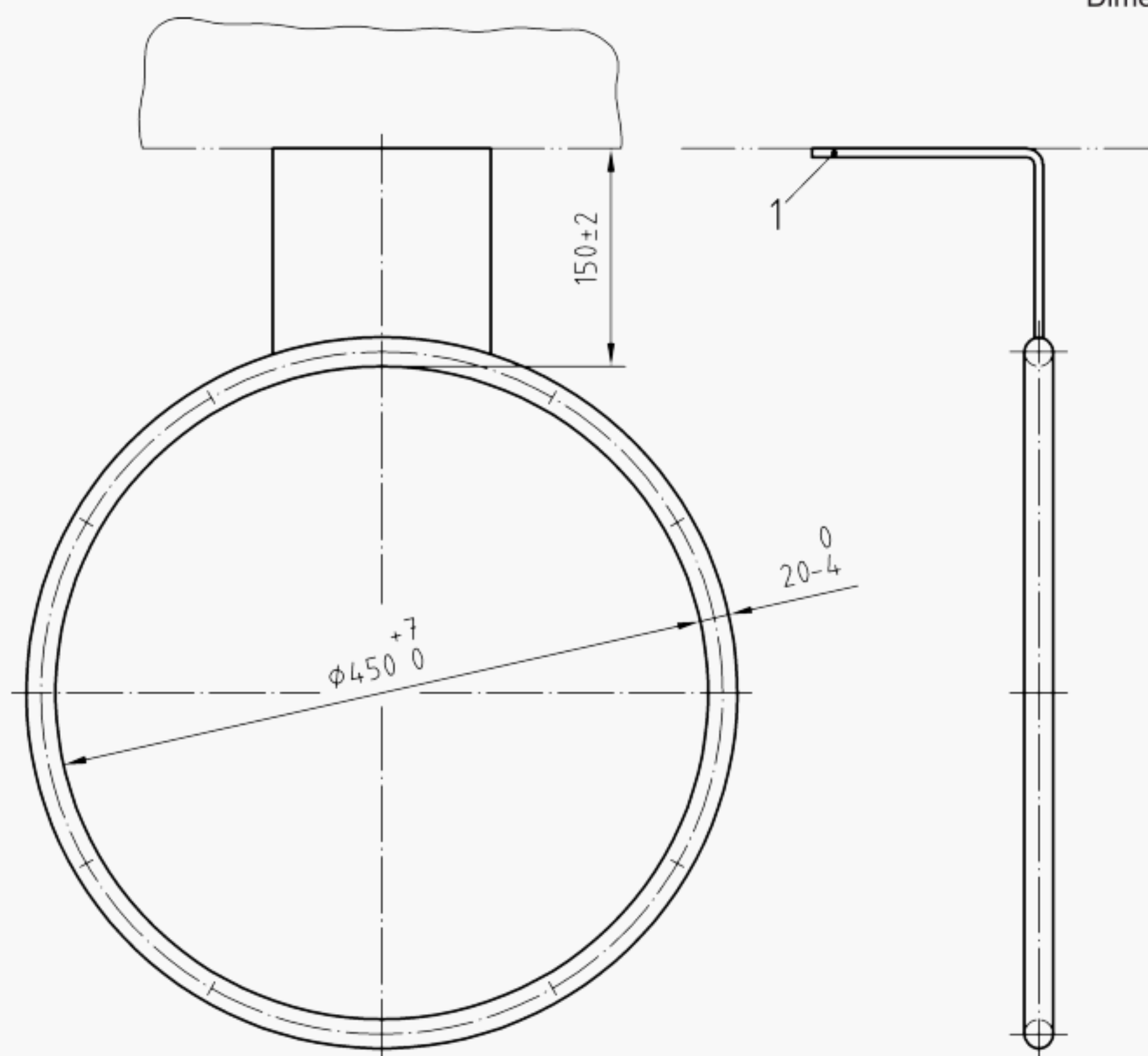


**Figure 10 — Ring mounting plate for classes A, B and C (classes D and E are not restricted)**

**NOTE** The hole pattern as drawn in Figure 10 is a conclusion of all existing hole patterns (agreed with FIBA and FIBA rules). Any hole pattern shall be within those dimensions.

Fixing of a board need not be done by holes. Any other fixing is allowed provided that the safety requirements are taken into consideration.

Dimensions in millimetres



**Key**

1 fixing plate

**Figure 11 — Ring**

### 3.3 Material

#### 3.3.1 Backboard

The materials for the backboard shall comply with 3.4.1.

