BS EN 1271:2014

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Playing field equipment — Volleyball equipment — Functional and safety requirements, test methods

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National foreword

This British Standard is the UK implementation of EN 1271:2014. It supersedes BS EN 1271:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/136, Sports, playground and other recreational equipment.

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

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Spielfeldgeräte - Volleyballgeräte - Funktionelle und sicherheitstechnische Anforderungen, Prüfverfahren

This European Standard was approved by CEN on 6 September 2014.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 1271:2014) 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of an identical text or by endorsement, at the latest by April 2015 and conflicting national standards shall be withdrawn at the latest by April 2015.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.

NOTE It is planned that the standard will be listed in the Official Journal of the European Union, therefore a standardization request has been launched to the European Commission (GSPD Committee).

This document supersedes EN 1271:2004.

In relation to EN 1271:2004, the following main amendments have been made:

a) scope was modified regarding umpire stand;

b) sitting volleyball was considered;

c) dimensions were modified;

d) material requirements were modified;

e) net breaking strength requirements were modified;

f) breaking forces of ropes/net lines were modified;

g) breaking forces for the top net line were modified;

h) breaking forces for the net tape were deleted;

i) antennae requirement regarding colouring was modified;

j) safety requirements for the posts, tensioning devices, rope and rope attachments were modified;

k) safety requirements for post pads detailed;

l) test method and test forces for the posts, tensioning devices, rope and rope attachments were modified (overall test);

m) instruction for use was modified;

n) marking was detailed.

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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 specifies the functional requirements (see Clause 3) and the safety requirements (see Clause 4) for volleyball equipment.

This European Standard is applicable to 2 types and 5 classes of volleyball equipment (see 3.2) which are used indoors and outdoors.

This European Standard is not applicable to beach volleyball.

This European Standard does not cover umpire stand (for the 1st official referee).

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 913:2008, *Gymnastic equipment — General safety requirements and test methods*

EN ISO 1806, *Fishing nets — Determination of mesh breaking force of netting (ISO 1806)*

EN ISO 2307, *Fibre ropes — Determination of certain physical and mechanical properties (ISO 2307)*

ISO 3108, *Steel wire ropes for general purposes — Determination of actual breaking load*

3 Requirements

3.1 Tolerances

If not otherwise specified in this standard, a tolerance of 2 % applies.

3.2 Classification

Volleyball equipment shall be classified by the design (types) and the intended level of the sport (classes) as shown in Table 1 and Table 2.

Table 1 — Types

Type	Description	Example
1	with ground sockets/fixings	Figure 1
2	with floor fixings	Figure 2

Table 2 — Classes

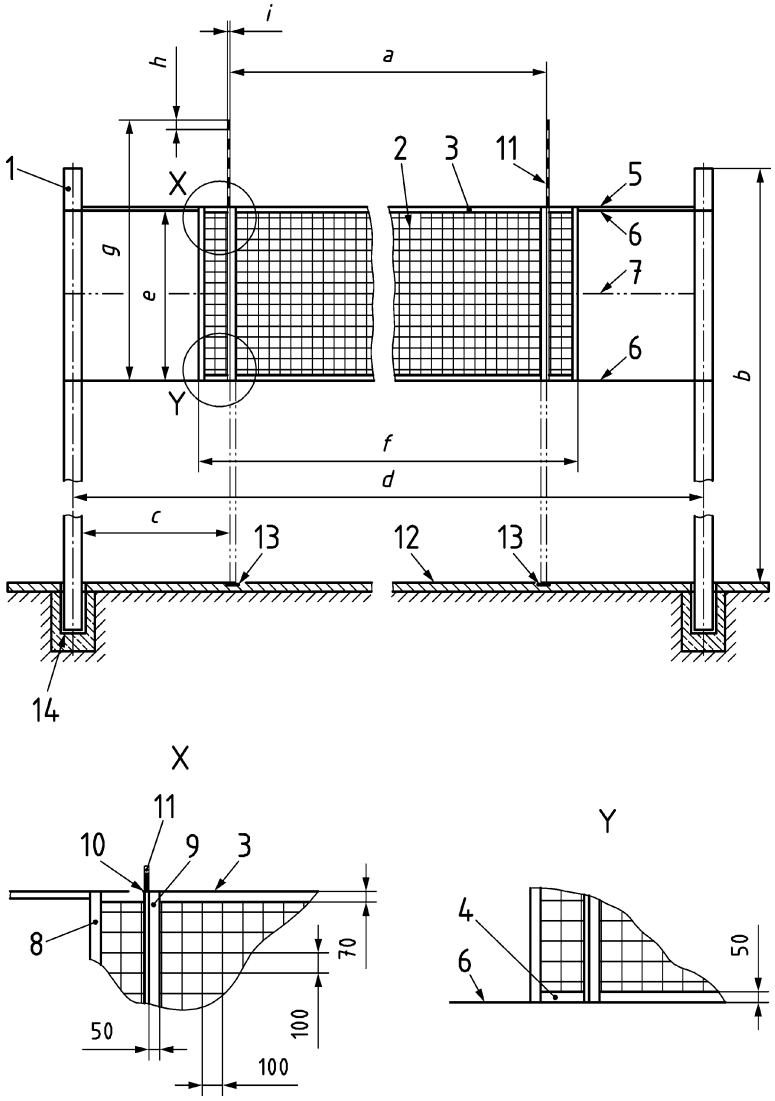
Class	Description
A	top level competitions [a]
B	club level [b] competitions
C	practice and school sports
D	sitting top level competitions [a]
E	sitting for practice and school sports

