UDC 621.882.42 March 1990

Large size washers

DIN 9021

Scheiben; Außendurchmesser ≈ 3 × Gewinde-Nenndurchmesser

Supersedes July 1974 edition.

In keeping cwith 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

This standard specifies requirements for product grades A and C washers with a large outside diameter, i.e. washers with an outside diameter approximately equal to three times the nominal thread diameter of bolts with which the washers are intended to be used. The preferred application of these washers is in assemblies of hexagon head bolts and nuts with widths across flats as specified in ISO 272.

2 Dimensions

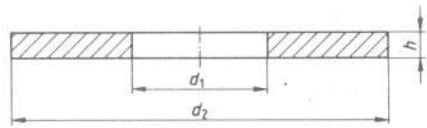

Table 1.

Nominal size	For nominal thread of diameter	Clearance hole diameter, d_1		Outside diameter, d_2		Thickness, h			Approximate mass (7,85 kg/dm³), per 1000 units, in kg
		min. = nominal size	max.	max. = nominal size	min.	Nominal size	max.	min.	
2,7	2,5	2,7	2,84	8	7,64	0,8	0,9	0,7	0,28
3,2	3	3,2	3,38	9	8,64	0,8	0,9	0,7	0,349
3,7	3,5	3,7	3,88	11	10,57	0,8	0,9	0,7	0,529
4,3	4	4,3	4,48	12	11,57	1	1,1	0,9	0,774
5,3	5	5,3	5,48	15	14,57	1,2	1,4	1	1,46
6,4	6	6,4	6,62	18	17,57	1,6	1,8	1,4	2,79
7,4	7	7,4	7,62	22	21,48	2	2,2	1,8	5,29
8,4	8	8,4	8,62	24	23,48	2	2,2	1,8	6,23
10,5	10	10,5	10,77	30	29,48	2,5	2,7	2,3	12,2
13	12	13	13,27	37	36,38	3	3,3	2,7	22,2
15	14	15	15,27	44	43,38	3	3,3	2,7	31,6
17	16	17	17,27	50	49,38	3	3,3	2,7	40,9
20	18	20	20,52	56	54,1	4	4,6	3,4	67,4
22	20	22	22,52	60	58,1	4	4,6	3,4	76,8
26	24	26	26,84	72	70,1	5	6	4	139
33	30	33	34	92	89,8	6	7	5	273
39	36	39	40	110	107,8	8	9,2	6,8	522

Continued on pages 2 and 3

3 Technical delivery conditions

Table 2.

Material [1]		Steel	Stainless steel
Mechanical properties	Hardness class	Product grade A: 140 HV Product grade C: 100 HV	140 HV
	Vickers hardness HV 10	Product grade A: 140 to 250 Product grade C: 100 to 250	140 to 250
	Material (steel group)	–	A2, F1, C1, A4 or C4
	As specified in	–	DIN 267 Part 11.
Limit deviations and geometrical tolerances	Product grade	A for sizes up to 17 and C for sizes greater than 17.	
	As specified in	DIN 522.	
Surface finish		Bright. DIN 522 shall apply with regard to surface roughness. DIN 267 Part 9 shall apply with regard to electroplating, any other types of finish being subject to agreement.	
Acceptance inspection		DIN 522 shall apply with regard to acceptance inspection.	
[1] Subject to agreement, washers may be made of non-ferrous metals or other materials.			

4 Designation

Designation of a nominal size 8,4 washer of hardness class 140 [1] HV:

Washer DIN 9021 – 8,4 – 140 HV

Where stainless steel washers are to be supplied, the steel grade as specified in DIN 267 Part 11 or the material number as specified in DIN 17 440 shall be included in the designation, e.g.:

Washer DIN 9021 – 8,4 – 140 HV – A2

or

Washer DIN 9021 – 8,4 – 140 HV – 1.4306

The standard washer type is of product grade A for nominal sizes up to and including 17 and of product grade C for nominal sizes exceeding 17.

However, where, in existing documentation, other specifications are made, both product grades will be supplied in all sizes, the product grade then being indicated in the designation, e.g.:

Washer DIN 9021 – 20 – 140 HV – A

or

Washer DIN 9021 – 20 – 140 HV – A2 – A

In this case, DIN 522 shall apply with regard to limit deviations.

The DIN 4000-3-1 tabular layout of article characteristics shall apply for washers complying with this standard.

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[1] Hardness class 140 HV (for product grade A) and 100 HV (for product grade C) shall also be used where no material or only symbol 'St' is specified in existing documentation.

Standards referred to

DIN 267 Part 9	Fasteners; technical delivery conditions; electroplated components
DIN 267 Part 11	Fasteners; technical delivery conditions; stainless and acid resistant steel components (with addenda to ISO 3506)
DIN 522	Metal washers; technical delivery conditions
DIN 4000 Part 3	Tabular layout of article characteristics for washers
DIN 17 440	Stainless steel; technical delivery conditions for plate and sheet, hot rolled strip, wire rod, drawn wire, steel bars, forgings and semi-finished products
ISO 272 : 1982	Fasteners; hexagon products; widths across flats

Previous editions

DIN 9021: 07.40, 04.43, 01.56, 07.74.

Amendments

The following amendments have been made to the July 1974 edition.

a) Nominal sizes (i.e. clearance hole diameters) 19 and 21 have been changed to 20 and 22 mm.
b) For nominal size 5,3, washer thickness 1,6 mm has been changed to 1,2 mm.
c) For nominal sizes 8,4, 13 and 15, the outside diameters have been amended.
d) Nominal sizes 26, 33 and 39 have been included.
e) Limits of size have been given on the basis of the tolerances specified.
f) Hardness classes 100 HV and 140 HV have been introduced.
g) The technical delivery conditions have been revised.
h) The standard has been editorially revised.

Explanatory notes

For washers up to size 39, the clearance hole diameter, outside diameter and washer thickness have been harmonized with the specifications given in the 1983 edition of ISO 7089*) where such were available.

International Patent Classification

F 16 B 43/00

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*) Obtainable from *Beuth Verlag GmbH (Auslandsnormenverkauf)*, Burggrafenstraße 6, D-1000 Berlin 30.