015 : 1993

CEB
STANDARD

UNGALVANIZED STAY ASSEMBLIES

CEYLON ELECTRICITY BOARD
SRI LANKA

Specification

for

UNGALVANIZED STAY ASSEMBLIES

CEB Standard 015 : 1993

CEYLON ELECTRICITY BOARD

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SPECIFICATION FOR UNGALVANIZED STAY ASSEMBLIES

1.0 SCOPE

This specification covers the design, manufacture and testing of ungalvanized Stay Assemblies for use in the overhead power line systems of the CEB. The items shall be suitable for hot dip galvanizing by the Purchaser.

2.0 APPLICABLE STANDARDS

The items and components supplied shall be in accordance with the standards specified below or later editions and/or amendments thereof.

B.S. 16 - 1974 Specification for telegraph material (pole fittings).

B.S. 3643 -1981 ISO Metric screw threads.

B.S, 4360 -1990 Weldable structural steel.

B.S. 464 -1958 Thimbles for wire ropes.

B.S. 3100 - 1976 Steel castings for general engineering purposes.

The equipment and components conforming to any other international standards which are equal to or higher but not less rigid than the standards and specifications stipulated may be offered.

When such alternative Standards are used reference to such standards shall be quoted and English Language copies of such standards shall be furnished with the offer.

3.0 BASIC FEATURES

3.1 General

Stay Assemblies shall consist of the following :-

(a) Stay Rod with Ratchet Nut;

(b) Stay Tightener (with forged steel/channel iron cross head);

(c) Stay Plate;

(d) Thimble;

The attached Drawing No. DS&S/2003/15 shows the general arrangements of the **Stay** Assembly. The dimensions given in the, drawing are in accordance with B.S.I 6 (1974).

3.2 Stay Rods with Ratchet Nuts

3.2.1 General - .

The rods shall comply in all respects with the dimensions specified in Table 3 of B.S. 16 **(1974):** Pattern 1.

3.2.2 Material

The rods shall be of steel suitable to give a minimum breaking strength of 62 kN and 96 km for 1.8 m and 2.4 m Stay Rods respectively as required in Clause 4.4 of B.S.I 6 **(1974).**

The screw threads of the rods and ratchet nuts shall conform to British Standard 3643 (1981) course series free fit. The head of the Stay rods shall be forged of the same material and not welded. The nut should match the locking device provided to the cross-head.

3.2.3 Tests

The assembled Stay Rods, when subjected to the Tensile Test, shall comply with the breaking **load** requirements specified in Clause 3.2.2 above.

3.3 Stay Tightener (Stay Buckle)

3.3.1 General

Stay Tightener shall be manufactured to comply with the Drawing No. DS&S/2003/15 and Table 3 and Figure 4 of the B.S.16 (1974) in all respects

3.3.2 Material

The Bow of the Tightener shall be of Steel to comply with the requirements of BS 4360 (1979). The Crosshead shall be made of forged mild steel or channel iron.

The sides of each bow shall be well riveted into the crosshead and shall not pulled-out from the cross head when the tightener is tested to fracture by tensile stress.

The ratchet nuts, and the ratchet face of each cross head shall be well formed, so that any nut and cross-head of the appropriate size shall provide a good ratchet action.

3:3.3 Tensile Test

The finished Stay Tighteners when subjected to Tensile Stress shall comply with the breaking load requirements specified in Clause 3.2.2. above.

3.4 Stay Plates and Washers

3.4.1 General

Stay Plates shall comply in all respects with Table 6 and Figure 5 of B.S.I 6 **(1974).** Washers for Stay Rods shall comply in all respects with the Drawing No. DS&S/2003/15, and Table 5 and Figure 5 of the B.S.I 6 (1974).

3.4.2 Material

Plates shall be of Mild Steel. Stay Plates and washers shall be cleanly cut off and punched and shall be free from cracks after punching.