[a] If top level competitions are played under FIVB rules, then refer to FIVB rules.
[b] If club level competitions are played under national federation rules, then refer to national federation rules

3.3 Dimensions

Volleyball equipment shall comply with the dimensions shown in Figure 1 and Table 3.

Dimensions in millimetres



Key

1	post	8	edge reinforcement
2	net	9	side band
3	upper edge band	10	antenna pocket (alternative to 9)
4	lower edge band	11	antennae
5	top net line	12	sport surface
6	tension ropes	13	court line
7	tension rope (optional)	14	ground socket

For example of foundations see Annex A.

NOTE The height of the net (top net line) is specified by the International and/or National federation(s)

Figure 1 — Volleyball equipment Type 1

Table 3 — Sizes of volleyball equipment Type 1

Dimensions in millimetres

	Class A	Class B	Class C	Class D	Class E
a	9 000 ± 30			6 000 ± 30	
b	$2\,550_{0}^{+100}$ [b]			$1\,250_{0}^{+100}$ [b]	
c [a]	500 to 1 000				
d [a]	11 000 max.			8 000 to 11 000	
e	1 000 ± 30			800 ± 30	
f	9 500 to 10 000			6 500 to 7 000	
g	1 800 ± 20				
h	100 ± 1				
i	10 ± 1				

a The values shall be measured at finished floor level.

b Telescopic posts shall be extendable up to the given height.

A complete volleyball equipment **Type 1** shall have the following components:

a) 2 posts (1 with tensioning device and 1 with rope attachment);

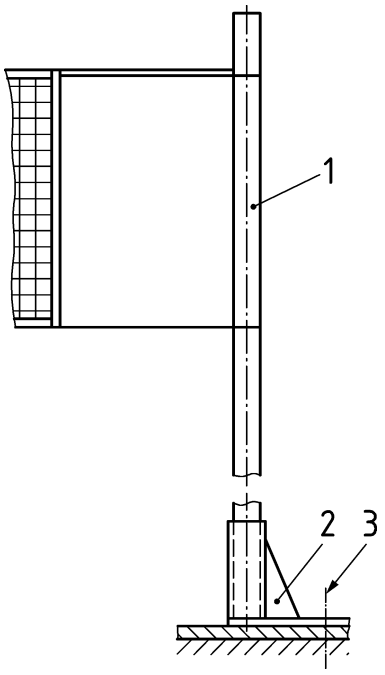
b) 2 post pads;

c) 2 ground sockets;

d) 1 net;

e) 2 antennae (Classes A, B and D);

f) 2 side bands (Classes A, B and D).



Key

1 post

2 base assembly

3 floor fixing devices

Other dimensions and specifications as Type 1.

Figure 2 — Volleyball equipment Type 2

A complete volleyball equipment **Type 2** shall have the following components:

g) 2 posts (1 with tensioning device and 1 with rope attachment);

h) 2 post pads;

i) 2 bases with floor fixing devices;

j) 1 net;

k) 2 antennae (for Classes B and D);

l) 2 side bands (for Classes B and D).