#### 3.3.2 Ring

For classes A and B the rings shall be made of solid steel, to at least S 235 JR as specified in EN 10025.

#### 3.3.3 Net

The net shall be made of synthetic or natural fibres.

### 3.4 Design

#### 3.4.1 Backboard

3.4.1.1 For the backboard the colours of Table 5 shall be used.

**Table 5 — Colours**

Material	Class A	
	Front	Markings
timber	white	black
synthetics or composit	white	black
synthetics transparent	colourless	white
safety glass	colourless, clear view without distortion	white
metal	white	black

3.4.1.2 The front of the backboard, directed towards the playing court, shall be flat.

#### 3.4.2 Ring

For classes A and B the colour of the ring shall be orange.

For classes A and B, 12 net fixings shall be equally spaced on the underside of the ring element.

When tested in accordance with 5.2.2, pressure release rings, after release and with the load no longer applied, shall return automatically and instantly to the original position.

When tested in accordance with 5.2.3, all rings shall show no rupture and no permanent deformation of more than 10 mm.

#### 3.4.3 Nets in classes A to D

The colour of the net shall be white.

The net shall be made of net yarn with a breaking force of at least 1 700 N.

Net yarn shall be not less than 4,5 mm minimum diameter.

When attached to the ring the net shall hang vertically from the net fixings with an overall length of  $(400^{+50}_0)$  mm.

**NOTE** The net should offer sufficient resistance to the passage of a basketball of 749 mm to 780 mm circumference to slow down the flight of the ball. This makes it possible that it can clearly be determined visually whether the ball has or has not passed through the net.

#### 3.4.4 Framework in classes A to D

For basketball equipment that is designed to permit height adjustment of the backboard with basket and net, locking devices shall be fitted at 3 050 mm<sup>1)</sup> and 2 600 mm (mini basketball), see  $h_1$  in figure 8.

After height adjustment the horizontal distance from the backboard to the playing court shall not change.

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1) in line with FIBA regulations



### 3.4.5 Rigidity

**3.4.5.1** When tested in accordance with 5.4 with a force  $F_1$ , the horizontal permanent deflection of the framework after removal of the test force, ready for use, from the zero position shall not be more than 10 mm.

**3.4.5.2** When tested in accordance with 5.4 with a force  $F_3$  for indoor equipment, the horizontal permanent deflection of the framework after removal of the test force, ready for use, from the zero position shall not be more than 10 mm.

If the equipment can be used outdoors, the horizontal permanent deflection of the framework after removal of the test force, ready for use, from the zero position shall not be more than 10 mm, when tested in accordance with 5.4 with a force  $F_4$ .

### 3.4.6 Stability

When tested in accordance with 5.5 with a force  $F_2$ , the vertical permanent deflection of the framework after removal of the test force, ready for use, from the zero position shall not be more than 10 mm.

## 4 Safety requirements

### 4.1 General

All corners and edges up to a height of 2 900 mm, which are exposed within the playing court area free space and are not protected by padding, shall be rounded with a radius of at least 3 mm or be chamfered.

The edges of the backboard shall be chamfered or padded.

### 4.2 Ring

The ring shall be fixed on the framework in such a manner so that no force, transmitted by the ring, is directly applied to the backboard.

The fixing plate shall be designed such that it does not protrude the lower edge of the backboard.

Pressure release rings shall meet the following requirements:

- a) there shall be no gaps between the bracket and the ring that create a danger of entrapment;
- b) the pressure release mechanism shall not disengage until a static load of 1 050 N has been applied to the top of the ring at the most distant point from the backboard;
- c) when disengaged the housing of the pressure release mechanism and fixing shall not have any gaps greater than 8 mm;
- d) when disengaged the ring shall not deflect more than 30° below the original horizontal position.



Table 6 — Padding

Type	Backboard	Framework	
		Behind backboard 4.5.2 a)	Support 4.5.2 b)
	4.5.1		
1	X	X	X
2	—	—	(X)
3	(X)	(X)	—
4	—	(X)	—
5	(X)	—	—
6	—	—	(X)
7	—	—	(X)
8	—	—	—
X required (X) recommended			

### 4.3 Attachment of the net to the ring

The attachment of the net to the ring shall be designed such that the fingers of the player cannot be caught, the gap shall not be more than 8 mm.

NOTE A net attachment according to Figure A.1 fulfils this requirement.

### 4.4 Height adjustment and storage position

The construction to adjust the height of the backboard and to store it shall prevent unintentional changes during use.

