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# Square taper washers for high-strength structural bolting of steel channel sections

**DIN**  
**6918**

Scheiben, viereck, keilförmig, für HV-Schrauben  
an U-Profilen in Stahlkonstruktionen

Supersedes February 1990 edition.

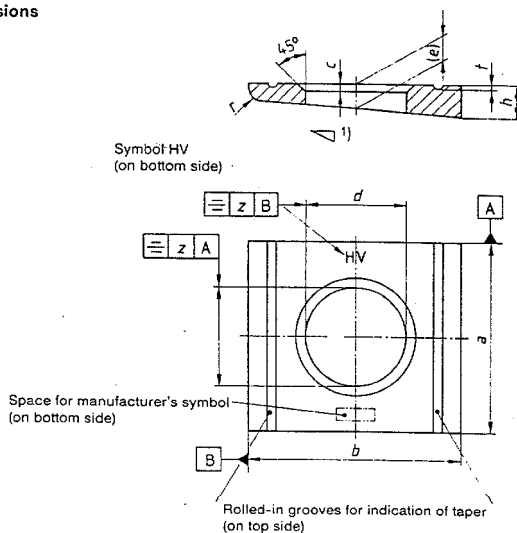
*In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.*

Dimensions in mm

## 1 Scope and field of application

Washers as specified in this standard are intended for use in GV and SL structural bolting of steel channel sections in accordance with DIN 18 800 Part 1, together with DIN 6914 bolts and DIN 6915 nuts.

## 2 Dimensions



<sup>1)</sup> Washers with an  $(8 \pm 0,5)\%$  taper shall be identified by two rolled-in grooves; those with  $(5 \pm 0,5)\%$  taper need not have grooves, but the letter A shall be added to the designation.

Continued on pages 2 and 3

Table 1.

Nominal size <sup>2)</sup>	For thread size	$d$		$a$		$b$		$c$		$e$		$h$		$r$	$f$	$z$	Approximate mass (785 kg/dm <sup>3</sup> ), per 1000 units, in kg		
		nominal size	max.	Nominal size	min.	max.	Nominal size	min.	max.	Nominal size	min.	max.							
13	M12	13	13,43	26	24	28	30	29,35	30,65	1,6	1,9	3,7	4,9	3,9	5,9	2	0,7	1,68	18,3
17	M16	17	17,43	32	29,5	34,5	36	35,2	36,8	1,6	1,9	4,45	5,9	4,9	6,9	2,4	0,8	2	31,7
21	M20	21	21,52	40	37,5	42,5	44	43,2	44,8	2	2,5	5,25	7	5,8	8,2	2,8	0,9	2	57,1
23	M22	23	23,52	44	41,5	46,5	50	49,2	50,8	2	2,5	6	8	6,8	9,2	3,2	1	2	82,8
25	M24	25	25,52	56	53	59	56	55,05	56,95	2	2,5	6,26	8,5	7,3	9,7	3,2	1	3,8	129
25A <sup>3)</sup>	M24	25	25,52	56	53	59	56	55,05	56,95	2	2,5	6,25	7,65	6,45	8,85	3,88	1	3,8	128
28	M27	28	28,52	56	53	59	56	55,05	56,95	2,5	3	6,26	8,5	7,3	9,7	3,2	1	3,8	122
28A <sup>3)</sup>	M27	28	28,52	56	53	59	56	55,05	56,95	2,5	3	6,25	7,65	6,45	8,85	3,88	1	3,8	121
31	M30	31	32	62	59	65	62	61,05	62,95	2,5	3	6,52	9	7,8	10,2	3,2	1	3,8	156
31A <sup>3)</sup>	M30	31	32	62	59	65	62	61,05	62,95	2,5	3	6,5	8,05	6,85	9,25	3,96	1	3,8	155
37	M36	37	38	68	65	71	68	67,05	68,95	3	3,5	6,68	9,4	8,2	10,6	3,2	1	3,8	182
37A <sup>3)</sup>	M36	37	38	68	65	71	68	67,05	68,95	3	3,5	7	8,7	7,5	9,9	4,24	1	3,8	191

1)  $e = h$  (nominal size) — 0,04  $b$  (nominal size) for washers with an  $(6 \pm 0,5)\%$  taper.  
2)  $e = h$  (nominal size) — 0,025  $b$  (nominal size) for washers with a  $(5 \pm 0,5)\%$  taper.  
3) Nominal size is equal to  $d_{\text{min}}$ .  
\*) — auxiliary dimension.

1)  $e = h$  (nominal size) — 0,04  $b$  (nominal size) for washers with an  $(8 \pm 0,5) \%$  taper.2)  $e = h$  (nominal size) — 0,025  $b$  (nominal size) for washers with a  $(5 \pm 0,5) \%$  taper.3) Nominal size is equal to  $d_{\text{nom}}$ .

\*) = auxiliary dimension.

### 3 Technical delivery conditions

#### 3.1 Material

Washers shall be made of steel as specified in DIN 17 200, quenched and tempered to a hardness from 295 to 350 HV 10 (e.g. C 45 steel).

#### 3.2 Surface finish

Washers shall have a bright surface finish, be free from burr, and be hot-dip galvanized as specified in DIN 267 Part 10.

#### 3.3 Acceptance inspection

Acceptance inspection shall be undertaken on the lines of DIN 267 Part 5.

The acceptable quality level, *AQL*, for the major characteristics shall be as specified in table 2.

Table 2.

Major characteristic	<i>AQL</i> value
Hole diameter, <i>d</i>	1,5
Coaxiality	1,5
Taper angle	1,5

### 4 Designation

Designation of a nominal size 21 washer for use with steel channel sections:

Washer DIN 6918 – 21

Designation of a nominal size 28 washer with a 5 % taper (A), for use with steel channel sections:

Washer DIN 6918 – 28 A

### 5 Marking

Washers shall be marked on their bottom side with the manufacturer's symbol and symbol HV.

### Standards referred to

- DIN 267 Part 5 Fasteners; technical delivery conditions; acceptance inspection (modified version of ISO 3269, 1984 edition)
- DIN 267 Part 10 Fasteners; technical delivery conditions; hot-dip galvanized components
- DIN 6914 High-strength hexagon head bolts with large widths across flats for structural steel bolting
- DIN 6915 High-strength hexagon nuts with large widths across flats for structural steel bolting
- DIN 17 200 Steels for quenching and tempering; technical delivery conditions
- DIN 18 800 Part 1 Steel structures; design and construction

### Previous editions

DIN 6918: 08.62, 12.70, 03.79, 02.90.

### Amendments

The following amendments have been made to the March 1979 edition.

- a) Limits of size are now specified.
- b) Use of materials as specified in DIN 17 200 that are equivalent with C 45 steel is now permitted.
- c) Washers are now to be quenched and tempered, as opposed to hardened (as specified before).
- d) Washers are now to be hot dip galvanized as specified in DIN 267 Part 10.
- e) Washers are now to be subjected to acceptance inspection as specified in DIN 267 Part 5.
- f) A specification regarding marking with the manufacturer's symbol has been included.
- g) Washers with a 5 % taper are now to be identified in a way other than before.
- h) The standard has been editorially revised.

### International Patent Classification

E 04 B 1/38

F 16 B 43/00