3.5 Thimbles

3.5.1 General

The Thimbles shall be neatly formed and be free from roughness and sharp edges liable to injure the Stay Wire. The Thimbles specified are intended for wire ropes used for general engineering purposes and the proportions and dimensions of the specified thimbles have been determined with regard to the strength and rigidity essential for such purposes. Thimbles shall be manufactured strictly in compliance with the Drawing No. DS&S/2003/15.

3.5.2 Material

Material should conform with Clause 3 (b) of B.S.464 (1958). Thimbles shall be steel castings and shall comply with the requirements specified in B.S.3100 (1976).

3.5.3 Dimensions and Tolerances

The form of the Thimbles shall be as shown in Figure 3, B.S.S.464: 1958 and the nominal size of the Thimbles shall be suitable to accommodate 7/3.15 mm and 7/4.06 mm Stay Wire for 1.8m and 2.4 m Stay Assemblies respectively. The dimensions of the Thimbles shall be in accordance with Drawing No. DS&S/2003/15 and Table 3 given in B.S.464 (1958).

All dimensions with the exception of these shown as minimum or approximate, shall **be** subject to a Tolerance of + or - 5%.

3.6 Finish

All items shall be clean, smooth & uniform throughout and also free from burs.oil and paint and suitable for hot dip galvanizing.

4.0 ADDITIONAL REQUIREMENTS

4.1 Marking

Every item shall be clearly embossed with the mark "C.E.B." **- Year of** Manufacture together with the manufacturer's identification mark.

4.2 Packing

Twenty five nos. of Stay rods with Ratchet Nuts / Stay Tighteners with Thimbles / Stay Plates and Washers shall be packed separately in polythene lined palletized wooden boxes. The item and quantity shall be marked on each box.

5.0 INFORMATION TO BE SUPPLIED WITH THE OFFER

The following shall be furnished with the offer.

(a) Constructional features, materials used for components and relevant technical literature.

(b) Complete dimensional drawings.

(c) Completed Schedule of Particulars , Annexure A

(d) Test certificates (for breaking load)

Test Certificates of the breaking load test performed conforming to the relevant standard specified. The test certificates should clearly identify the equipment concerned showing the Manufacturer's identity, type number and basic technical parameters.

The Test Certificates referred to shall be issued **from a recognized Independent Testing Authority acceptable to the** Purchaser.

Failure to furnish the particulars requested in the above Clause will result in the offer being rejected.

6.0 TECHNICAL LITERATURE AND DRAWINGS

The selected Bidder shall supply relevant dimensioned drawings'along with the equipment.

7.0 INSPECTION AND TESTING

7.1 Inspection

The selected Bidder shall make necessary arrangements for inspection by an Engineer or Inspector as appointed by the Purchaser and also to carry out in his presence necessary tests on the equipment and the materials offered.

7.2 Testing

The following test shall be witnessed by the Purchaser

(!) Breaking load test

(ii) Tolerance

7.3 Sampling Tests

Each batch of items supplied will be subjected to the following sampling Tests at the place of dispatch: -

1) Checking whether the items are rust, oil and paint free.

2) Checking of the specified dimensions and the ratchet action.

3) Whether the surfaces are smooth and burr free.

The above Tests shall be carried out, for 10 Nos. Stay Assemblies selected randomly from a batch of 1000 numbers, at the place of dispatch (or at the Purchaser's Stores). If two or more numbers of Stay Assemblies are found defective then a second Sampling Test shall be carried out on the same basis. If two or more Stay Assemblies are also found defective then the whole batch shall be rejected.

8.0 SAMPLE STUDY

One Sample (non returnable sample) of a complete stay assembly of each size shall be provided together with the Bid.