During activation of the height adjustment system the operator shall be able to view both the adjustment mechanism and the backboard.

NOTE 1 These requirements also relate to hoisting the whole equipment.

NOTE 2 The future European Standard on hoisting devices will also apply.

### 4.5 Padding for classes A and B (see Table 6)

**4.5.1** The backboards shall be padded as follows:

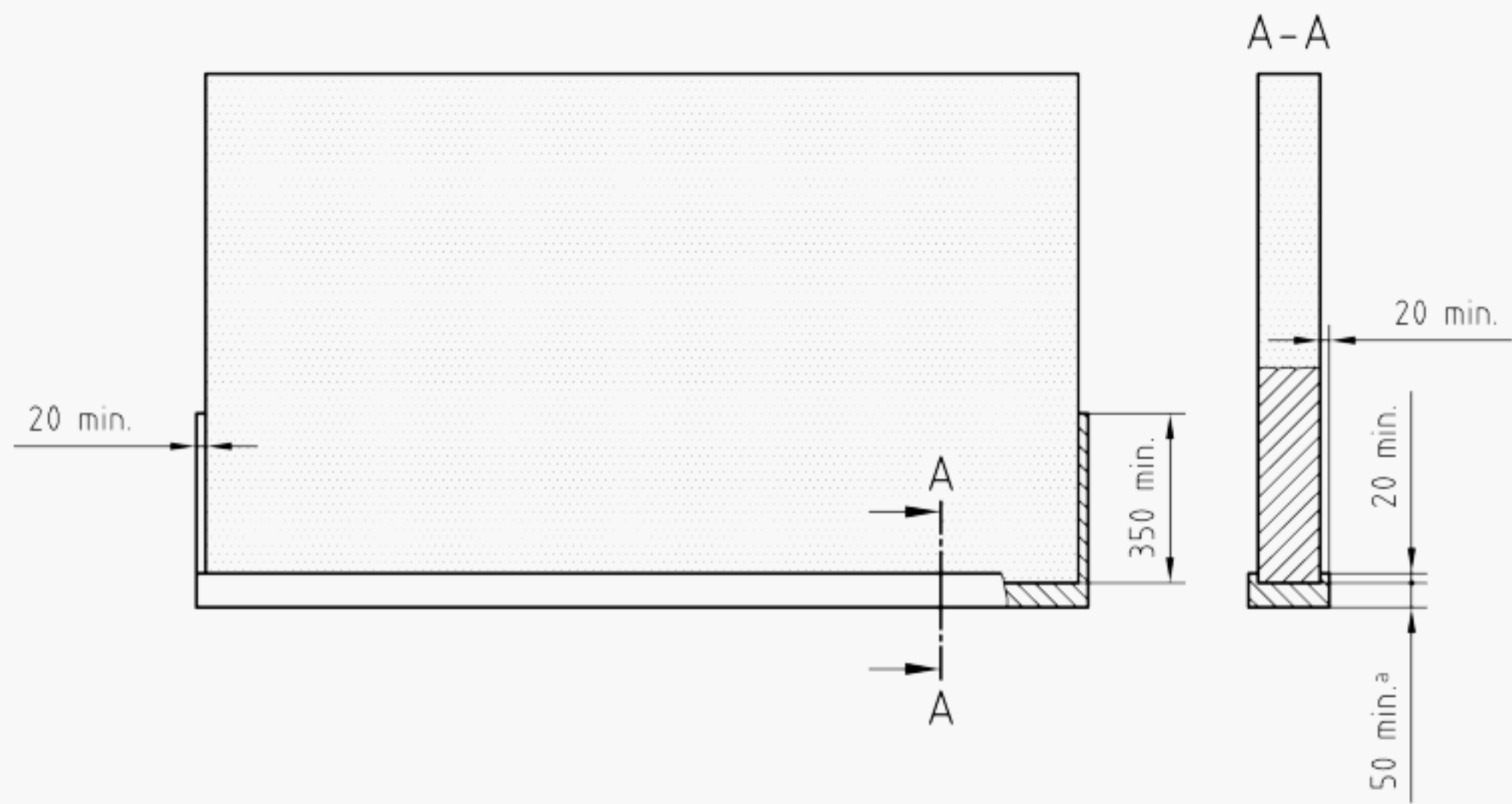
- for the bottom and sides of the backboards the padding shall cover the bottom edge and side edges to a distance of 350 mm from the bottom;
- for the front and back surface the padding shall cover to a minimum of 20 mm from the bottom (see Figure 12).

