

**SRI LANKA STANDARD 372:1976**  
**UDC 621.884**

**SPECIFICATION FOR  
RIVETS FOR  
GENERAL ENGINEERING PURPOSES**

**BUREAU OF CEYLON STANDARDS**



SPECIFICATION FOR RIVETS  
FOR GENERAL ENGINEERING PURPOSES

SLS 372 : 1976

Gr. 6

~~XXXXXXXXXXXXXXXXXXXX~~

*Copyright Reserved*  
BUREAU OF CEYLON STANDARDS  
53, Dharmapala Mawatha,  
Colombo 3,  
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 RIVETS  
FOR GENERAL ENGINEERING PURPOSES

**FOREWORD**

This Sri Lanka Standard Specification has been prepared by the Drafting Committee of the Bureau on Rivets. It was approved by the Mechanical Engineering Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 1976-01-07.

The specification has been given both in the imperial and metric systems. The values in the imperial and metric systems are the standard values in the respective systems. The values in the imperial system will be valid only till such time as the metric system is adopted. Rivets adopted in this specification are in conformity with universally accepted practice.

A chart showing a tentative range of preferred nominal lengths in association with shank diameters for metric size rivets is included in Appendix A which will be reviewed as and when the need arises.

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 shall be rounded off in accordance with CS 102\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

\*CS 102 *Presentation of numerical values.*

Assistance derived from the publications of the British Standards Institution, the American National Standards Institution, the American Society for Testing and Materials, the Japanese Standards Institution and the International Organization for Standardization in the preparation of this standard is gratefully acknowledged.

## 1 SCOPE

This Sri Lanka Standard specifies the materials, dimensions, head shapes and mechanical properties of rivets in inch sizes ranging from 1/16 in to 1½ in diameter and metric sizes ranging from 1.6 mm to 39 mm diameter intended for general engineering purposes.

## 2 DEFINITIONS

2.1 For the purposes of this Sri Lanka Standard, the following definitions apply:

2.1.1 nominal diameter: The diameter of the shank.

2.1.2 nominal length of rivets other than countersunk or raised countersunk rivets: The length from the underside of the head to the end of the shank.

2.1.3 nominal length of countersunk and raised countersunk rivets: The distance from the periphery of the head to the end of the rivet measured parallel to the axis of the rivet.

## 3 REQUIREMENTS

### 3.1 Materials

The rivets shall be made from mild steel, copper, brass, pure aluminium, aluminium alloys or other suitable metals.

### **3.2 Manufacture**

Rivets may be made either by cold forging or hot forging. If rivets are made by the cold forging process they shall subsequently be adequately heat treated so that the stresses set up in the cold forging process are eliminated. If they are made by the hot forging process care shall be taken to see that the rivets cool gradually, after the forging operation.

### **3.3 Workmanship**

The rivets shall be cleanly finished with heads concentric with shanks and they shall be free from defects.

### **3.4 Shapes of heads and shanks**

The heads of rivets shall conform to the details given in:

- a) Tables 1 to 6 for inch size rivets, and
- b) Tables 7 to 11 for metric size rivets, as appropriate.

### **3.5 Radius under the head**

The radius under the head of the rivets shall run smoothly into the face of the head and shank without any step or discontinuity.

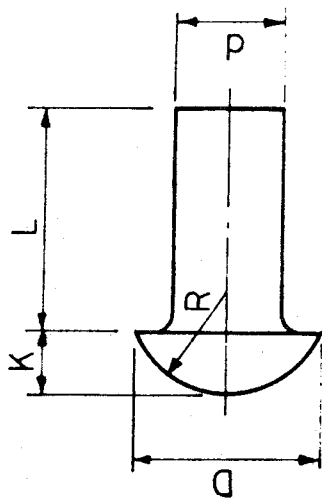
### **3.6 Dimensions and tolerances**

**3.6.1** Dimensions and tolerances for rivets shall be in accordance with:

- a) Tables 1 to 6 for inch size rivets: and
- b) Tables 7 to 11 for metric size rivets, as appropriate.

