SRI LANKA STANDARD 321 : PART 2 : 2004
UDC 685.55:672.9

SPECIFICATION FOR
UMBRELLA RIBS
PART 2 : FOLDING TYPE UMBRELLA RIBS

SRI LANKA STANDARDS INSTITUTION

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(FIRST REVISION)

SLS 321 Part 2 : 2004

Gr. 6

SRI LANKA STANDARDS INSTITUTION
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SRI LANKA

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

SRI LANKA STANDARD
SPECIFICATION FOR UMBRELLA RIBS
PART 2: FOLDING TYPE UMBRELLA RIBS
(FIRST REVISION)

FOREWORD

This standard was approved by the Sectoral Committee on Engineering Materials, Mechanical systems and Manufacturing Engineering and was authorized for adoption and publication as a Sri Lanka Standard by the council of the Sri Lanka Standards Institution on 2004-08-18.

This is the first revision of **SLS 321: 1974** Specification for Umbrella Ribs. In this revision, mainly the requirements for materials, shapes and dimensions, physical requirements for finished ribs and methods of test have been revised.

This standard is presented in two parts as follows:

Part 1 : Non-folding type umbrella ribs
Part 2 : Folding type umbrella ribs

Guidelines for the determination of compliance of a lot with the requirements of this standard, based on statistical sampling and inspection, are given in Appendix **A**.

All values given in this specification are in SI units.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or an analysis, shall be rounded off in accordance with **CS 102**. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this standard.

In the preparation of this specification valuable assistance derived from the **IS 2917** of the Indian Standards Institution is gratefully acknowledged.

1 SCOPE

This part of the standard lays down specifications for umbrella ribs and covers, requirements for finished umbrella ribs, both main and stretcher, for the folding type umbrellas.

2 REFFERENCES

CS 102 Presentation of numerical values
SLS 428 Random sampling methods
SLS 978 Tensile testing of metallic materials

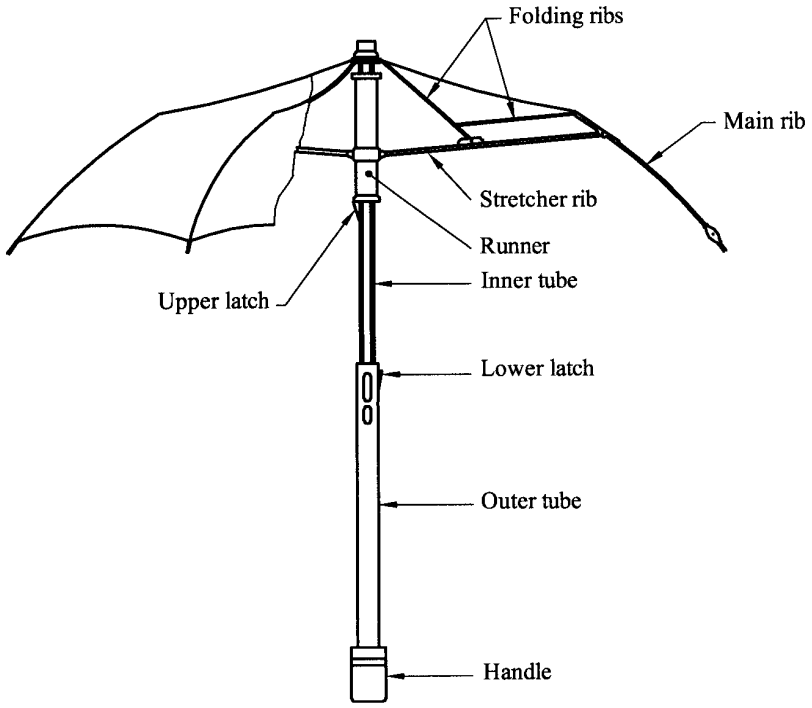

FIGURE 1 - Schematic diagram of a complete umbrella (Three folding)

3 TYPES

The umbrella ribs shall be one of the following two types:

a) Solid ribs ; or
b) Fluted ribs

3.1 Solid ribs

The solid ribs shall be of round cross section.

3.2 Fluted ribs

The fluted ribs shall be of U-shaped cross section.

4 REQUIREMENTS

4.1 Materials

Umbrella ribs shall be made of carbon steel, conforming to physical requirements stated in **4.3** or any other suitable material. Umbrella ribs, if made out of any other material, shall have equal or better performance to that of carbon steel ribs.