**4.5.2** The supports shall be padded as follows (see Figure 12):

- for the bottom surface of any backboard support behind the backboard and at a height of less than 2 750 mm above the floor shall be padded on to a distance of 1 200 mm from the face of the backboard;
- for type 1 the framework shall be padded on the side which is exposed within the playing court area free space to a height of 2 150 mm from the surface of the court.

NOTE On class A type equipment consideration should be given to padding the sides of the supports which although in the free space zone are sufficiently close as to be a potential hazard.

Dimensions in millimetres



Key

<sup>a</sup> taken from FIBA rules

Figure 12 — Padding

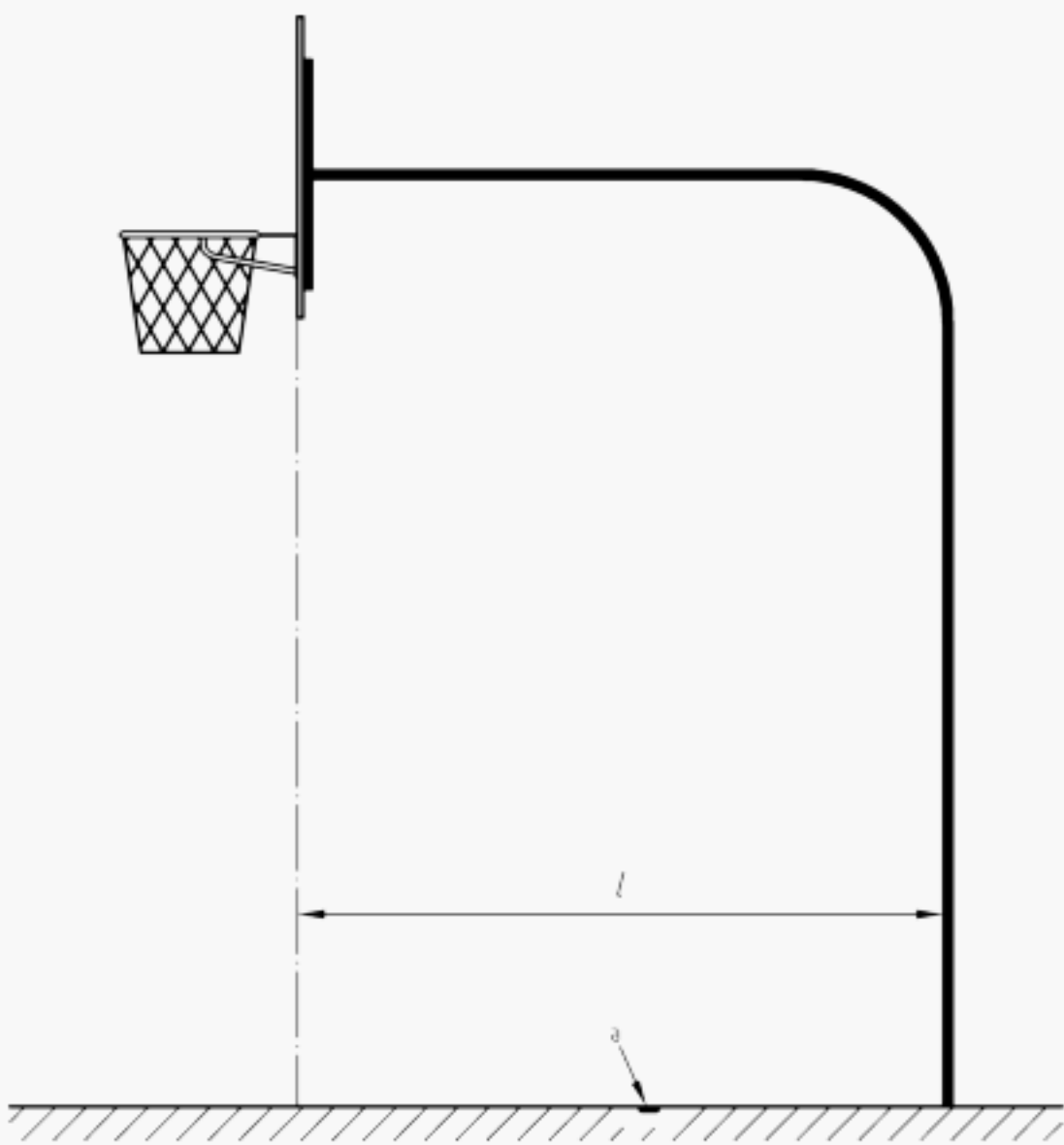
**4.5.3** When tested in accordance with Annex C of EN 913:1996 with an effective drop height of 200 mm, the value of the padding shall be below 50 g.