**3.6.2** A chart showing a tentative range of preferred nominal lengths associated with shank diameters for metric size rivets is shown in Appendix A.

**TABLE 1 Cold forged snap head rivets - inch size**  
*All dimensions are in inches*

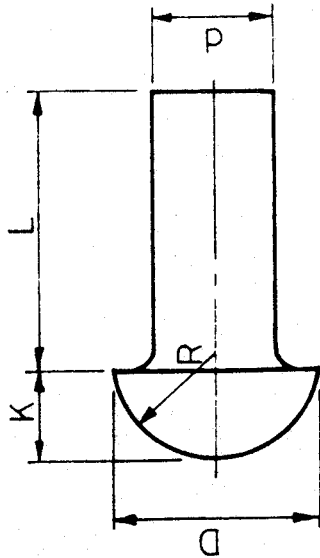


With  $d$  7/16 in or smaller  
 $D = 1.75 d$   
 $K = 0.75 d$   
 $R = 0.885 d$   
 $L = \text{length}$

Nominal size	Shank diameter $d$			Head diameter $D$				Head depth $K$			Head Radius $R$	Tolerance on Length $L$
	Basic	Tolerance		Basic	Tolerance		Basic	Tolerance		Basic (approx)		
		plus	minus		plus	minus		plus	minus			
1/16	0.062	0.002	0.003	0.109	0.014	0.006	0.047	0.005	0.005	0.055		
3/32	0.094	0.002	0.004	0.164	0.018	0.002	0.070	0.007	0.005	0.083		
1/8	0.125	0.002	0.004	0.219	0.016	0.004	0.094	0.006	0.006	0.111		
5/32	0.156	0.002	0.004	0.273	0.017	0.005	0.117	0.007	0.007	0.138		
3/16	0.188	0.003	0.006	0.328	0.019	0.007	0.141	0.006	0.008	0.186		
1/4	0.250	0.003	0.006	0.436	0.022	0.008	0.188	0.008	0.008	0.221		
5/16	0.312	0.004	0.008	0.547	0.026	0.008	0.234	0.009	0.009	0.277	$\pm 0.016$	
3/8	0.375	0.005	0.010	0.656	0.028	0.010	0.281	0.010	0.010	0.332		
7/16	0.438	0.005	0.010	0.766	0.032	0.012	0.328	0.011	0.011	0.387		



**TABLE 2 Hot forged snap head rivets - inch size**  
*All dimensions are in inches*



With  $d \frac{1}{2}$  in or larger

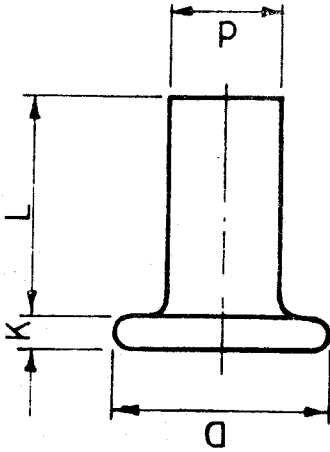
$D = 1.6 d$

$k = 0.7 d$

$L = \text{length}$

Nominal size	Shank diameter $d$		Nominal head diameter $D$	Nominal head depth $K$	Head Radius $R$	Tolerance on length $L$
	Basic plus	Tolerance minus				
1/2	0.500	0.020	51/64	11/32	0.443	Up to 6 in $\pm$ 0.03 Over 6 in $\pm$ 0.06
5/8	0.625	0.030	1	7/16	0.553	
3/4	0.750	0.030	1 13/64	33/64	0.664	
7/8	0.875	0.030	1 13/32	39/64	0.775	Up to 6 in $\pm$ 0.06 Over 6 in $\pm$ 0.12
1	1.000	0.030	1 19/32	45/64	0.885	
1 1/8	1.125	0.035	1 51/64	25/32	0.996	
1 1/4	1.250	0.035	2	7/8	1.107	Up to 6 in $\pm$ 0.04 Over 6 in $\pm$ 0.14
1 3/8	1.375	0.040	2 13/64	31/32	1.217	
1 1/2	1.500	0.040	2 13/32	1 3/64	1.328	

