

Fences —

Part 3: Specification for strained wire fences

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- British Independent Steel Producers' Association
- British Precast Concrete Federation Ltd.
- British Steel Industry (Wire Section)
- British Timber Merchants' Association
- British Wire Netting Association
- British Wood Preserving Association
- Cement and Concrete Association
- Concrete Society
- Country Landowners' Association
- Department of Agriculture and Fisheries for Scotland
- Department of the Environment (Building Research Establishment, Princes Risborough Laboratory)
- Department of the Environment (Property Services Agency)
- Department of Transport (Highways)
- Fencing Contractors' Association
- Forestry Commission
- Home Timber Merchants' Association of Scotland
- Institute of Clerks of Works of Great Britain Inc.
- Institute of Leisure and Amenity Management
- Institution of Civil Engineers
- Landscape Institute
- Ministry of Agriculture, Fisheries and Food
- National Council of Building Materials Producers
- National Farmers' Union
- Royal Institution of Chartered Surveyors
- Society of Chain Link Fencing Manufacturers
- Society of Chestnut Fencing Manufacturers
- Timber Growers United Kingdom
- Timber Research and Development Association
- Timber Trade Federation
- Wire Products Association

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Consumer Standards Advisory Committee of BSI
- County Surveyor's Society
- Fencing Industry Association

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Foreword

This British Standard has been prepared under the direction of the Road Engineering Standards Committee. It is a revision of BS 1722-3:1973, which is withdrawn.

BS 1722 is published in separate Parts as follows:

- *Part 1: Specification for chain link fences;*
- *Part 2: Specification for rectangular wire mesh and hexagonal wire netting;*
- *Part 3: Specification for strained wire fences;*
- *Part 4: Specification for cleft chestnut pale fences;*
- *Part 5: Specification for close-boarded fences;*
- *Part 6: Specification for wooden palisade fences;*
- *Part 7: Specification for wooden post and rail fences;*
- *Part 8: Specification for mild steel (low carbon steel) continuous bar fences;*
- *Part 9: Specification for mild steel (low carbon steel) fences with round or square verticals and flat posts and horizontals;*
- *Part 10: Specification for anti-intruder fences in chain link and welded mesh;*
- *Part 11: Specification for woven wood and lap boarded panel fences;*
- *Part 12: Specification for steel palisade fences;*
- *Part 13: Specification for wire mesh fencing for tennis court surrounds.*

The various Parts specify requirements for the types of fence that are considered suitable for standardization. It should be noted that no attempt has been made to standardize fences of a purely decorative nature, or to suit special requirements, or to specify requirements for “patent” proprietary fencing systems. It is recommended that the structure of such fences should comply with those parts of this Part of BS 1722 that are applicable.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

The purpose of this standard is to establish minimum requirements for materials and workmanship for the more common types of fence in order to ensure satisfactory service for the purchaser, and to assist manufacturers and erecting contractors by eliminating unnecessary minor variations in the demands of purchasers. It specifies requirements for the components that make up a fence and the way in which the fence needs to be constructed. Throughout this standard there are requirements for sizes of components, together with the permissible tolerances on size. These are minimum requirements and it will normally be acceptable to use larger sizes, except where it would otherwise adversely affect the fit of components or where replacement parts need to match up with those already present.

The choice of a fence is affected by factors such as the intended purpose of the fence, the desired service life, aesthetic considerations and the availability of components. The specifier of the fence will know its intended purpose and by reference to Table 1 a suitable choice can be made. This then gives those erecting the fence the basic characteristics that need to be provided. This standard includes requirements for protective treatments. However, an important aspect of providing an extended service life is the maintenance of the fence after its erection; this is outside the scope of this standard. Premature failure can be avoided by taking care not to damage protective treatments during installation.

Ground condition may indicate that a variation in the length of a post, or of the depth to which it should be set, is desirable. The posts and setting depths specified in this standard are intended for use in normal ground but if special conditions exist that warrant a change in the specification, e.g. ground that is softer or firmer than usual, such a change needs to be agreed with the specifier, as for other variations.

This revision has retained the method of allocating a reference code to each type of fence indicating its height, the number of line wires and whether they are used in conjunction with droppers, and the material used for the posts. These type references are given in full in Table 1. The first letter indicates that it is either a general pattern or a dropper pattern strained wire fence, the second the type of post that is used. The numbers give an indication of the height of the fence, e.g. DC 90 indicates a 0.90 m high fence with concrete posts and droppers. For the sake of uniformity the quoted heights are those to the top wire and exclude any variation in ground clearance at the base. The third letter, where present, indicates the number of line wires.

Designations of bolt sizes are in accordance with BS 4190.