3.4 Material

3.4.1 Posts

Materials shall be selected such that the requirements of this document are fulfilled.

Metal shall be non-corrosive and steel protected against corrosion (e. g. hot-galvanized, powder coated or painted).

3.4.2 Net

The net shall be made from suitable fibres.

The top net line shall be made from synthetics, galvanised, corrosion-resistant steel wires, or equivalent material.

NOTE Plastic covering for steel wires is also acceptable.

All bands bordering the net shall be made from synthetic materials.

3.4.3 Antenna

The antenna shall be made of glass-fibre reinforced plastics or other suitable material.

3.5 Design

3.5.1 Posts

In the installed position the height adjustment of the net between the posts shall be possible between at least 2 000 mm to 2 500 mm for classes A, B and C and at least 1 000 mm to 1 200 mm for classes D and E from the sport surface.

3.5.2 Net

The net of Classes A, B and D shall be black, the upper and lower edge bands and the side band shall be white.

The net mesh of the classes A, B and D shall be square 100 mm by 100 mm.

The top net line shall be inserted in the upper edge band.

The net shall be stretched horizontally at its upper and lower corners by means of the tension ropes. For the classes A, B and D the distance between the top net line and the bottom net line between the court side lines shall be as specified in Table 3.

Regarding the breaking forces of the net and its components the Classes of Table 4, Table 5, Table 6 and Table 7 shall be selected as appropriate.

Table 4 — Mesh breaking strength

Class	Force N min.	Test method
A	1 080 (900) [a]	EN ISO 1806
B	1 080 (900) [a]	
C	792 (660) [a]	
D	1 080 (900) [a]	
E	792 (660) [a]	
[a] This corresponds to the breaking strength of the net yarn, tested in accordance with EN ISO 2062.		

Table 5 — Breaking forces of ropes/net lines

Class	Force N min.	Test method
A	3 400	EN ISO 2307
B	3 400	
C	1 100	
D	3 400	
E	1 100	

Table 6 — Breaking forces of top net line

Class	Force N min.	Test method
A	6 000	EN ISO 2307 (for cable made of synthetics or equivalent material) ISO 3108 (for steel cable)
B	6 000	
C	3 000	
D	6 000	
E	3 000	

3.5.3 Antennae

For Classes A, B and D antennae shall be provided. Each antenna shall be marked with 100 mm stripes of contrasting colour, preferably red and white.

The removable antenna pockets shall be attached to both sides of the net vertically above the point of intersection between side-line and centre line of the play area.

3.5.4 Ground sockets

For outdoor volleyball equipment the ground sockets shall be resistant to corrosion and provided with a drainage hole (see Annex A).

4 Safety requirements

4.1 General

Corners and edges shall be rounded with a radius of at least 3 mm.

4.2 Posts, tensioning devices, rope and rope attachments

When tested in accordance with 5.2, each post shall not collapse nor show:

a) visible signs of cracks/fractures and/or

b) a permanent deformation d of the post of greater than 10 mm.

When tested according to 5.2, the locking mechanism of the tensioning device, rope and any rope attachment shall not release unintentionally.

If handles are provided, e.g. the winch, they shall be removable, retractable or remain inside the post.

Tensioning devices and rope attachments of classes A, B and D shall be outside the post side, i.e. away from the court, or fitted inside the post profile.

In classes C and E they may be fitted on the net side of the post with a maximum projection as specified in EN 913:2008, 5.1.

4.3 Post pads

Post pads shall be provided and fitted from the ground level to a height of 2 000 mm. If the height of the post is less than 2 000 mm over the finished floor the padding shall go up to the top of the post.

The pads shall completely encompass the posts and tensioning device and protruding parts.

Post pads shall be constructed in such a way, that they cannot be dislodged during normal use.

When tested according to EN 913:2008, Annex C with a drop height of 200 mm, the damping value of the padding shall be below 50 g.

4.4 Base assembly

The base assembly of the volleyball equipment Type 2 shall be outside the court (see Figure 2) and shall be protected because of risk of hazards during the game, e. g. by padding with the damping characteristics of 4.3.

5 Test methods

5.1 General

Requirements of Clause 3 and Clause 4, for which no particular tests are indicated in the following, shall be appropriately verified, e.g. by measurement, visual inspection, tactile or functional testing.