In deviation to EN 913:1996, C.3, test the padding without the backboard.

In addition to EN 913:1996, C.3, use a homogenous not profiled test sample in accordance with the padding. The thickness of the test sample shall correspond to the padding at the lower edge of the backboard.

**4.6 Free space**

The free space (*l*) shown in Figure 13 and specified in Table 2 shall be free of any obstacles.



Key

<sup>a</sup> end line of playing court

Figure 13 — Free space

## 5 Test methods

### 5.1 General

Unless otherwise specified in the following, the requirements of Clauses 3 and 4 shall be verified by measurement, visual examination or practical tests.

Before testing, the equipment shall be assembled according to manufacturer's instructions into a condition similar to position of use.

### 5.2 Ring

**5.2.1** Check by visual examination whether a force is transmitted by the ring directly to the backboard.

**5.2.2** Test the pressure release ring as shown in Figure 14, applying a force  $F_1$  of 1 050 N statically to the front of the ring for 5 s.

Note any gaps and whether the ring releases.

When the ring has disengaged, note whether:

- a) the housing of the pressure release mechanism and fixing produces no gaps greater than 8 mm;
- b) the ring deflects not more than  $30^\circ$ .

Unload the ring and note whether the ring returns automatically and instantly to the original position.

**5.2.3** Apply a force  $F_2$  of 2 400 N statically for  $1 \text{ min} + {}^{10}_0 \text{ s}$  to the front of the fixed ring (see Figure 15).

For pressure release rings apply the force  $F_2$  on the ring, which has been disengaged with a force  $F_1$  of 1 050 N (see Figure 14 and 5.2.2).

Note any rupture or permanent deformation of more than 10 mm.