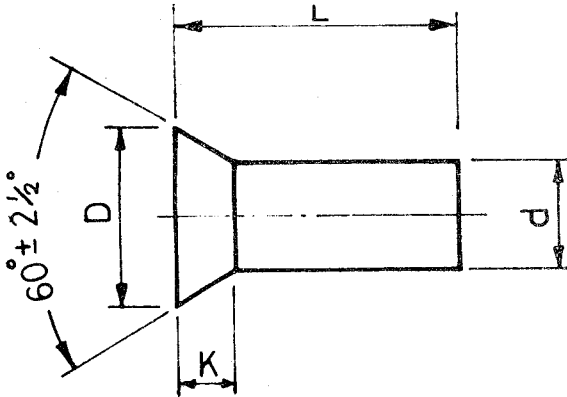
**TABLE 3 Cold forged flat head rivets - inch size**  
*All dimensions are in inches*



$D = 2 d$   
 $K = 0.25 d$   
 $L = \text{Length}$

Nominal size	Shank diameter d		Basic	Tolerance		Basic	Tolerance		Nominal head depth K	Tolerance on length L
	Basic	plus		minus	plus		minus			
1/16	0.062	0.002	0.003	0.125	0.016	0.004	0.016	0.004	0.016	± 0.016
3/32	0.094	0.002	0.004	0.188	0.012	0.008	0.012	0.008	0.023	
1/8	0.125	0.002	0.004	0.250	0.010	0.010	0.010	0.010	0.031	
6/32	0.156	0.002	0.004	0.313	0.011	0.011	0.011	0.011	0.039	
3/16	0.188	0.003	0.006	0.375	0.011	0.015	0.011	0.015	0.047	
1/4	0.250	0.003	0.006	0.500	0.015	0.015	0.015	0.015	0.063	
5/16	0.312	0.004	0.008	0.625	0.017	0.017	0.017	0.017	0.078	
3/8	0.375	0.005	0.010	0.750	0.019	0.019	0.019	0.019	0.094	
7/16	0.438	0.005	0.010	0.875	0.020	0.024	0.020	0.024	0.109	

TABLE 4 Cold forged 60° countersunk head rivets  
inch size (All dimensions are in inches)



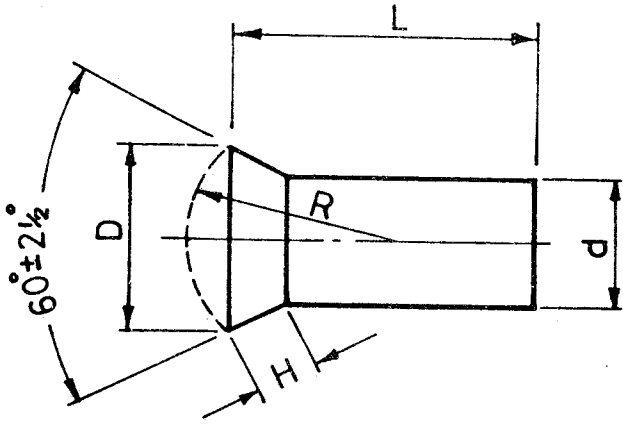
$$D = 1.75 d$$

$$K = 0.65 d$$

$$L = \text{length}$$

Nominal size	Shank diameter d			Nominal head diameter D	Nominal head depth K	Tolerance on length L
	Basic	Tolerance				
		Plus	Minus	D	K	L
3/16	0.188	0.003	0.006	0.328	0.122	± 0.016
1/4	0.250	0.003	0.006	0.438	0.162	
5/16	0.312	0.004	0.008	0.547	0.203	
3/8	0.375	0.005	0.010	0.656	0.244	
7/16	0.438	0.005	0.010	0.766	0.284	

