

UDC 621.882.42 : 621.882.2

December 1990

Plain washers  
for screw and washer assemblies

**DIN**  
**6902**

Scheiben für Kombi-Schrauben

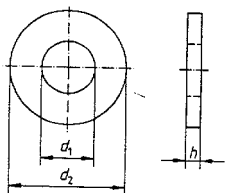
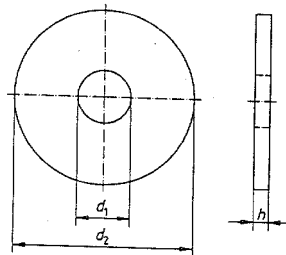
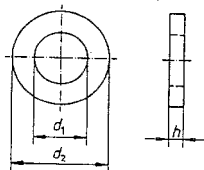
Supersedes December 1972 edition.

*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 with screw and washer assemblies as specified in DIN 6900 Parts 1 to 3.

**2 Dimensions**Type A<sup>1)</sup>Type B<sup>1)</sup>Type C<sup>2)</sup>

<sup>1)</sup> Preferably for use with hexagon head screws.

<sup>2)</sup> Preferably for use with cheese head screws, pan head screws and hexagon socket head cap screws.

Continued on pages 2 to 4

Table 1.

Nom- inal size	Clearance hole diameter, $d_1$			Outside diameter, $d_2$ <sup>1)</sup>						Thickness, $t$						Approximate mass per 1000 units, in kg		For thread size			
	min- nom- inal size	max- nom- inal size	min- nom- inal size	Type A		Type B		Type C		Type A		Type B		Type C		Type A	Type B		Type C		
				max- nom- inal size	min- nom- inal size	max- nom- inal size	min- nom- inal size	max- nom- inal size	min- nom- inal size	max- nom- inal size	min- nom- inal size	max- nom- inal size	min- nom- inal size	max- nom- inal size	min- nom- inal size					max- nom- inal size	
2.25	2.25	2.35	6	5.82	8	7.78	5	4.82	0.6	0.65	0.55	0.8	0.85	0.75	0.6	0.65	0.55	0.11	0.29	0.07	M2,5
2.75	2.75	2.85	7	6.78	9	8.78	6	5.82	0.6	0.65	0.55	0.8	0.85	0.75	0.6	0.65	0.55	0.15	0.36	0.11	M3
3.2	3.2	3.32	8	7.78	11	10.73	7	6.78	0.8	0.85	0.75	0.8	0.85	0.75	0.8	0.85	0.75	0.27	0.55	0.19	M3,5
3.6	3.6	3.72	9	8.78	12	11.73	8	7.78	0.8	0.85	0.75	1	1.06	0.94	0.8	0.85	0.75	0.34	0.81	0.25	M4
4.55	4.55	4.67	10	9.78	15	14.73	9	8.78	1	1.06	0.94	1.6	1.68	1.52	1	1.06	0.94	0.49	2.01	0.37	M5
5.5	5.5	5.62	12	11.73	18	17.73	11	10.73	1.6	1.68	1.52	1.6	1.68	1.52	1.6	1.68	1.52	1.12	2.90	0.89	M6
7.4	7.4	7.55	16	15.73	24	23.67	15	14.73	2	2.09	1.91	2	2.09	1.91	2	2.09	1.91	2.48	6.43	2.10	M8
9.3	9.3	9.52	20	19.67	30	29.67	18	17.73	2.5	2.6	2.4	2.5	2.6	2.4	2.5	2.6	2.4	4.83	12.54	3.66	M10
11	11	11.27	24	23.67	37	36.61	20	19.67	3	3.11	2.89	3	3.11	2.89	3	3.11	2.89	8.41	23.08	5.16	M12

<sup>1)</sup> The outside diameter complies with the relevant specifications for general purpose washers given in ISO 7089:1983, ISO 7092:1983 and ISO 7093:1983.

### 3 Technical delivery conditions

Table 2.

Mechanical properties	Material	Steel: St 2 K 60
	As specified in	DIN 1624.
	Hardness class	200 HV
	Vickers hardness HV 10	200 to 250
Geometrical tolerances	Product grade	F
	As specified in	DIN 522.
Surface condition	Bright. DIN 267 Part 9 shall apply with regard to electroplating and DIN 522 (product grade A), with regard to surface roughness.	
Acceptance inspection	DIN 522 shall apply with regard to acceptance inspection.	

### 4 Designation

Designation of a type A washer of nominal size 9,3 and hardness class 200 HV<sup>1)</sup>:

Washer DIN 6902 – A 9,3 – 200 HV

The DIN 4000-3-1 tabular layout of article characteristics shall apply for washers as covered in this standard.

The specifications of this standard relevant to the CAD standard parts file have been summarized in DIN V 4001 Part 15.

### Appendix A

#### Additional washers (6,5) for replacement and maintenance purposes

Thread size M 7 is not included in the international range of threads for screws and nuts and its further use is deprecated. However, with regard to existing documentation and for meeting replacement and maintenance requirements, washers for use with M 7 screw and washer assemblies may still be ordered on the basis of DIN 6902, December 1972 edition. The dimensions of such washers shall be as specified in the table below.

Table A.1.

Clearance hole diameter, $d_1$	For thread size	$d_2$		$s^1)$				$t$	Approximate mass (7,85 kg/dm <sup>3</sup> ), per 1000 units, in kg	
		h13		Type A		Type B			Type A	Type B
		Type A	Type B	Limit deviations	Limit deviations	Limit deviations	Limit deviations		Type A	Type B
H12										
6,5	M7	14	21	1,6	± 0,08	2	± 0,09	0,3	1,52	4,92

<sup>1)</sup> In this standard,  $t_1$  has been substituted for  $s$ .

<sup>1)</sup> Hardness class 200 HV shall also be used where no material or only 'St' is specified in existing documentation.

Page 4 DIN 6902

### Standards referred to

DIN 267 Part 9	Fasteners; technical delivery conditions; electroplated parts
DIN 522	Metal washers; technical delivery conditions
DIN 1624	Steel flat products; cold reduced mild unalloyed steel strip in widths not exceeding 650 mm; technical delivery conditions
DIN 4000 Part 3	Tabular layouts of article characteristics for washers
DIN V 4001 Part 15	CAD standard parts file; specification for geometry and parameters; plain and curved washers
DIN 6900 Part 1	Screw and washer assemblies; coarse threaded screws with captive plain washer
DIN 6900 Part 2	Screw and washer assemblies; coarse threaded screws with captive wave spring washer
DIN 6900 Part 3	Screw and washer assemblies; coarse threaded screws with captive curved spring lock washer
ISO 7089:1983*)	Plain washers, normal series; product grade A
ISO 7092:1983*)	Plain washers, small series; product grade A
ISO 7093:1983*)	Plain washers, large series; product grades A and C

### Previous editions

DIN 6902: 09.66, 12.72.

### Amendments

The following amendments have been made to the December 1972 edition.

- a) Specifications for type C washers are now included.
- b) The dimensions of washers of nominal size 6,5 (for thread size M 7) have been specified in an appendix.
- c) The specifications for diameter  $d_2$  for nominal sizes 2,25, 5,5, 7,4, 9,3 (type A) and 7,4 and 11 (type B) have been amended.
- d) Limits of size have been specified.
- e) Material and hardness class have been amended.
- f) The geometrical tolerances shall be those specified for product grade F instead of grade A (cf. DIN 522).
- g) The designation has been amended.
- h) The standard has been editorially revised.

### International Patent Classification

F 16 B 43/00

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