5.2 Testing of posts, tensioning devices, rope and rope attachments

a) Assemble the whole volleyball equipment (posts and net) by putting the posts in their sockets (Type 1) or bases (Type 2) and erect the net as intended for normal use.

b) Insert a force measuring device, capable of measuring ± 10 N, in the top net line between the net and the posts.

c) Provide a suitable reference datum, passing through the axis of the top net line < 100 mm outside one post. This remains in place throughout the test.

NOTE Suitable reference datum would be a straight edge fixed to the lower 50 mm of the post (see Figure 3) or a plumb line suspended outside the post.

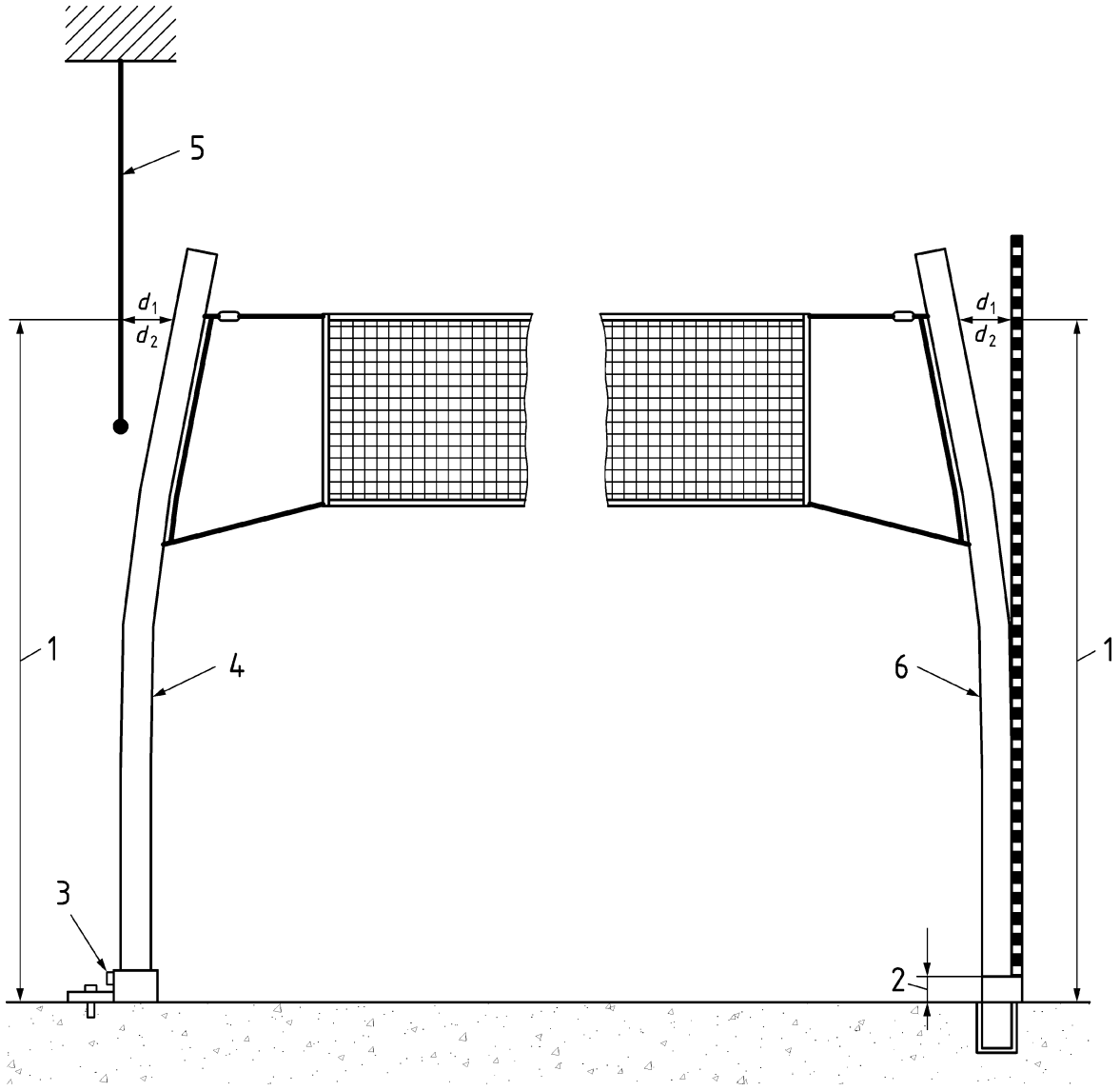
d) Increase the tension in the top net line until the appropriate initial force F_1 is achieved (see Table 7).