4.2 Shapes and dimensions

4.2.1 The shapes and dimensions of the ribs shall be as given in Figure **2** to Figure **4** and Table **1** and Table **2**.

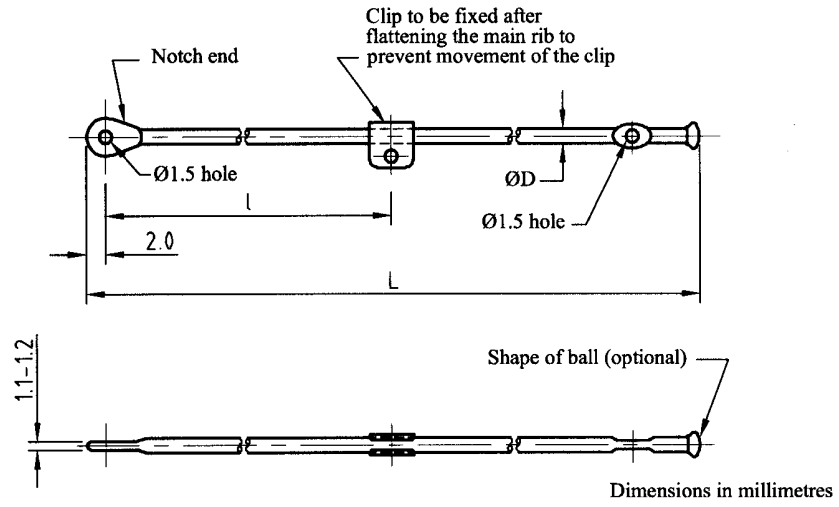

FIGURE 2 - Typical illustration of a main rib (solid type)

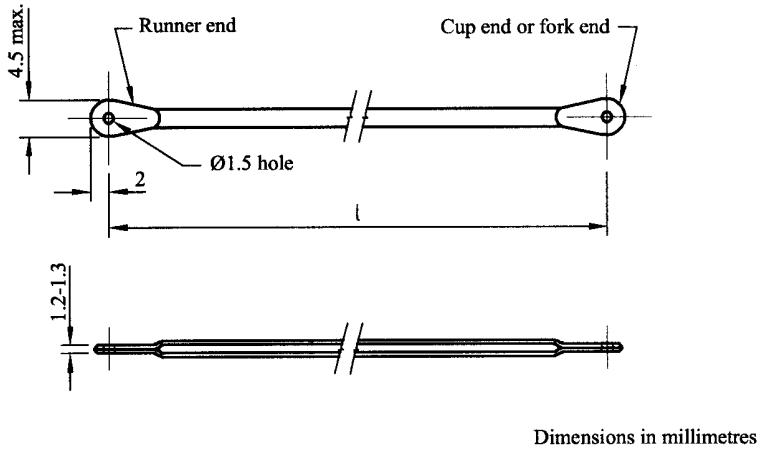

FIGURE 3 - Typical illustration of a stretcher rib (fluted type)

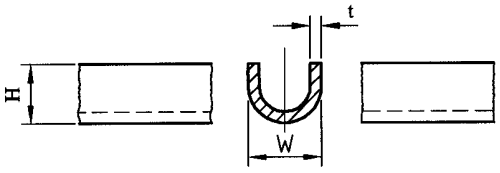

FIGURE 4 - Enlarged section of a fluted rib

TABLE 1- Dimensions of main ribs (Figure 2 to Figure 4)

All values in millimeters

Sl. No.	Nominal size (L)	Tolerance on L	Minimum values for fluted ribs			For solid ribs, minimum D
			W	II	t	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	50	± 5	-	-	-	1.70
2	65	± 5	-	-	-	1.70
3	85	± 5	3.2	3.40	0.45	1.70
4	100	± 5	3.2	3.40	0.45	1.70
5	125	± 10	3.2	3.40	0.45	-
6	150	± 10	3.3	3.50	0.45	-
7	175	± 10	3.4	3.50	0.45	1.70
8	200	± 10	3.4	3.50	0.45	1.70
9	225	± 10	-	-	-	1.75
10	250	± 10	3.4	3.50	0.45	1.75
11	300	± 10	-	-	-	1.75
12	350	± 10	-	-	-	1.75
13	400	± 10	-	-	-	1.75

TABLE 2 – Dimensions of stretcher ribs (Figure 3 and Figure 4)

