

Fences —

Part 2: Specification for strained wire and wire mesh netting fences

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The preparation of this British Standard was entrusted to Technical Committee B/201, Fences, upon which the following bodies were represented:

- Association of Security Consultants
- British Precast Concrete Federation
- County Surveyors Society
- Department of the Environment, Transport and the Regions
- European Fencing Industry Association
- Fencing Contractors Association
- Forestry Commission
- Galvanizers Association
- National Farmers Union
- Security Facilities Executive
- The Open Spaces Society
- Timber Trade Federation
- UK Steel Association

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

- National Council of Building Materials Producers
- Society of Chain Link Fencing Manufacturers
- UK Forest Products Association

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Foreword

This part of BS 1722 has been prepared by Technical Committee B/201, Fences. It is a revision and combination of BS 1722-2:1989 and BS 1722-3:1986, which are withdrawn.

BS 1722 is published in the following parts:

- *Part 1: Specification for chain link fences;*
- *Part 2: Specification for strained wire and wire mesh netting fences;*
- *Part 4: Specification for cleft chestnut pale fences;*
- *Part 5: Specification for close-boarded and wooden palisade fences;*
- *Part 7: Specification for wooden post and rail fences;*
- *Part 8: Specification for mild steel (low carbon steel) continuous bar fences and hurdles;*
- *Part 9: Specification for mild steel (low carbon steel) fences with round or square verticals and flat 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 chain link fences for tennis court surrounds;*
- *Part 14: Specification for open mesh steel panel fences;*
- *Part 16: Specification for organic powder coatings for use as a plastics finish to components and mesh.*

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 or gates of a purely decorative nature, or those to suit special requirements; nor to specify requirements for “patent” proprietary fencing systems. It is recommended, however, that such fences or gates should be designed in accordance with the relevant clauses of this part of BS 1722.

This standard aims 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 installers 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.

The standard includes 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 if this could adversely affect the fitting of components or if replacement parts are required to match up with those already present.

Choosing a fence is affected by factors such as intended purpose, desired service life, aesthetic considerations and availability of components. The specifier can match a suitable choice of fence to its intended purpose and also inform those installing the fence of the basic characteristics required. This standard includes requirements for protective treatments. However, maintenance requirements of the fence after installation are outside the scope of this standard. Premature failure of the fence can be avoided by taking care not to overstrain coated wire or to damage protective treatments during installation.

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

Annex C provides details of the fence requirements and installation site that should be agreed between the fence supplier and purchaser. However, as conditions vary from site to site, annex C should not be assumed to be exhaustive.

It has been assumed in the drafting of this part of BS 1722 that the execution of its provisions is entrusted to appropriately qualified and experienced people. Before installation commences, the lead installer should either:

- a) have achieved the appropriate National Vocational Qualification (NVQ) or Scottish Vocational Qualification (SVQ) in fence installation (Level 2) relevant to this part of BS 1722; or
- b) be currently registered for the appropriate NVQ or SVQ in fence installation (Level 2) relevant to this part of BS 1722 provided such registration has not been in place for a period greater than 5 years from the date of registration without successful assessment having taken place.

Annexes A, B and D are normative. Annex C is informative.

A British Standard does not purport to include all 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.

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1 Scope

This part of BS 1722 specifies requirements for the construction and installation of general pattern and dropper pattern strained wire fences and rectangular wire mesh fences, including mild steel or high tensile woven wire fencing, welded mesh fencing, hexagonal wire netting fences of the general pattern, and spring steel wire pattern fences where the mesh is fixed onto spring steel line wires.

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

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

- BS 4-1, *Structural steel sections — Part 1: Specification for hot-rolled sections.*
- BS 12, *Specification for Portland cement.*
- BS 443¹⁾, *Specification for testing zinc coatings on steel wire and for quality requirements.*
- BS 882, *Specification for aggregates from natural sources for concrete.*
- BS 1014, *Specification for pigments for Portland cement and Portland cement products.*
- BS 1202-1, *Specification for nails — Part 1: Steel nails.*
- BS 1722-4, *Fences — Part 4: Specification for cleft chestnut pale fences.*
- BS 1722-7:1999, *Fences — Part 7: Specification for wooden post and rail fences.*
- BS 1722-16, *Fences — Part 16: Specification for organic powder coatings to be used as a plastics finish to components and mesh.*
- BS 1881-116, *Testing concrete — Part 116: Method for determination of compressive strength of concrete cubes.*
- BS 3892 (all parts), *Pulverized fuel ash.*
- BS 4027, *Specification for sulfate-resisting Portland cement.*
- BS 4102, *Specification for steel wire for general fencing purposes.*
- BS 4320, *Specification for metal washers for general engineering purposes — Metric series.*
- BS 4449, *Specification for carbon steel bars for the reinforcement of concrete.*