e) Measure the maximum gap d_1 between the post and the vertical reference datum.

f) Increase the tension in the top net line over a period not exceeding 60 s (e.g. by suspending a weight from the centre of the top net line) until the appropriate force F_2 is achieved (see Table 7). Maintain the additional force for 10 min ± 1 min.

g) Reduce the force in the top net line to the original force F_1 and re-measure the maximum gap d_2 between the post and the reference datum.

h) Calculate the residual permanent deflection d as $d = d_2 - d_1$.



Key

1 test height according to Table 7

2 tape within the first 5 cm above the ground (vertical straightedge taped to lowest 5 cm of post)

3 fixing screw

4 surface mounted post

5 plumb line on axis of net

6 socket post

d_1 initial distance before applying the test force

d_2 distance after release of the test force

Figure 3 — Test for permanent deflection of the post

Table 7 — Test force *F* and test height *h*

	Class A	Class B	Class C	Class D	Class E
Test force F_1 N	1 450	1 200	1 000	1 200	1 000
Test force F_2 (= F_1 × 1,2 safety factor) N	1 740	1 440	1 200	1 440	1 200
Test height h mm	2 430[a]			1 150	
[a] The test height is related to the maximum competition height given in FIVB rules (edition 2013 to 2016).					

6 Instructions for use

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

a) Identifications:

   1) type of the volleyball equipment (see classification Table 1);

   2) is intended to be used for … class (see classification Table 2) of sport only and no other purpose;

b) warning: “Before using this product check that all fittings and fastenings are secure and correctly tightened”;

c) correct setting of the posts in position of use;

d) correct fastening of the net;

e) correct setting of the pads;

f) handling of the tensioning device;

g) storage and transportation;

h) disposal;

i) details of suitable nets and its components to be used (antennae, top net line, etc.) for each class;

j) maintenance.

7 Marking

Volleyball equipment, which complies with this document, shall be marked with the following information:

a) the posts:

   1) the number of this document EN 1271 [1)]

   2) the type and class of the volleyball equipment;

   3) warning: “Do not climb, hang or swing on the volleyball equipment”;

   4) the name, trademark or other means of identification of the manufacturer, retailer or importer and the year of manufacture.

b) the net:

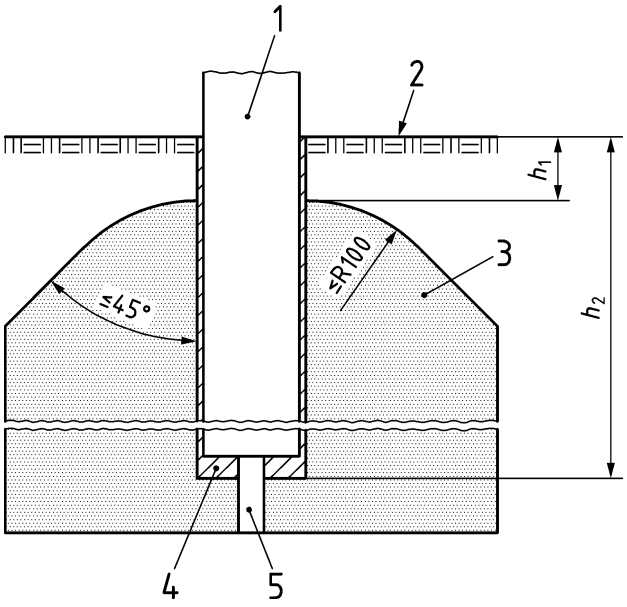
   1) the name, trademark or other means of identification of the manufacturer, retailer or importer and the year of manufacture.

[1)] Marking EN 1271 on or in relation to a product represents the 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 may also be desirable.

Annex A
(informative)

Example of foundation

Dimensions in millimetres



Key

1 post
2 sport surface
3 concrete bock
4 ground socket
5 drainage hole (outdoor use)

Figure A.1 — Foundation

Table A.1 — Heights

Dimensions in millimetres

Height	**Post** min.
h_1	40
h_2	350

Bibliography

EN ISO 2062, *Textiles — Yarns from packages — Determination of single-end breaking force and elongation at break using constant rate of extension (CRE) tester (ISO 2062)*

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