The proof test of concrete strength has been deleted as experience had shown that there were technical problems associated with the application and interpretation of the test. Cube tests of concrete strength are now required and the frequency of testing is specified to ensure that regular quality checks are made.

Since the publication of the previous edition of this standard BS 5589 has been published, and the timber appendix in this standard has been revised to include the recommendations of BS 5589. Quality requirements have been added for round, quartered and cleft timber posts.

In appendix C details have been included of methods for measuring defects in timber, and in particular the measurement of knots. In the case of the structural members of a fence, including posts, struts and rails, the principle of knot area ratio (K.A.R.) has been introduced as a means of determining, by visual assessment of the proportion of the cross section occupied by knots, the maximum permissible knots for fencing grade timber. Although the application of the method of knot measurement is new, in so far as timber fencing components are concerned, it has been applied to the grading of structural timber for more than a decade. K.A.R. is a firmly established and widely accepted method of knot assessment which in itself is a critical part of all timber grading. The adoption of K.A.R. as part of grading timber for fencing is a logical move in unifying timber grading rules where the question of strength is involved.

To assist those specifying and/or providing a fence, appendix E provides guidance on the more important details, which often take the form of selected options, that need to be specified at the time of ordering a fence. Appendix D contains a suggested sampling procedure. These are new features of the standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 24, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1.1 Scope

This Part of BS 1722 specifies requirements for strained wire fences of the general pattern and of the dropper pattern, where droppers are used to maintain the spacing of the wires.

This standard specifies lengths of posts and struts, and foundation details for use in normal ground and does not cover the situations where special conditions exist, e.g. ground that is softer or firmer than usual, which warrant a change in normal lengths (see foreword).

This standard is divided into sections that specify separate requirements for the material components for fences (see sections 2 and 4) and the erection of the fences (see sections 3 and 5).

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

1.2 Definitions

For the purposes of this Part of BS 1722, the timber definitions given in BS 6100-4.1 apply.

NOTE For convenience, the relevant definitions have been repeated in C.2.

1.3 Dimensions and general characteristics

The dimensions of strained wire fences shall be as given in Table 1.

NOTE Figure 1 illustrates the general characteristics of the two patterns of strained wire fencing. It is not intended to illustrate any particular requirements of this Part of the standard but provides guidance as to the general layout of a typical fence, and on the terminology associated with this form of fencing.