TABLE 5 Hot forged 60° countersunk and raised countersunk head rivets - inch size  
(All dimensions are in inches)



$$D = 1.5 d$$

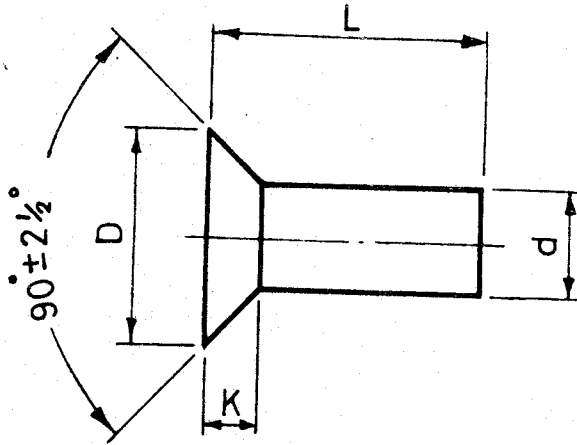
$$H = 0.5 d$$

$$R = 1.5 d$$

$$L = \text{length}$$

Nominal size	Shank diameter d			Nominal head diameter D	Nominal slant height H	Nominal head radius R	Tolerance on length L
	Basic	Tolerance					
		plus	minus				
1/2	0.500	0.020	0.022	3/4	1/4	33/4	Up to 6 in ± 0.03 Over 6 in ± 0.06
5/8	0.625	0.030	0.025	15/16	5/16	15/16	
3/4	0.750	0.030	0.025	1 1/8	3/8	1 1/8	Up to 6 in ± 0.06 Over 6 in ± 0.12
7/8	0.875	0.030	0.025	1 5/16	7/16	1 5/16	
1	1.000	0.030	0.025	1 1/2	1/2	1 1/2	Up to 6 in ± 0.09 Over 6 in ± 0.10
1 1/8	1.125	0.035	0.027	1 1/16	9/16	1 11/16	
1 1/4	1.250	0.035	0.027	1 7/8	5/8	1 7/8	Up to 6 in ± 0.09 Over 6 in ± 0.10
1 3/8	1.375	0.040	0.030	2 1/16	11/16	2 1/16	
1 1/2	1.500	0.040	0.030	2 1/4	3/4	2 1/4	Up to 6 in ± 0.10 Over 6 in ± 0.10

TABLE 6 Cold forged 90° countersunk head rivets  
inch size (All dimensions are in inches)



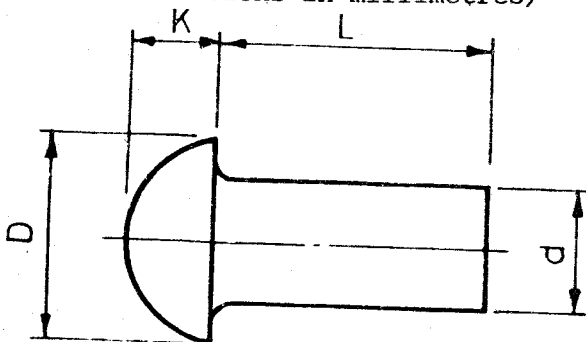
$$D = 2 d$$

$$K = 0.5 d$$

$$L = \text{length}$$

Nominal size	Shank diameter $d$			Nominal head diameter $D$	Nominal head depth $K$	Tolerance on length $L$
	Basic	Tolerance				
		plus	minus			
1/16	0.062	0.002	0.003	0.125	0.031	± 0.016
3/32	0.094	0.002	0.004	0.188	0.047	
1/8	0.125	0.002	0.004	0.250	0.063	
5/32	0.156	0.002	0.004	0.313	0.078	
3/16	0.188	0.003	0.006	0.375	0.094	
1/4	0.250	0.003	0.006	0.500	0.125	
5/16	0.312	0.004	0.008	0.625	0.156	
3/8	0.375	0.005	0.010	0.750	0.188	
7/16	0.438	0.005	0.010	0.875	0.219	