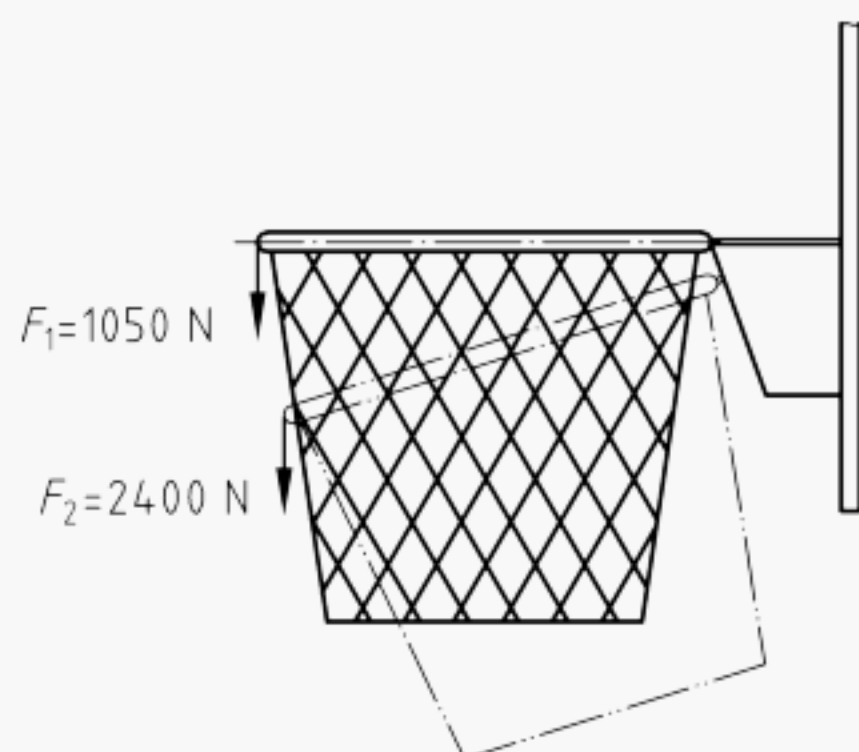


Figure 14 — Testing of pressure release rings

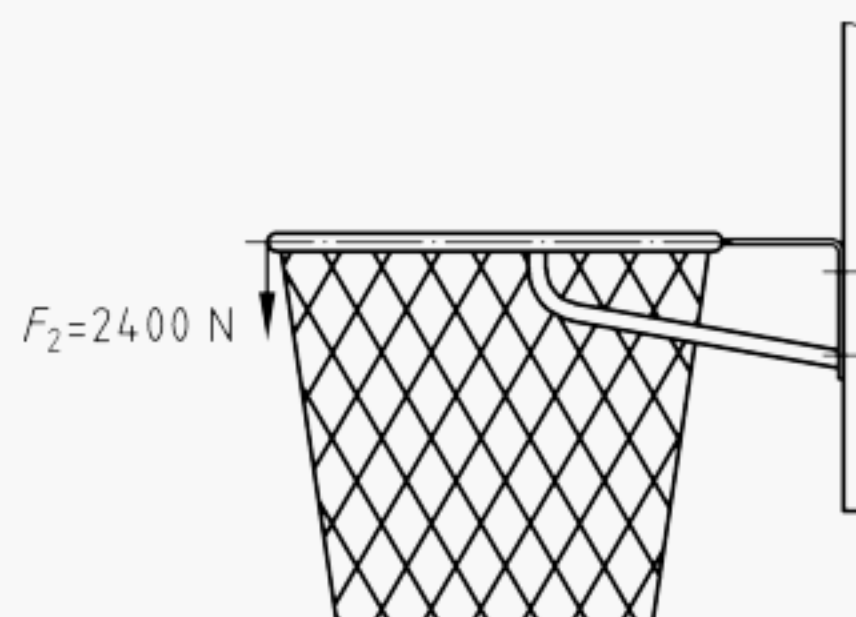


Figure 15 — Testing of fixed rings

### 5.3 Net

The breaking force of the net yarn is tested according to EN ISO 2062.



5.4 Rigidity

Test the rigidity in accordance with Figure 16 and Table 7, applying forces for 1 min <sup>+10</sup><sub>0</sub> s :

- $F_1$  of 900 N, and
- $F_3$  of 900 N for indoor equipment, and
- $F_4$  of 1 000 N for outdoor equipment.

Note any permanent deformation.

5.5 Stability

Test the stability in accordance with Figure 16 and Table 7, applying a force  $F_2$  of 3 200 N for 1 min <sup>+10</sup><sub>0</sub> s .

Note any permanent deformation.