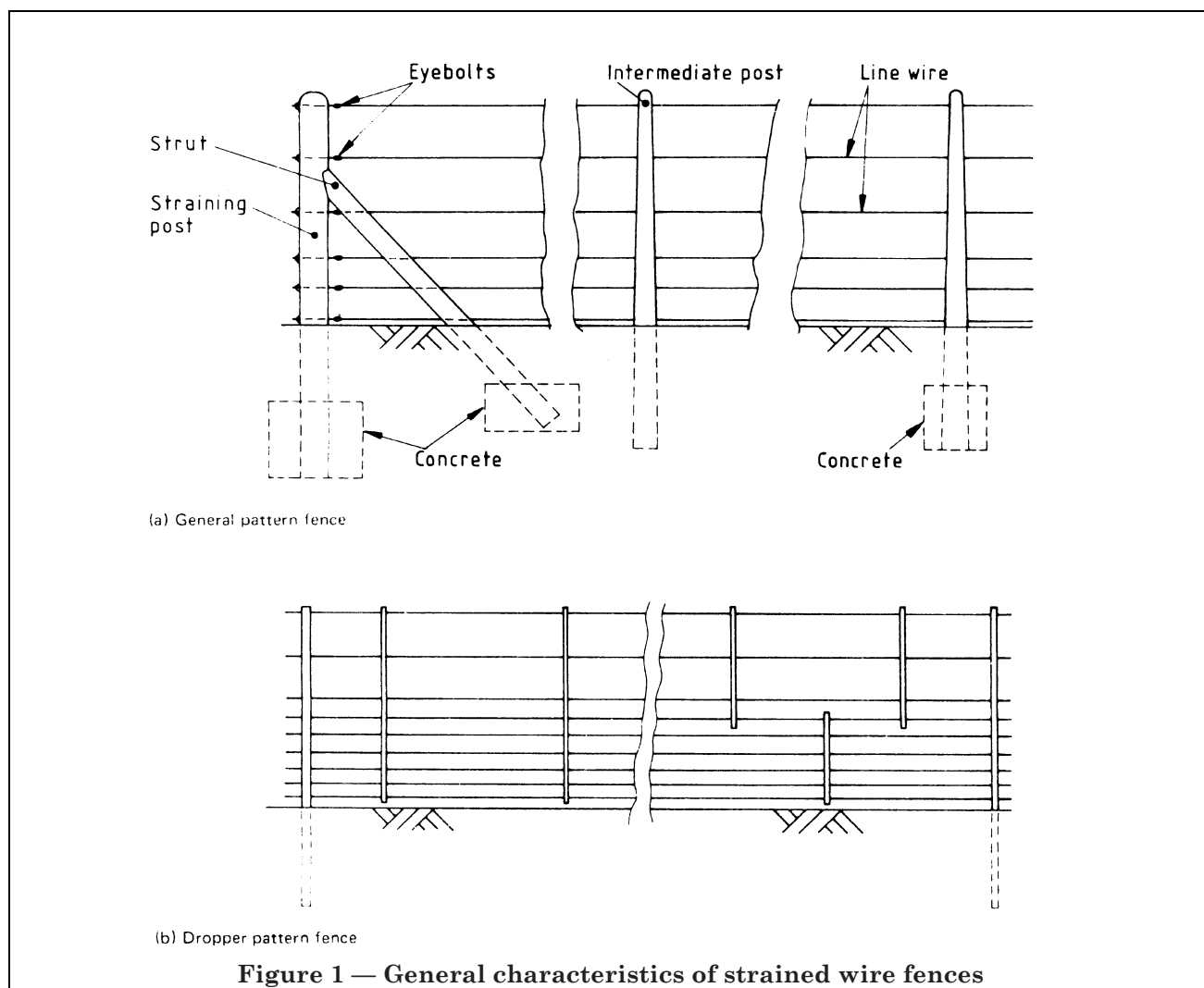


Table 1 — General characteristics of strained wire fences

Fence types						Height of top wire	Number of horizontal wires	Applicability ^a	Spacings between horizontal wires, from the top wires ^b
With concrete post		With steel posts		With wooden posts					
General pattern	Dropper pattern	General pattern	Dropper pattern	General pattern	Dropper pattern				
SC 90	DC 90	SS 90	DS 90	SW 90	DW 90	m 0.90	3	Housing	mm 330, 330
SC 105A	DC 105A	SS 105A	DS 105A	SW 105A	DW 105A	1.05	5	General purposes	250, 250, 230, 150
SC 105B	SS 105B	SS 105B	DS 105B	SW 105B	DW 105B	1.05	6		250, 250, 230, 150, 100
SC 120	DC 120	SS 120	DS 120	SW 120	DW 120	1.20	6		250, 250, 230, 150, 150
SC 135A	DC 135A	SS 135A	DS 135A	SW 135A	DW 135A	1.35	7		250, 250, 230, 150, 150, 150
SC 135B	DC 135B	SS 135B	DS 135B	SW 135B	DW 135B	1.35	8	Special purposes	250, 250, 230, 150, 150, 150, 100
SC 135C	DC 135C	SS 135 C	DS 135C	SW 135C	DW 135C	1.35	9		250, 225, 225, 150, 125, 125, 100, 75
—	DC 180	—	DC 180	—	DW 180	1.80	11		225, 225, 200, 175, 175, 175, 150, 150, 125, 100
—	DC 210	—	DC 210	—	DW 210	2.10	16		250, 225, 225, 175, 125, 100, 100, 100, 100, 100 100, 100, 100, 100, 100
NOTE To prevent damage to the fence by animals, additional lines of barbed wire may be attached to the face of the posts in a suitable position.									
^a The applicability of fences is dependent on many factors which cannot be standardized, and the selection of fence type should be made for particular circumstances.									
^b Top wire secured 75 mm below the top of concrete or wood posts, or 25 mm below the top of steel posts.									

Section 2. Materials for general pattern fences

2.1 General

The sizes specified in 2.2 to 2.7 are minimum requirements and it shall therefore be permissible to use larger sizes, except where this would adversely affect the fit of the components or where replacement parts need to match those already present.

2.2 Wire

2.2.1 Line wire

Line wire shall comply with BS 4102 and shall be one of the following:

- a) zinc coated low carbon steel (mild steel) with a nominal wire diameter of 4.0 mm, 4.5 mm or 5.0 mm; or
- b) zinc coated high tensile wire with a nominal wire diameter of 3.15 mm; or
- c) plastics coated high tensile wire having a tensile strength of 1 050 N/mm² with a zinc coated core of 3.15 mm nominal core diameter and a 4.0 mm overall diameter.

2.2.2 Stirrup wire

Stirrup wire shall comply with BS 4102 and shall be of zinc coated low carbon steel (mild steel) or grade A plastics coated low carbon steel (mild steel) and shall have a nominal wire core diameter of 2.5 mm.