BS 4482, *Specification for cold reduced steel wire for the reinforcement of concrete.*

BS 4483, *Steel fabric for the reinforcement of concrete.*

BS 4652, *Specification for zinc-rich priming paint (organic media).*

BS 5075 (all parts), *Concrete admixtures.*

BS 5589:1989, *Code of practice for preservation of timber.*

BS 6497, *Specification for powder organic coatings for application and stoving to hot-dip galvanized hot-rolled steel sections and preformed steel sheet for windows and associated external architectural purposes and for finish on galvanized steel sections and preformed steel coated with powder organic coatings.*

BS EN 844-9, *Round and sawn timber — Terminology — Part 9: Terms relating to features of sawn timber.*

BS EN 10024, *Hot-rolled taper flange 1 sections — Tolerances on shape and dimensions.*

BS EN 10025:1993, *Hot-rolled products of non-alloy structural steels — Technical delivery conditions.*

BS EN 10056-1, *Specification for structural steel equal and unequal angles — Part 1: Dimensions.*

BS EN 10210-1, *Hot finished structural hollow sections of non-alloy and fine grain structural steels — Part 1: Technical delivery requirements.*

BS EN 10210-2, *Hot finished structural hollow sections of non-alloy and fine grain structural steels — Part 2: Tolerances, dimensions and sectional properties.*

BS EN 10223-1, *Steel wire and wire products for fences — Part 1: Zinc and zinc alloy coated barbed wire.*

BS EN 10223-2, *Steel wire and wire products for fences — Part 2: Hexagonal steel wire netting for agricultural, insulation and fencing purposes.*

BS EN 10223-5:1998, *Steel wire and wire products for fences — Part 5: Steel wire woven hinged joint and knotted mesh fencing.*

BS EN 10223-6:1998, *Steel wire and wire products for fences — Part 6: Steel wire chain link fencing.*

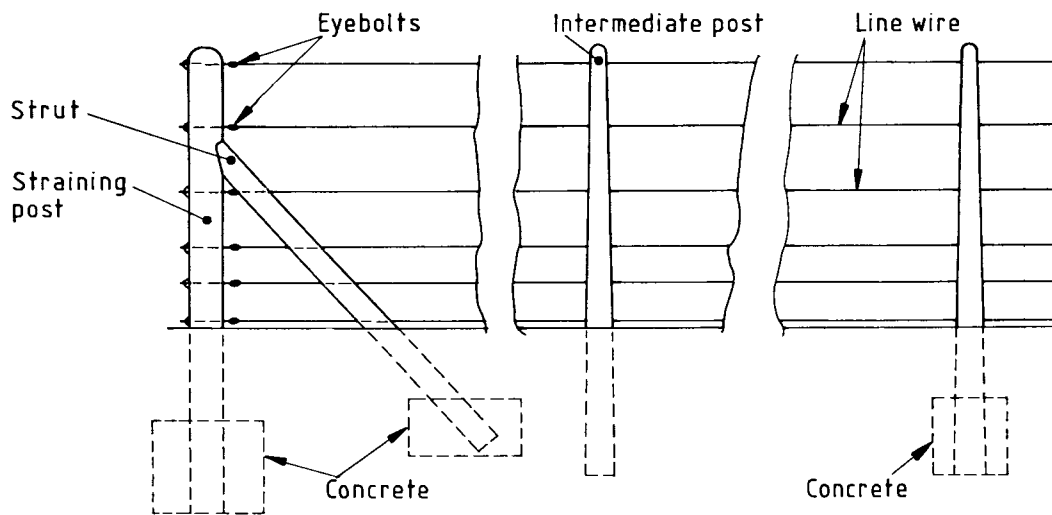
BS EN 22063, *Metallic and other inorganic coatings Thermal spraying — Zinc, aluminium and their alloys.*

BS EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods.*

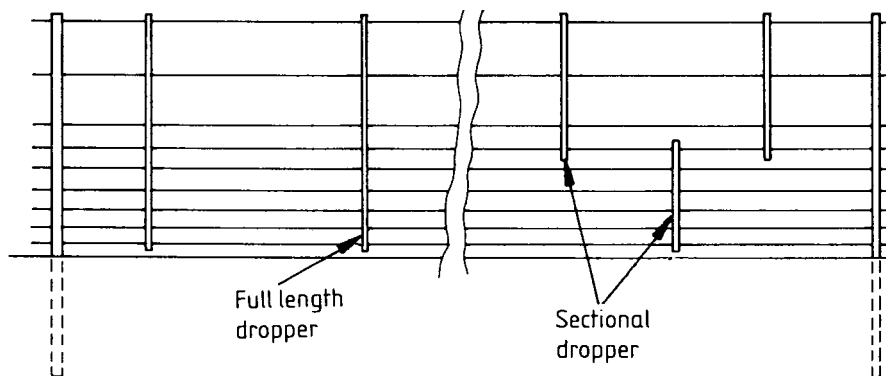
3 Terms and definitions

For the purposes of this part of BS 1722, the terms and definitions given in BS EN 844-9 apply.

