

Curved and wave spring lock washers

DIN
128

Federringe; gewölbt oder gewellt

Supersedes April 1968 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.

It is recommended that spring lock washers complying with this standard be used instead of those complying with DIN 127 (see Explanatory notes).

Specifications for type B spring lock washers are to be omitted in the standard (transitional period: 5 years) as these washers do not comply with the specifications of DIN 267 Part 26. It is thus recommended that type A spring lock washers be used instead.

Dimensions in mm

1 Scope and field of application

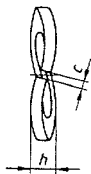
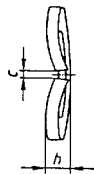
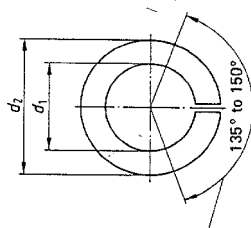
Spring lock washers covered in this standard are deemed to be spring washers designed for use with bolt/nut assemblies involving fasteners of a property class less than 8.8, as specified in ISO 898 Part 1. They are intended to counteract the effect of setting which results in bolt/nut assemblies working loose (see DIN 267 Part 26). They do not effectively prevent loosening of the assembly under varying radial load and are designed for use with short bolts predominantly subject to thrust.

2 Dimensions

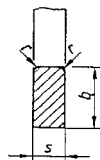
Type A, curved

Type B, wave

Washer cross section (enlarged)

 $c < s$.

Position of curve peak for type A.



The spring lock washers may be used both for bolts with right-hand and with left-hand thread.

Continued on pages 2 and 3

Nominal size ¹⁾	d ₁		d ₂	b		s		h		r	Mass (7,85 kg/dm ³) per 1000 units, in kg, ≈	For thread size
	min.	max.	max.		Limit deviations		Limit deviations	min.	max.	≈		
2 ²⁾	2,1	2,4	4,4	0,9	± 0,1	0,5	± 0,1	0,7	0,9	0,1	0,035	2
2,5 ²⁾	2,6	2,9	5,1	1	± 0,1	0,6	± 0,1	0,9	1,1	0,1	0,055	2,5
3 ²⁾	3,1	3,4	6,2	1,3	± 0,1	0,7	± 0,1	1,1	1,3	0,1	0,09	3
3,5 ²⁾	3,6	3,9	6,7	1,3	± 0,1	0,7	± 0,1	1,1	1,3	0,1	0,1	3,5
4	4,1	4,4	7,6	1,5	± 0,1	0,8	± 0,1	1,2	1,4	0,2	0,15	4
5	5,1	5,4	9,2	1,8	± 0,1	1	± 0,1	1,5	1,7	0,2	0,3	5
6	6,1	6,5	11,8	2,5	± 0,1	1,3	± 0,1	2	2,2	0,3	0,7	6
7 ²⁾	7,1	7,5	12,8	2,5	± 0,15	1,3	± 0,1	2	2,2	0,3	0,75	7
8	8,1	8,5	14,8	3	± 0,15	1,6	± 0,1	2,45	2,75	0,5	1,3	8
10	10,2	10,7	18,1	3,5	± 0,2	1,8	± 0,1	2,85	3,15	0,5	2,1	10
12	12,2	12,7	21,1	4	± 0,2	2,1	± 0,15	3,35	3,65	1	3,2	12
14	14,2	14,7	24,1	4,9	± 0,2	2,4	± 0,15	3,9	4,3	1	4,8	14
16	16,2	17	27,4	5	± 0,2	2,8	± 0,15	4,5	5,1	1	7	16
18	18,2	19	29,4	5	± 0,2	2,8	± 0,15	4,5	5,1	1	7,8	18
20	20,2	21,2	33,6	6	± 0,2	3,2	± 0,2	5,1	5,9	1	12,2	20
22	22,5	23,5	35,9	6	± 0,2	3,2	± 0,2	5,1	5,9	1	13,3	22
24	24,5	25,5	40	7	± 0,25	4	± 0,2	6,5	7,5	1,6	21,5	24
27	27,5	28,5	43	7	± 0,25	4	± 0,2	6,5	7,5	1,6	23,7	27
30	30,5	31,7	48,2	8	± 0,25	6	± 0,2	9,5	10,5	1,6	42,5	30
36	36,5	37,7	58,2	10	± 0,25	6	± 0,2	10,3	11,3	1,6	68	36
(42) ²⁾³⁾	42,5	43,7	68,2	12	± 0,25	7	± 0,25	12	13	2	111	42
(48) ²⁾³⁾	49	50,5	75	12	± 0,25	7	± 0,25	12	13	2	123	48
(56) ²⁾³⁾	57	58,5	87	14	± 0,25	8	± 0,25	14	15,5	2	193	56
(64) ²⁾³⁾	65	66,5	95	14	± 0,25	8	± 0,25	14	15,5	2	218	64
(72) ²⁾³⁾	73	74,5	103	14	± 0,25	8	± 0,25	14	15,5	2	240	72
(80) ²⁾³⁾	81	82,5	111	14	± 0,25	8	± 0,25	14	15,5	2	262	80
(90) ²⁾³⁾	91	92,5	121	14	± 0,25	8	± 0,25	14	15,5	2	290	90
(100) ²⁾³⁾	101	102,5	131	14	± 0,25	8	± 0,25	14	15,5	2	318	100