2.2.3 Barbed wire

Barbed wire shall comply with BS 4102 and shall be zinc coated and shall be made from either low carbon steel (mild steel) wire or high tensile steel wire.

2.3 Concrete components

2.3.1 General

2.3.1.1 Material. Concrete posts and struts shall be of steel reinforced concrete complying with appendix A.

2.3.1.2 Tolerances on size. The following permissible deviations shall apply to the specified size of concrete components when determining the actual sizes.

- a) A de-moulding draw allowance of up to 4 mm on each of two opposing sides.
- b) An allowance on the base dimensions of intermediate posts resulting from the use of a mould having the base dimensions given in Table 2 that has been shortened by means of a stopping-off plate located not more than 300 mm from the base of the mould.

c) Additional deviations on size of:

- 1) length: $\begin{smallmatrix} +50 \\ -25 \end{smallmatrix}$ mm;
- 2) cross section: $\begin{smallmatrix} +6 \\ -4 \end{smallmatrix}$ mm.

NOTE The cross section is measured about the centre lines.

2.3.1.3 General constructional details. The long arrises formed in the mould shall either be rounded or have all sharp edges removed. The heads of posts shall be weathered so as to prevent lodgement of water.

Holes for bolts shall allow the bolt to be freely inserted. Holes for wire shall allow an M6 bolt to be freely inserted. All holes shall be free from obstruction and accurately positioned.

2.3.2 Posts and struts

The dimensions of concrete fence posts and struts shall be as given in Table 2. Posts shall be reinforced with four steel reinforcing bars of the size given in Table 2, except that if steel having a characteristic strength greater than 250 N/mm² is used, it shall be permissible for the cross section of the reinforcing bars to be proportionately reduced.

Straining posts and struts shall not be tapered. Straining posts shall be provided with a firm bearing for struts at a point within the top third of the length of the straining post, measured above the ground level. Straining posts shall be holed for the attachment of straining fittings. When line wires are to be passed through them, struts shall be provided with either holes or slots.

Intermediate posts shall be tapered to 75 mm × 75 mm at the top and shall be holed to allow the attachment of line wires.

NOTE The positions of line wires are given in Table 1.

2.4 Steel components

NOTE See 2.6 for steel fittings.

2.4.1 General

2.4.1.1 Materials and protective treatment. Steel posts and struts shall comply with appendix B.

2.4.1.2 Tolerances on size. The following permissible deviations shall apply to the specified sizes of steel components when determining the actual sizes:

- a) length: $\begin{smallmatrix} +50 \\ -25 \end{smallmatrix}$ mm;
- b) cross section: as specified in the appropriate material standards given in B.1.

2.4.1.3 General constructional details. Steel components shall be free from sharp edges and burrs. The tops of all hollow steel posts shall be capped.

Posts shall be holed for the attachment of line wires, etc. as specified in 2.4.2. The hole for the top horizontal wire shall be appropriately 25 mm below the top of the post. All holes shall be free from obstructions and shall be accurately positioned.

2.4.2 Posts and struts

2.4.2.1 Fence posts and struts. The dimensions of steel posts and struts of rolled steel angle, circular hollow section or rectangular hollow section shall be as given in Table 3.

Straining posts and struts shall either be fitted with baseplates or have spragged or dowelled ends (see 2.4.2.2). Straining posts and struts shall be holed to allow the two to be bolted together with bolts with a minimum diameter of 8 mm at a point within the top third of the length of the straining post, measured above the ground level. In addition, straining posts shall be holed to allow the attachment of straining fittings.

Table 2 — Concrete fence posts and struts

Fence height type	Intermediate posts			Straining posts			Struts ^a			
	Length	Base dimensions	Reinforcement diameter	Length	Section	Reinforcement diameter (all lengths)	Length (approx.)	Section	Reinforcement diameter (all lengths)	
m	m	mm × mm	mm	m	mm × mm	mm	m	mm × mm	mm	
0.90	1.57	100 × 100	6	1.57	100 × 100 or 125 × 125 ^b	6 or 8 ^b	1.50	75 × 75 or 100 × 75 ^b	6	
1.05	1.72	125 × 125		1.87	125 × 125	8	1.83	100 × 75		
1.20	1.87			2.02			1.98			
1.35 A and B	2.02			2.17			2.13			
1.35 C	2.17			2.32	150 × 150	10	2.13	100 × 100	8	
1.80	2.62			2.77	200 × 200	12	2.73			
2.10	2.92	3.07				3.03				
^a These lengths are suitable for struts fixed at an angle of 45° on level ground. If site conditions make the use of struts of these lengths unsuitable, the length may need to be specified (see 1.1).										
^b The larger section is for use with high tensile or spring steel line wires.										