TABLE 7 Cold forged snap head rivets-Metric size.  
(All dimensions in millimetres)



with  $d$  16 mm or smaller

$$D = 1.75 d$$

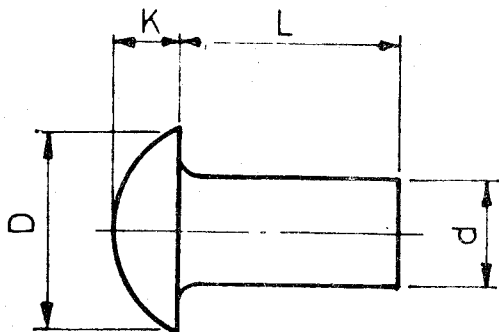
$$K = 0.6 d$$

$$L = \text{length}$$

Nominal shank diameter $d$	Tolerance on diameter $d$	Nominal head diameter $D$	Tolerance on diameter $D$	Nominal head depth $K$	Tolerance on head depth $K$	Tolerance on length $L$
1.6	± 0.07	2.8	± 0.2	1.0	+ 0.2 - 0.0	+ 0.5 - 0.0
2		3.5	± 0.24	1.2	+ 0.24 - 0.0	
2.5		4.4				
3	5.3					
(3.5)	± 0.09	6.1	± 0.29	2.1	+ 0.29 - 0.0	
4		7				
5		8.8				
6	± 0.11	10.5	± 0.35	3.6	+ 0.35 - 0.0	+ 0.8 - 0.0
(7)		12.3				
8		14				
10	± 0.14	18	± 0.42	6.0	+ 0.42 - 0.0	+ 1.0 - 0.0
12		21				
(14)		25				
16		28		9.6		

NOTE - Rivet sizes shown in brackets are non-preferred.

**TABLE 8 Hot forged snap head rivets - Metric size**  
 (All dimensions are in millimetres)



with  $d$  14 mm or larger

$$D = 1.6 d$$

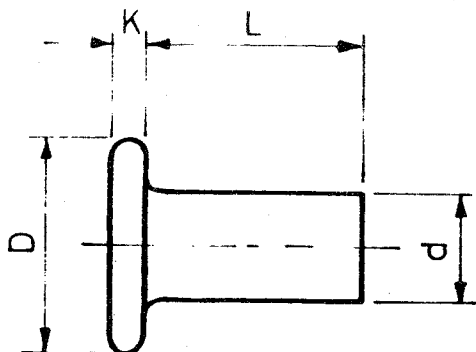
$$K = 0.65 d$$

$$L = \text{length}$$

Nominal shank diameter $d$	Tolerance on diameter $d$	Nominal head diameter $D$	Tolerance on diameter $D$	Nominal head depth $K$	Tolerance on head depth $K$	Tolerance on length $L$
(14)	± 0.43	22	± 1.25	9	+ 1.0 - 0.0	+ 1.0 - 0.0
16		25		10		
(18)		28		11.5		
20	± 0.52	32	± 1.8	13	+ 1.5 - 0.0	+ 1.6 - 0.0
(22)		36		14		
24		40		16		
(27)	± 0.62	43	± 2.5	17	+ 2.0 - 0.0	+ 3.0 - 0.0
30		48		19		
(33)		53		21		
36		58		23		
(39)		62		± 3.0		