All values in millimeters

Sl. No.	Nominal size (*l*)	Tolerance on *l*	Minimum values for fluted ribs			For solid ribs, minimum D
			W	H	t	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	75	± 5	3.2	2.2	0.30	1.70
2	90	± 5	3.2	2.2	0.30	1.70
3	110	± 5	3.2	2.2	0.30	1.70
4	140	± 5	3.4	2.3	0.40	1.70
5	160	± 5	3.4	2.3	0.40	1.70
6	180	± 5	3.5	2.4	0.45	1.75
7	200	± 5	3.5	2.4	0.45	1.75
8	225	± 5	3.5	2.5	0.45	1.75
9	250	± 5	3.5	2.5	0.45	1.75

4.3 Physical requirements of finished ribs

4.3.1 *Tensile strength*

Ribs of carbon steel shall be heat-treated, as such the finished ribs shall have the, minimum tensile strength as stated in Table **3**. Tensile test shall be carried out according to **SLS 978**.

TABLE 3 – Tensile strength of ribs

Type of ribs	Tensile strength N/mm^2
Main ribs	
Fluted	1200
Solid	1400
Stretcher ribs	650

4.4 Workmanship and finish

4.4.1 The riveting of the stretcher ribs at the joint with the main rib shall be such that its movement is free but without shake or play. Riveting material shall be brass or stainless steel

4.4.2. The ribs shall be thoroughly cleaned and free from rust, scale and oily substances and shall be suitably protected against corrosion by galvanizing, metal plating or painting. If painted it should be stove enameled.

5 MARKING

The brand name or the trademark of the manufacturer shall be suitably marked or shown by any other means on the ribs individually or on the pack.

NOTE : *Attention is drawn to the certification marking facilities offered by the Sri Lanka Standards Institution. See the inside back cover of this standard.*

6 PACKING

The ribs shall be packed as agreed between the purchaser and the supplier.

APPENDIX A

SAMPLING SCHEME AND CRITERIA FOR CONFORMITY FOR UMBRELLA RIBS

A.1.1 Lot

In any consignment, all the ribs of the same type, shape and dimension and belonging to the same batch of manufacture shall constitute a lot.

A.1.1.1 Every lot in a consignment shall be tested separately to ascertain its conformity to the requirements of this standard.

A.1.2 To ascertain the conformity of the lot to the requirements of this standard, the number of ribs to be selected at random from the lot shall be in accordance with Column 2 and Column 3 of Table **4**.

TABLE 4- Sample size and criteria for conformity
(Clause A.1.2, A.2.2 and A.2.3.1)

Sl.No. (1)	Lot size (No. of ribs in the lot) (2)	Sample size (No. of ribs to be selected) (3)	Acceptance number (4)	Sub-sample size (5)
1	Up to 100	13	1	3
2	101 to 150	20	1	4
3	151 to 300	32	2	5
4	301 to 500	50	3	6
5	501 to 1 000	80	5	7
6	1 001 to 3 000	125	7	8
7	3 001 to 10 000	200	10	9
8	10 001 and above	315	14	10

A.1.3 The ribs shall be selected at random. In order to ensure randomness of selection random number tables given in **SLS 428** shall be used.

A.2 Number of tests and criteria for conformity

A.2.1 The ribs selected according to **A.1.2** shall be tested for,

(a) shapes and dimensions (**4.2**); and
(b) workmanship and finish (**4.4**).

A.2.2 For testing tensile strength the number of ribs to be selected from the ribs already tested under **A.2.1** and found satisfactory with respect to all the characteristics shall be in accordance with Column 2 and Column 5 of Table **4**.

A.2.3 Criteria for conformity

The lot shall be declared as conforming to the requirements of this standard if the conditions given in **A.2.3.1** and **A.2.3.2** are satisfied.

A.2.3.1 The number of defective ribs with respect to any one or more of the characteristics tested for in **A.2.1** shall not exceed the corresponding acceptance number given in Column 4 of Table **4**.

A.2.3.2 From the test results for tensile strength the average $\overline{X}$ (see Note 1) and the range R (see Note 2) are computed and the value of the expression $\overline{X}$-0.6 R shall not be less than the relevant specified minimum value.

NOTES

1 *Average ($\overline{x}$) is the value obtained by dividing the sum of test results by the number of test results.*

2 *Range(R) is the difference between the maximum and the minimum of the test results.*

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SRI LANKA STANDARDS INSTITUTION

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The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in turn are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

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