¹⁾ It is envisaged that BS 443 will be withdrawn and replaced by BS EN 10244-1 and BS EN 10244-2.



a) Typical line wire fence showing concrete posts



b) Dropper pattern fence

Figure 1 — General characteristics of strained wire fences

4 Materials for general pattern strained wire fences

4.1 General

Strained wire fences shall conform to the general requirements of Table 1.

NOTE The sizes specified are minimum requirements. Larger sizes may be used, except if this could adversely affect the fitting of components or if replacement parts are required to match with those already present.

4.2 Wire

NOTE Wire fittings are described in 4.6.

All wire shall conform to BS EN 10223 or BS 4102 and shall be one of the following:

- zinc or zinc coated alloy wire with nominal wire diameter of 4.0 mm, 4.5 mm or 5.0 mm;
- zinc or zinc alloy coated high tensile wire with nominal wire diameter of 2.5 mm, 2.55 mm or 3.15 mm;
- organics coated high tensile wire with a zinc or zinc alloy coated core diameter of 3.15 mm and a 4.00 mm overall diameter.

Galvanized stirrup wire shall be of low carbon steel (mild steel) and shall have a nominal wire diameter of 2.5 mm. Organics coated stirrup wire shall have a nominal core diameter of 2.5 mm and a nominal outside diameter of 3.55 mm.

Barbed wire shall conform to BS EN 10223-1.

Table 1 — General requirements for strained wire fences

Type of fence						Application ^a	Height of top wire m	Number of horizontal wires	Spacings between horizontal wires, from the top wires H ^b mm
With concrete posts		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	Housing	0.90	3	330, 330
SC 105A	DC 105A	SS 105A	DS 105A	SW 105A	DW 105A	General	1.05	5	250, 250, 230, 150
SC 105B	DC 105B	SS 105B	DS 105B	SW 105B	DW 105B		1.05	6	250, 250, 230, 150, 100
SC 120	DCC 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	250, 250, 230, 150, 150, 150, 100
SC 135C	DC 135C	SS 135C	DS 135C	SW 135C	DW 135C	Special purposes	1.35	9	250, 225, 225, 150, 125, 125, 100, 75
—	DC 180	—	DS 180	—	DW 180		1.80	11	225, 225, 200, 175, 175, 175, 150, 125, 100
—	DC 210	—	DS 210	—	DW 210		2.10	16	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 H Top wire secured 75 mm below the top of concrete or wood posts, or 25 mm below the top of steel posts.									

4.3 Concrete posts and struts

4.3.1 Materials

Concrete posts and struts shall be of steel reinforced concrete conforming to annex A.

4.3.2 Tolerances on size

Concrete components shall conform to their specified sizes within the following tolerances:

- a) a demoulding 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 of posts: ±1 %;
 - 2) cross-section: ±3 mm.

NOTE The cross-section should be measured about the centre lines.

4.3.3 General construction

The long arrises formed in the base of the mould of the post shall either be rounded or have all sharp edges removed. The arrises formed at the top of the mould shall be free from overfill. The heads of posts shall be either weathered or half rounded in order to prevent lodgement of water.

Posts shall be holed to allow the fixing of line wires, etc. as specified in 4.2. The hole for the top line wire shall be approximately 75 mm below the top of the post (excluding any extension for barbed wire). Holes for bolts shall allow the bolt to be freely inserted. Holes for wire shall allow a 6 mm bolt to be freely inserted. All holes shall be free from obstructions and shall be accurately positioned.

4.3.4 Fence posts and struts

General dimensions of concrete fence posts and struts shall conform to Table 2. Fence posts and struts shall be reinforced with four steel reinforcing bars of dimensions conforming to Table 2.

NOTE 1 If steel having a characteristic strength greater than 250 N/mm² is used, the cross-section of the reinforcing bars may be proportionately reduced.

Straining posts and struts shall not be tapered. Straining posts shall be provided with a firm bearing for struts, within the top third of the length above ground of the straining post (excluding the length of any extension for barbed wire).

Straining posts shall be holed for the attachment of straining fittings. The holes shall be offset from the face of the strut to prevent the line wires snagging on the strut, unless the line wires are to be passed through the strut, which shall then be provided either with 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 2 The positions of line wires are given in Table 1.

Table 2 — Dimensions of 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		m	mm × mm		m	mm × mm	
0.90	1.57	100 × 100	6	1.57	100 × 100 or 125 × 125	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		
1.35A and B	2.02			2.17			2.13		
1.35C	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 use of struts of these lengths unsuitable, the length may need to be specified.

^b The larger section is for use with high tensile or spring steel line wires.