UDC 621.882.54 July 1988

Serrated lock washers

DIN 6798

Fächerscheiben

Supersedes August 1971 edition.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

1 Scope and field of application

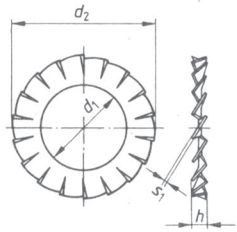
The main purpose of serrated lock washers is to permit the flow of electric current between components coated by varnish, anti-corrosive agents or similar materials, the bent ends of the washers piercing the coating when such components are joined. For such applications, the effectiveness of serrated lock washers shall be verified in accordance with the relevant DIN VDE Standards.

Where such washers are intended to keep fasteners of a low property class from working loose, their effectiveness shall be checked for the application concerned.

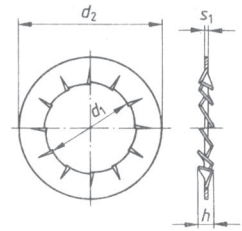
2 Dimensions

Details left unspecified are to be selected as appropriate.

Type A, with external teeth



Type J, with internal teeth



$h \approx 3\,s_1$

Continued on pages 2 to 4

Table 1.

Nominal size	d_1		d_2		s_1	Minimum number of teeth		Mass (7,85 kg/dm³) per 1000 units, in kg, for types A and J	For nominal thread diameter
	min. = nominal dimension	max.	max. = nominal dimension	min.	[1]	Type A	Type J	≈	
1,7	1,7	1,84	3,6	3,3	0,3	9	7	0,02	1,6
2,2	2,2	2,34	4,5	4,2	0,3	9	7	0,03	2
2,7	2,7	2,84	5,5	5,2	0,4	9	7	0,045	2,5
3,2	3,2	3,38	6	5,7	0,4	9	7	0,06	3
3,7	3,7	3,88	7	6,64	0,5	10	8	0,11	3,5
4,3	4,3	4,48	8	7,64	0,5	11	8	0,14	4
5,3	5,3	5,48	10	9,64	0,6	11	8	0,28	5
6,4	6,4	6,62	11	10,57	0,7	12	9	0,36	6
7,4	7,4	7,62	12,5	12,07	0,8	14	10	0,5	7
8,4	8,4	8,62	15	14,57	0,8	14	10	0,8	8
10,5	10,5	10,77	18	17,57	0,9	16	12	1,25	10
13	13	13,27	20,5	19,98	1	16	12	1,6	12
15	15	15,27	24	23,48	1	18	14	2,3	14
17	17	17,27	26	25,48	1,2	18	14	2,9	16
19	19	19,33	30	29,48	1,4	18	14	5	18
21	21	21,33	33	32,38	1,4	20	16	6	20
23	23	23,33	36	35,38	1,5	20	16	7,5	22
25	25	25,33	38	37,38	1,5	20	16	8	24
28	28	28,33	44	43,38	1,6	22	18	12	27
31	31	31,39	48	47,38	1,6	22	18	14	30

[1] Limit deviations for s_1 as specified in DIN 1544.

Type V, countersunk

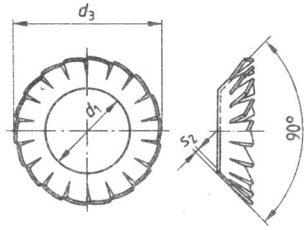


Table 2.

Nominal size	d_1 min. = nominal dimension	d_1 max.	d_3 ≈	s_2 [1]	Minimum number of teeth	Mass (7,85 kg/dm³) per 1000 units, in kg, ≈	For nominal thread diameter
2,2	2,2	2,34	4,2	0,2	10	0,025	2
2,7	2,7	2,84	5,1	0,2	10	0,03	2,5
3,2	3,2	3,38	6	0,2	12	0,04	3
3,7	3,7	3,88	7	0,25	12	0,075	3,5
4,3	4,3	4,48	8	0,25	14	0,1	4
5,3	5,3	5,48	9,8	0,3	14	0,2	5
6,4	6,4	6,62	11,8	0,4	16	0,3	6
8,4	8,4	8,62	15,3	0,4	18	0,5	8
10,5	10,5	10,77	19	0,5	20	1	10
13	13	13,27	23	0,5	26	1,5	12
15	15	15,27	26,2	0,6	28	1,9	14
17	17	17,27	30,2	0,6	30	2,3	16

[1] Limit deviations for s_2 as specified in DIN 1544.

3 Technical delivery conditions

3.1 Material

Serrated lock washers shall be made of spring steel (FSt) as specified in DIN 17 221 or DIN 17 222, the grade being at the manufacturer's discretion.

3.2 Hardness

Spring steel shall be hardened to from 350 to 425 HV 10.

3.3 Finish

Toothed lock washers shall be free from scale or burr.

3.4 Surface protection

The surface protection shall be at the manufacturer's discretion (e.g. phosphated and oiled as specified in DIN 50 942, or blackened and oiled as specified in DIN 50 938).

Any electroplating (as specified in DIN 267 Part 9) shall be indicated in the designation.

4 Designation

Designation of a type A serrated lock washer of nominal size 8,4, made from spring steel (FSt) [1]:

Serrated lock washer DIN 6798 – A 8,4 – FSt

Where serrated lock washers for left-hand thread bolts are required, symbol LH shall be included in the designation:

Serrated lock washer DIN 6798 – A 8,4 – LH – FSt

The DIN 4000 – 3 – 3 tabular layout of article characteristics shall apply for washers covered in this standard.

[1] FSt shall also be used here where no material has been specified in the relevant documentation.

Standards referred to

DIN 267 Part 9	Fasteners; technical delivery conditions; electroplated components
DIN 1544	Flat steel products; cold rolled steel strip; dimensions, permissible dimensional and form deviations
DIN 4000 Part 3	Tabular layout of article characteristics for washers and rings
DIN 17 221	Hot rolled steel for quenched and tempered springs; quality specifications
DIN 17 222	Cold rolled steel strip for springs; technical delivery conditions
DIN 50 938	Black finishing of ferrous materials; principles, testing
DIN 50 942	Phosphating of metals; principles, testing

Previous editions

DIN 6798: 06.52, 06.64, 08.71.

Amendments

The following amendments have been made to the August 1971 edition.

a) The 'Scope and field of application' clause has been included.

b) The hitherto used Nominal diameters (d_1) 1,8, 1,9, 2,5, 2,8, 5,1 and 8,2 mm for nominal thread diameters 1,7, 1,8, 2,3, 2,6, 5 and 8 mm are no longer specified.

c) Nominal sizes (bore diameters) 12,5 mm, 14,5 mm and 16,5 mm have been replaced by 13 mm, 15 mm and 17 mm.

d) In the technical delivery conditions, materials CuSn8 and X 12 CrNi 17 7 are no longer specified.

e) The standard has been editorially revised.

Explanatory notes

In May 1987, ISO/TC 2 'Fasteners' decided that washers with a hardness not less than 300 HV 10 should be provided with a clearance hole of the medium series as specified in ISO 273, or the edges of the clearance hole should be chamfered on both sides, to avoid interference with the underhead fillet involving damage to the bolt.

The clearance hole of the fine series used hitherto has, however, been retained both for toothed lock washers as specified in DIN 6797, and for serrated lock washers having a hardness exceeding 300 HV 10, since such washers are only intended for use with bolts of a low property class. In such cases, interference between the edge of the washer hole and the underhead fillet of the bolt is not likely to impair the performance of the assembly.

International Patent Classification

F 16 B 39/24
H 01 R 4/24