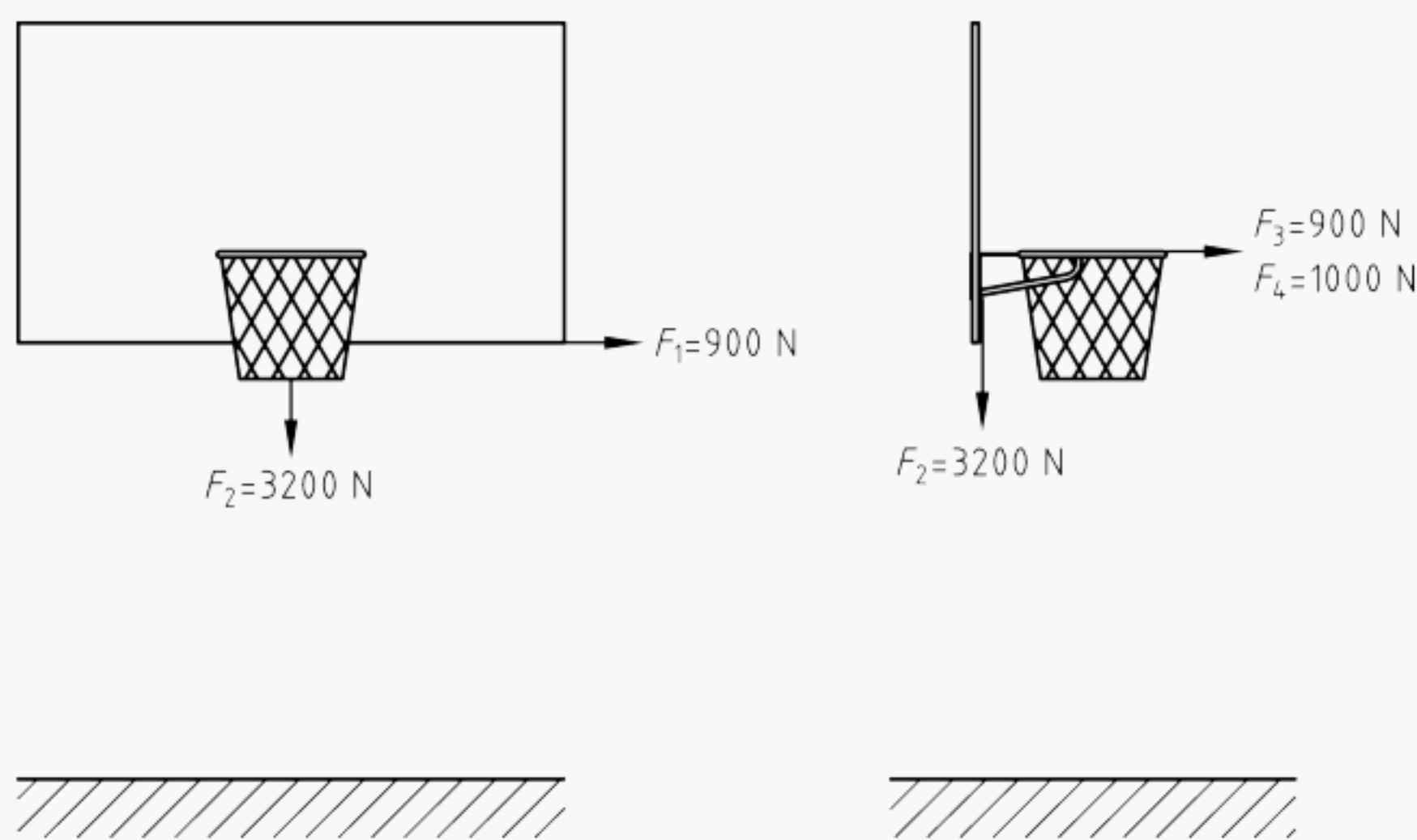


Figure 16 — Testing of rigidity and stability

Table 7 — Testing of rigidity and stability

Type	Force $F_1$	Force $F_2$	Force $F_3$ indoor	Force $F_4$ outdoor
1	X	X	X	—
2	X	X	X or	X
3	X	X	X or	X
4	X	X	X or	X
5	X	X	X	—
6	X	X	—	X
7	X	X	—	X
8	X	X	X or	X
X: required.				



## 6 Instruction for use

Each basketball equipment shall be accompanied by instructions for use including at least the following information:

- a) assembly instructions;
- b) handling;
- c) setting;
- d) maintenance.

## 7 Warning label

A permanent warning label shall be fixed to the basketball equipment with the following wording:

- This equipment has not been designed for misuse;
- Do not climb on the framework!;
- Do not hang on the ring!

## 8 Marking

Basketball equipment complying with this European Standard shall be marked with the following information:

- a) number of this European Standard EN 1270<sup>2)</sup>;
- b) name, trademark or other means of identification of the manufacturer, retailer or importer and the year of manufacture.

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2) Marking EN 1270 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration should not be confused with third party certification of conformity, which can also be desirable.