**NOTE** - Rivet sizes shown in brackets are non-preferred.

**TABLE 9 Cold forged flat head rivets - Metric size**  
*(All dimensions in millimetres)*



$$D = 2 d$$

$$K = 0.25 d$$

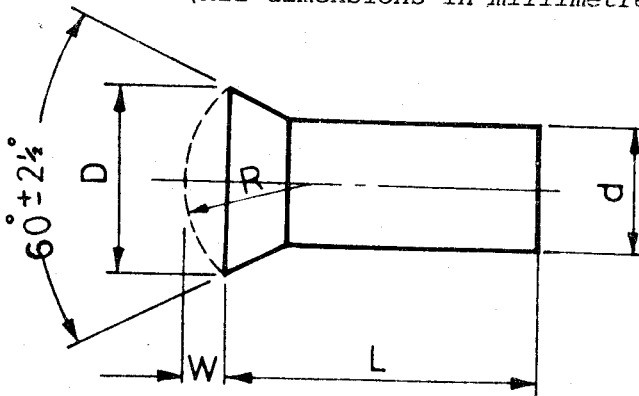
$$L = \text{length}$$

Nominal shank diameter $d$	Tolerance on diameter $d$	Nominal head diameter $D$	Nominal head depth $K$	Tolerance on length $L$
1.6	$\pm 0.07$	3.2	0.4	+ 0.5 - 0.0
2		4	0.5	
2.5		5	0.6	
3		6	0.8	
(3.5)	$\pm 0.09$	7	0.9	
4		8	1.0	
5		10	1.3	
6		12	1.5	
(7)	$\pm 0.11$	14	1.8	+ 0.8 - 0.0
8		16	2	
10		20	2.5	

*NOTE ; Rivet sizes shown in brackets are non-preferred.*



TABLE 10 Hot forged 60° countersunk and raised countersunk head rivets - Metric size  
(All dimensions in millimetres)

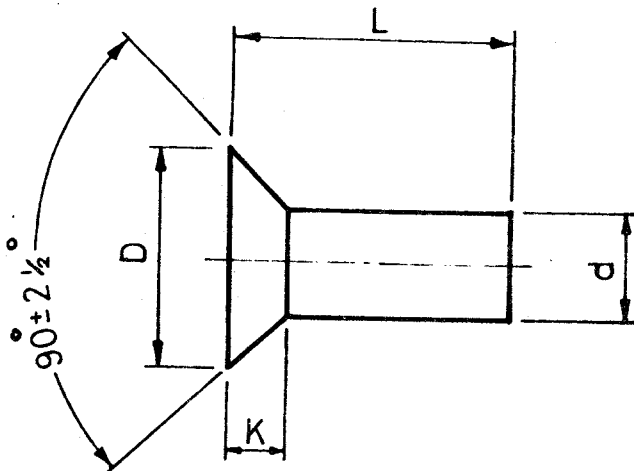


$D = 1.5 d$   
 $K = 0.43 d$  (for reference only)  
 $W = 0.2 d$   
 $L = \text{length}$

Nominal shank diameter $d$	Tolerance on diameter $d$	Nominal head diameter $D$	Tolerance on diameter $D$	Height of raise $w$	Tolerance on raise $w$	Tolerance on length $L$
(14) 16 18	± 0.43	21	± 1.25	2.8	+ 0.35 - 0.0	+ 1.0 - 0.0
		24 27		3.2 3.6		
20 (22) 24	± 0.52	30	± 1.8	4.0	+ 0.45 - 0.0	+ 1.6 - 0.0
		33 36		4.4 4.8		
(27) 30 (33)	± 0.62	40	± 2.5	5.4	+ 0.6 - 0.0	+ 3.0 - 0.0
		45 50		6.0 6.6		
36 (39)		55	± 3.0	7.2	+ 0.8 - 0.0	
		59		7.8		

NOTE - Rivet sizes shown in brackets are non-preferred.