9.0 ANNEXURE

A - Schedule of Particulars

ANNEXURE A

SCHEDULE OF PARTICULARS

(To be filled by the Bidder)

Stay Rods with Ratchet Nuts

(i) Grade of steel

(ii) Tensile strength

(iii) Dimension

Stay plates and Washers

(!) Grade of steel

(ii) Dimension, Plate
Washer

Stay Tightener

(i) Type of Cross head
(Channel Iron/forged steel)

(ii) Dimension

(iii) Tensile strength

Amendment Slip No. 1
Effective from 23rd January 1998
To CEB Standard 015 : 1993

Specification for Ungalvanized Stay Assemblies

REVISED TEST

January 1998

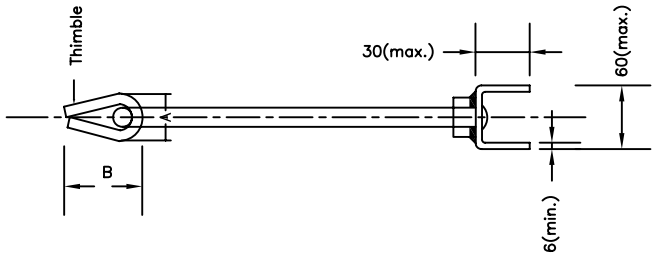
Clause 2.0 Applicable Standards

(i) The following standard shall be included under this Clause.
"Sri Lanka Standards 949 : Part 1 : 1 : 1992 Dimensions of Hot Rolled Steel Bars for Structural and General Engineering Purposes. (Part 1 Round Bars)"

Clause 3.5.3 Dimensions and Tolerances

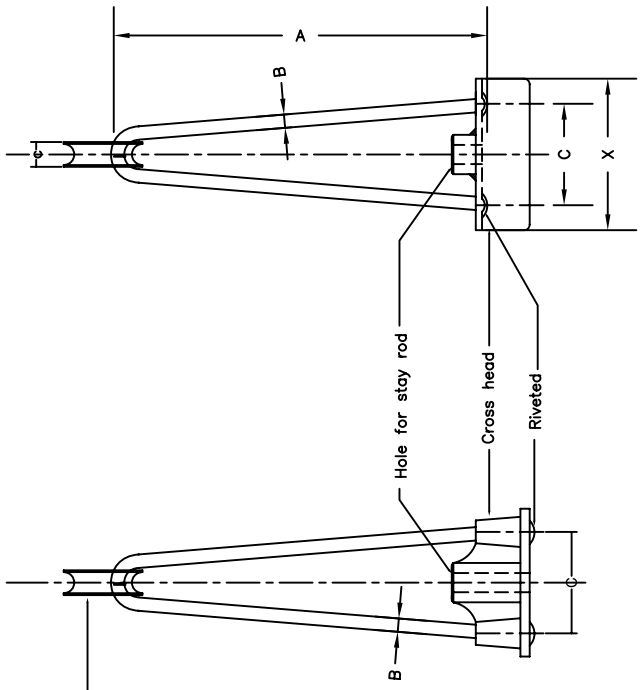
Second para of this Clause which reads as ***"All dimensions with the exception of these shown as minimum or approximate, shall be subject to a Tolerance of + or – 5%" shall be replaced with the following Clauses.***

Clause 3.5.3	***a)***	***Thimbles***	***-***	***Tolerances on Dimensions shall be ± 5% of the nominal.***		
	b)	***Round Bars***	***-***	***Tolerance on diameter shall be + or - 0.5mm as per Sri Lanka Standard 949 : Part 1 : 1992.***		
	c)	***Screw Threads***	***-***	***Major diameter max.***	***-***	***15.96 mm***
				Major diameter min.	***-***	***15.48 mm***
				Minor diameter min.	***-***	***13.27 mm***