## Annex A (informative)

### Examples of design

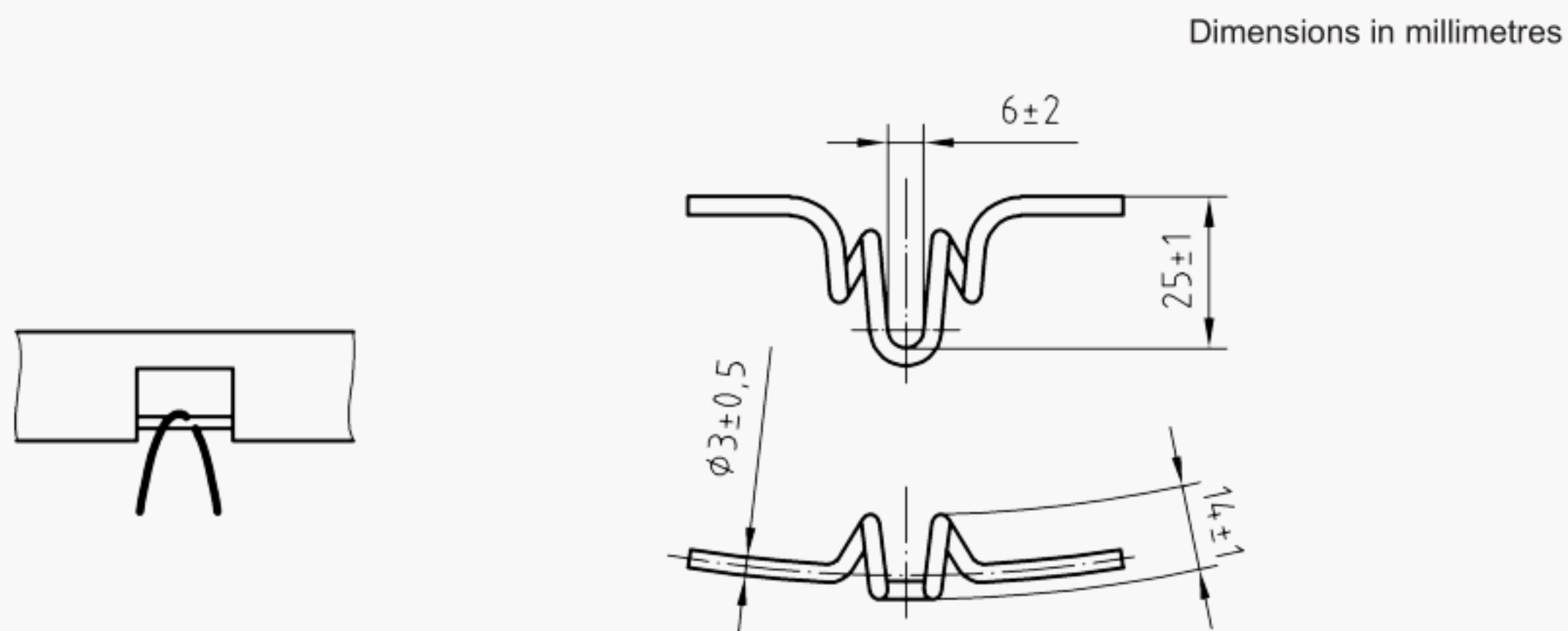


Figure A.1 — Example of a net fixing

## Annex B (informative)

### Choice-table for basketball equipment

Dimensions in millimetres

Remark	Class	Type								
		Decision of the appropriate type depends mainly on the construction of building or field.								
		1 free standing extension	2 free standing	3 foldable	4 positively wall mounted	5 mounted at the ceiling	6 movable in floor sleeves	7 positively installed in the floor	8 adjustable in height from 2 600 to 3 050	
Application of classes A and B should be in accord- ance with federation rules	A (free space 3 250 min.)	Up to competition according to the rules a) internal rules of FIBA level ... b) rules of national federations	Not recommended	Up to competition according to the rules a) internal rules of FIBA level ... b) rules of national federations		Up to competition according to the rules a) internal rules of FIBA level ... b) rules of national federations	Not recommended	Not recommended	Additional device for equipment of classes A to C, types 3 to 5 and classes D and E, types 2 to 7	
	B (free space 2 250 min.)	Up to national competitions provided that they are in accordance with national federation's rules	Not recommended	Up to national competitions provided that they are in accordance with national federation's rules			Outdoor sports facilities with playing fields according to the national rules for basketball sport in schools and clubs			
Application of types and classes depending of national regulations or/and determina- tions	C (free space 1 650 min.)	Not recommended	Training in schools and clubs, indoor and outdoor.							
	D (free space 1 200 min.)	Not recommended								
	E (free space < 1 200 min.)	Not recommended								

## **Annex C** (informative)

### **A-Deviation**

**A-deviation:** National deviation due to regulation, the alteration of which is for the time being outside the competence of the CEN/CENELEC member.

This European Standard does not fall under any Directive of the EC.

In the relevant CEN/CENELEC countries these A-deviations are valid instead of the provisions of the European Standard until they have been removed.

#### **France:**

Considering to two types of equipments (type 1 and type 2) for freestanding basketball goals;

Considering the French national current regulation laying down the safety requirements to be fulfilled by football, handball, field and indoor hockey goals and basketball goals (decree n° 96-495 of June 4, 1996), which provides that:

"The equipment placed on the market shall be provided with an installation device enabling to ensure that it is firmly secured.

The fixing device shall allow to prevent the equipment from falling, overturning or toppling over under reasonably foreseeable conditions of use.

It shall in particular ensure the stability of the equipment in the event of hanging onto or swinging from the horizontal crossbar of the football, handball, hockey goal or onto or from the ring of the basketball goal. ... (article 3)

"The making available to users for sports or game activity purposes, either free of charge or against payment, of football, handball, hockey goals and of basketball goals intended for outdoor or indoor use, is prohibited if this equipment is not firmly secured/fixed and if it does not meet the safety requirements specified by this decree. ... (article 6)"

France has asked for this national deviation.

In France all provisions in EN 1270 regarding type 1 and type 2 are not valid.

This concerns Clauses 1, 3.1, 4.5.2, Figure 1, Figure 2, Table 3, Table 6, Table 7 and Annex B.