TABLE 11 Cold forged 90° countersunk head rivets - Metric size  
(All dimensions in millimetres)



$$D = 2 d$$

$$K = 0.5 d \text{ (for reference only)}$$

$$L = \text{length}$$

Nominal shank diameter d	Tolerance on diameter d	Nominal head diameter D	Tolerance on diameter D	Tolerance on length L
1.6	± 0.07	3.2	+ 0.0 - 0.48	+ 0.5 - 0.0
2				
2.5				
3				
(3.5)	± 0.09	7	+ 0.0 - 0.58	
5		8		
6		12		
(7)	± 0.11	14	+ 0.0 - 0.7	+ 0.8 - 0.0
8		16		
10	± 0.14	20	+ 0.0 - 1.3	
12		24		

NOTE - Rivet sizes shown in brackets are non-preferred.

### **3.7 Mechanical properties**

3.7.1 Mechanical properties of cold forged rivets shall be such that they shall be capable of passing the tests specified in 4 at normal temperatures.

3.7.2 Mechanical properties of hot forged rivets made of steel shall be such that they shall be capable of passing the test specified in 4.1 after being heated to about 800 °C and the test specified in 4.2 at normal temperatures.

## **4 TESTS**

4.1 The rivet head shall be pressed to flatness till its diameter becomes 2.5 times as large as the nominal diameter as shown in Fig. 1. There shall be no crack caused on the edge.

4.2 The rivet shank shall be bent 180 degrees till it comes in close contact as shown in Fig. 2. There shall be no crack and flaw caused on the outer side.

4.3 The rivet shall be inserted into a hole on the bearing surface inclined at 30 degrees as shown in Fig. 3 and the rivet head is hammered till the rivet head is deformed to let the bearing surface of the rivet touch the inclined surface. There shall be no breakage, crack nor fissure caused in the rivet.

## **5 SAMPLING**

### **5.1 Lot**

All rivets of one consignment of the same size, shape, material and manufactured under similar processes of production, shall constitute a lot.

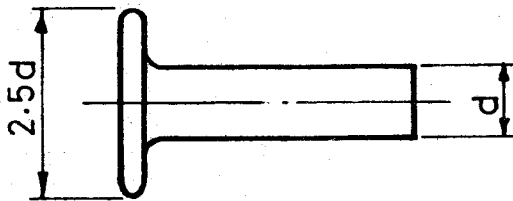
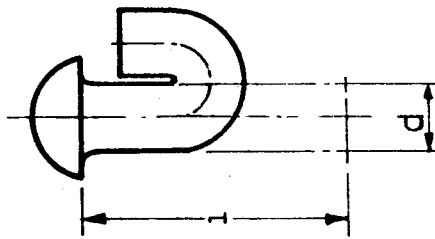


FIG. 1



(Be desirable  
that  $l > 4d$ )

FIG. 2

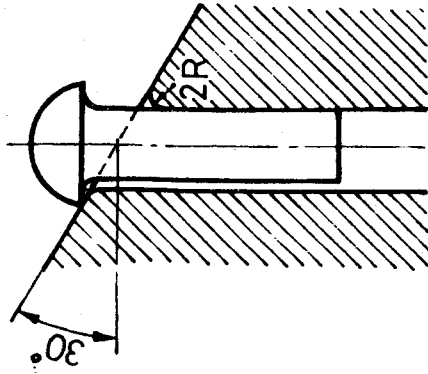


FIG. 3

## 5.2 Scale of sampling

The scale of sampling shall be as indicated in Tables 12 and 13. The required number of sample rivets (Column 3 of Table 12 and Columns 2 and 3 of Table 13) to be drawn shall depend upon the size of the lot and shall be drawn at random from the lot.

## 5.3 Criteria for conformity

5.3.1 The number of sample rivets not conforming to any one or more of the requirements specified under 3.3 and 3.5 shall be compared with the acceptance and rejection numbers in Columns 5 and 6 of Table 12. The directions given in 5.3.3 shall determine the conformity or otherwise of the lot to these requirements.

5.3.2 The number of sample rivets not conforming to any one or more of the requirements specified under 3.4 and 3.6 shall be compared with the acceptance and rejection numbers in Columns 7 to 10 of Table 12. The directions given in 5.3.3 shall determine the conformity or otherwise of the lot to these requirements.