- 1) It is intended to omit the sizes in brackets from the standard after a period of five years (see Explanatory notes).
 2) Test values for the spring force test as described in DIN 267 Part 26 have not as yet been specified for this nominal size.
 3) Test values for the test for permanent set as described in DIN 267 Part 26 have not as yet been specified for this nominal size.

3 Technical delivery conditions

DIN 267 Part 26 shall apply with regard to the technical delivery conditions.

Material: FSt = spring steel as specified in DIN 267 Part 26.

4 Designation

Designation of a type A or type B spring lock washer (at the manufacturer's discretion) of nominal size 8, made of spring steel (FSt)¹⁾:

Spring lock washer DIN 128 – 8 – FSt

Where a specific type is required, e.g. type A, the letter symbol denoting the type shall be included in the designation:

Spring lock washer DIN 128 – A 8 – FSt

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

1) FSt shall also apply where no material has been specified in existing documentation.

Standards referred to

DIN 267 Part 26	Fasteners; technical delivery conditions; steel spring washers for bolt/nut assemblies
DIN 4000 Part 3	Tabular layout of article characteristics for washers and lock washers
ISO 898 Part 1	Mechanical properties of fasteners; bolts, screws and studs

Previous edition

DIN 128: 04.68.

Amendments

The following amendments have been made to the April 1968 edition.

- The scope of the standard has been reduced.
- Nominal sizes 2,3 and 2,6 have been deleted.
- Dimension d_1 min. for nominal size 8 has been amended from 8,2 to 8,1 mm.
- The technical delivery conditions have been summarized in DIN 267 Part 26.
- The designation now includes a reference to the material to be used.
- The standard has been editorially revised.

Explanatory notes

By maintaining a sufficiently high preloading in a bolt/nut assembly, spring washers are designed to prevent loosening of the assembly, which may be caused, for instance, by the effect of setting. The specification of residual spring forces given in DIN 267 Part 26 has made it possible for the first time to assess the performance of spring washers.

Spring lock washers complying with the present standard are suitable for bolt/nut assemblies involving fasteners of a property class less than 8.8, whilst spring lock washers complying with DIN 127 are only to be used for fasteners of property class 5.8 or less.

The specification that spring lock washers complying with the present standard can only be used effectively for bolt/nut assemblies involving fasteners of a property class less than 8.8 reflects the current state of the art. This does not, however, rule out the manufacture of spring lock washers suitable for bolt/nut assemblies involving fasteners of property class 8.8. This has been substantiated by tests, but it is recommended that the washer manufacturer be consulted before spring lock washers are used for such type of assembly and verification required of their effectiveness on the basis of tests similar to those described in DIN 267 Part 26.

As there is no real demand for DIN 127 spring lock washers, DIN 128 washers being more suitable for the proposed application, the responsible committee has decided to withdraw DIN 127 in due course, the proposed transitional period of five years being intended to give manufacturers and users the opportunity to convert to spring lock washers complying with DIN 128.

International Patent Classification

F 16 B 39/24