UDC 621.882.54 October 1987

Spring lock washers with safety ring

DIN 6913

Federringe mit Schutzmantel

Supersedes June 1966 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 intended to withdraw this standard by 1 January 1992, since the spring lock washers it specifies are no longer required. It is recommended that spring lock washers as covered in DIN 128 should be used instead of those specified in the present standard.

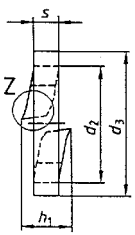
Dimensions in mm

1 Scope and field of application

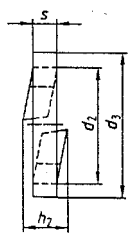
Spring lock washers covered in this standard are deemed to be spring washers designed for use for bolt/nut assemblies involving bolts of property class 5.8 or less as specified in ISO 898 Part 1. They are intended to counteract the effect of setting which results in bolt/nut assemblies working loose (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.

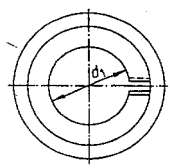
2 Dimensions

Type A, with tang ends

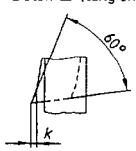


Type B, with plain ends

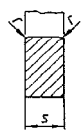




Detail Z (tang end)



Enlarged cross section of spring lock washer without safety ring



The tang ends shall be produced to dimension *k* without kinking by bending both ends in a zone extending one-tenth of the circumference from either end.

The illustrations show spring lock washers for screws with right-hand thread, the position of the tang ends being vice versa for bolts with left-hand thread.

Continued on pages 2 and 3

Nominal size	d_1 min.	d_2	d_3 max.	d_3 min.	s	h_1 max.	h_1 min.	h_2 max.	h_2 min.	k	r	Mass (7,85 kg/dm3) per 1000 units, in kg, ≈	For thread size
3 [1]	3,1	5,4	7	6,7	1,25	3	2	3	2	–	0,2	0,3	3
4	4,1	6,7	9	8,7	1,75	4,2	2,8	3,9	2,5	0,15	0,4	0,68	4
5	5,1	8,25	11	10,6	2	4,8	3,2	4,5	2,9	0,15	0,4	1,18	5
6	6,1	9,5	12	11,6	2,25	5,4	3,6	5	3,2	0,2	0,5	1,49	6
8	8,2	12,5	16	15,6	2,75	6,6	4,4	6	3,8	0,3	0,8	3,18	8
10	10,2	15	19	18,5	3	7,2	4,8	6,6	4,2	0,3	0,8	4,7	10
12	12,2	17,5	22	21,5	3,5	8,4	5,6	7,6	4,8	0,4	1,2	7,28	12
14	14,2	21	27	26,5	4,5	10,8	7,2	10	6,4	0,4	1,2	14,5	14
16	16,2	24	30	29,5	5	12	8	11,2	7	0,4	1,2	19,8	16
18	18,2	27	34	33,5	5,5	13,2	8,8	12,4	8	0,4	1,2	27,6	18
20	20,2	30	38	37,2	6,1	14,6	9,8	13,8	9	0,4	1,2	38,3	20
22	22,5	34	42	41,2	6,6	15,8	10,6	15	9,8	0,4	1,2	46,6	22
24	24,5	34	42	41,2	7,1	17	11,4	16	10,4	0,5	2	46,1	24
27	27,5	39	48	47,2	7,1	17	11,4	16	10,4	0,5	2	67,4	27
30	30,5	42	52	51	7,1	17	11,4	15,4	9,8	0,8	2	76,3	30
33	33,5	48	58	57	8,1	19,4	13	17,8	11,4	0,8	2	105	33
36	36,5	52	62	61	9,1	21,8	14,6	20,2	13	0,8	2	141	36
39 [1] [2]	39,5	56	70	69	10,1	24,2	16,2	23	14,6	0,8	2	208	39
42 [1] [2]	42,5	60	75	74	11,1	26,6	17,8	25	16,2	0,8	2	269	42

[1] Test values for the spring force test as described in DIN 267 Part 26 have not as yet been specified for this nominal size.

[2] 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 for spring lock washers made of spring steel. The technical delivery conditions for spring lock washers made of copper-zinc alloys shall be the subject of agreement.

Material: FSt = spring steel as specified in DIN 267 Part 26, or
CuSn 8 as specified in DIN 17 662 (only up to nominal size 22).
Safety ring: St = steel.
CuZn = copper-zinc alloy.

4 Designation

Designation of a type A spring lock washer of nominal size 8, made of spring steel (FSt) [1], with a steel (St) safety ring:

Spring lock washer DIN 6913 – A 8 – FSt – St

Where spring lock washers for left-hand thread bolts are required, the letter symbol LH shall be added to the designation:

Spring lock washer DIN 6913 – A 8 – LH – FSt – St

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	128	Curved spring washers and wave spring washers
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 rings
DIN	17 662	Wrought copper alloys; copper-tin alloys (tin bronze); composition
ISO	898 Part 1	Mechanical properties of fasteners; bolts, screws and studs

Previous edition

DIN 6913: 06.66.

Amendments

The following amendments have been made to the June 1966 edition.

a) The field of application has been limited.

b) A note on the period of validity of this standard has been included; see Explanatory notes.

c) The technical delivery conditions have been summarized in DIN 267 Part 2.

d) 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 in the assembly. The specification of residual spring forces in DIN 267 Part 26 has made it possible for the first time to assess the performance of spring washers.

Owing to the spring forces which may be achieved (see DIN 267 Part 26) by using spring lock washers as covered in the present standard, such washers are only suitable for bolt/nut assemblies involving bolts of property class 5.8 or less. When spring lock washers with safety ring were developed, the heat treatment methods available at the time were not able to ensure that the washers would not fracture during service. The purpose of the safety ring was to retain the fragments of the washer should it break and thus to prevent further damage occurring, particularly in the case of electrical installations. The problem has now been resolved and it is intended to withdraw this standard after a transitional period of five years. It is recommended that spring lock washers as specified in DIN 128 should be used instead of those specified in the present standard.

International Patent Classification

F 16 B 39/24