5.3.3 If in the first sample the number of defective rivets is less than or equal to the first acceptance number (Columns 5,7 and 9 of Table 12), the lot shall be declared as conforming to the requirements. If the number of defectives is greater than or equal to the first rejection number, (Columns 6,8 and 10 of Table 12), the lot shall be rejected. If the number of defectives is greater than the first acceptance number but less than the first rejection number, a second sample of the size equal to that of the first shall be taken to determine the conformity or otherwise of the lot. The number of defectives found in the first and second samples shall be combined and, if the combined number of defectives is less than or equal to the second acceptance number (Columns 5,7 and 9 of Table 12), the lot shall be declared as conforming to the requirements, otherwise not.

5.3.4 The lot which has been found satisfactory in respect of 5.3.1 and 5.3.2 shall be examined for mechanical properties (3.7). The number of rivets selected for testing shall be in accordance with Column 2 or Column 3 of Table 13. The sample thus selected shall be divided into three sub-samples of equal size, for carrying out the three tests specified in 3.7.1, in the case of cold forged rivets and in the case of hot forged rivets, the sample selected shall be divided into two sub-samples of equal size for carrying out the two tests specified in 3.7.2. If no rivets fail any one of the tests, the lot shall be declared as conforming to the requirements of this standard, otherwise not.

## 6 DESIGNATION

The rivet shall be designated by material, shape of head, size and number of this standard.

Examples:

1) A 90 degree countersunk head rivet of  $\frac{1}{4}$  in diameter having a length of 1 in and made of aluminium shall be designated as:

Aluminium 90<sup>o</sup> countersunk head rivet  
 $\frac{1}{4}$  x 1 in to SLS 372.

2) A snap head rivet of 6 mm diameter having a length of 30 mm made of steel shall be designated as:

Steel snap head rivet 6 x 30 mm to SLS 372.

## 7 PACKING AND MARKING

7.1 The rivets are to be so packed that they are protected as far as possible against mechanical damage in transit and corrosion.

TABLE 12 Scale of sampling for visual and dimensional characteristics

Lot size (1)	Sample size (2)	Sample size (3)	Cumulative sample size (4)	Visual* characteristics		Dimensional characteristics**			
				Acc. No. (5)	Rej. No. (6)	Shank diameter		All dimensions other than shank diameter	
						Acc. No. (7)	Rej. No. (8)	Acc. No. (9)	Rej. No. (10)
Up to 500	1st	20	20	2	5	1	4	2	5
	2nd	20	40	6	7	4	5	6	7
501 to 1200	1st	32	32	3	7	2	5	3	7
	2nd	32	64	8	9	6	7	8	9
1201 to 2000	1st	50	50	5	9	3	7	5	9
	2nd	50	100	12	13	8	9	12	13
2001 to 10,000	1st	80	80	7	11	5	9	7	11
	2nd	80	160	18	19	12	13	18	19
Over 10,000	1st	125	125	11	16	7	11	11	16
	2nd	125	250	26	27	18	19	26	27

\*Visual characteristics include testing for workmanship and radius under the head.

\*\*Dimensional characteristics include testing for shank diameter, head diameter, head depth, etc., given in the standard.

7.2 The packages of standard rivets must bear the designation given in this standard. In addition the quantity and the manufacturer's symbol shall be indicated on the packaging unless agreed to the contrary by manufacturer and purchaser.

TABLE 13 Scale of sampling for mechanical properties

Lot size (1)	Sample size	
	Cold forged rivets (2)	Hot forged rivets (3)
Up to 500	9	6
501 to 2000	15	10
2001 to 5000	24	16
Over 5000	39	26







## **SLS CERTIFICATION MARK**

*The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.*

*Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.*



## **SRI LANKA STANDARDS INSTITUTION**

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Science & Technology.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and administrative control is vested in a Council appointed in accordance with the provisions of the Act.

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.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.