TYPE 2

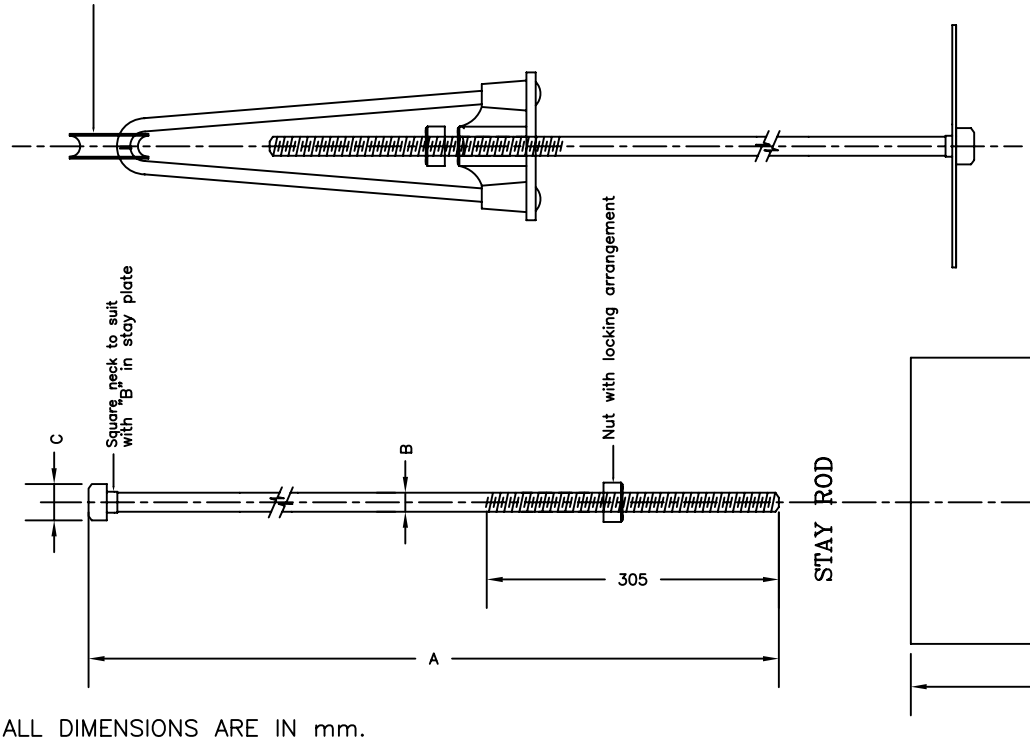
CHANNEL IRON CROSS HEAD
STAY TIGHTENER



TYPE 1

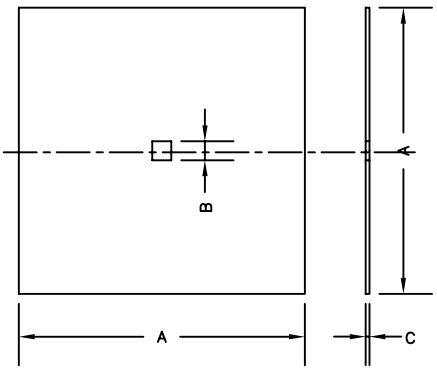
FORGED STEEL CROSS HEAD
STAY TIGHTENER

	STAY TIGHTENER Table 3:B S:16(1974)		STAY PLATE Table 6:B S:16(1974)		STAY RODS Table 3:B S:16(1974)		THIMBLES	
	For 2400 Stay	For 1800 Stay	For 2400 Stay	For 1800 Stay			For 2400 Stay	For 1800 Stay
A	400 ± 1%	400 ± 1%	380 ± 1%	300 ± 1%	2400 ± 1%	1800 ± 1%	59 ± 2%	54 ± 2%
B	14 ± 2%	12 ± 2%	22 ± 2%	18 ± 2%	20 ± 2%	16 ± 2%	79 ± 2%	73 ± 2%
C	110 ± 2%	98 ± 2%	4 ± 2%	4 ± 2%	38.1± 2%	31.8± 2%	21 ± 2%	18 ± 2%
D	155 ± 2%	143 ± 2%						



STAY ASSEMBLY

STAY ROD



STAY PLATE

ALL DIMENSIONS ARE IN mm.

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATION	SCALE : NOT TO SCALE
	UNGALVANIZED STAY ASSEMBLY	DRAWN : LALANI
	DESIGNED BY / APPROVED BY	DATE : March, 2000
		DRG. NO : DS&S/2003/15
DIST. PLANNING BRANCH	E.E.DS & S) / CHAIRMAN, SPECIFICATION COMMITTEE	CAD NO :