DIN6902-90 (1728x2273x2 tiff)

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UDC 621.882.42 : 621.882.2

ſ		December 199
	Plain washers for screw and washer assemblies	<u>DIN</u> 6902
Scheiben für K	ombi-Schrauben Supersedes (December 1972 edition.
In keeping with has been used	current practice in standards published by the International Organization for Standard throughout as the decimal marker.	dization (ISO), a comma
	Dimensions in mm	
1 Scope an Washers as spe to 3.	nd field of application cified in this standard are intended for use with screw and washer assemblies as speci	fied in DIN 6900 Parts 1
2 Dimensio	ons	
	Туре А:) Туре В:)	
	Type C²)	
¹) Preferably for ²) Preferably for	use with hexagon head screws. use with cheese head screws, pan head screws and hexagon socket head cap screw	ws.
	Conti	nued on pages 2 to 4

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Type B Type C Approximate mass (355 0.8) Type C nin, inal size max nin nan. inal ppe A jype B jype C 0,55 0,8 0,75 0,6 0,65 0,55 0,11 0,29 0,07 0,75 0,8 0,85 0,75 0,8 0,85 0,13 0,25 0,19 0,75 1 1,06 0,94 0,85 0,75 0,24 0,36 0,17 0,75 1 1,06 0,94 0,81 1,264 0,37 0,37 1,52 1,6 1,52 <th>Type A Type B Type C Approximate mass (MS-Syddm) Approximate mass Approximate mass 0,655 0,86 0,75 0,65 0,65 0,55 0,19 0,25 0,19 0,25 0,19 0,37 10,32 10,37 10,32</th> <th>Clearance Outside diameter, d_2^{1}</th> <th></th> <th>Outside diam</th> <th>Outside diam</th> <th>tside diam</th> <th>Ē</th> <th>eter, d</th> <th>(12</th> <th></th> <th></th> <th></th> <th></th> <th>μ</th> <th>Thickness, h</th> <th>ų</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Type A Type B Type C Approximate mass (MS-Syddm) Approximate mass Approximate mass 0,655 0,86 0,75 0,65 0,65 0,55 0,19 0,25 0,19 0,25 0,19 0,37 10,32 10,37 10,32	Clearance Outside diameter, d_2^{1}		Outside diam	Outside diam	tside diam	Ē	eter, d	(12					μ	Thickness, h	ų							
min. nom- inal max. min. nom- inal max. min. per 1000 units, in kg 0,55 0,8 0,85 0,75 0,65 0,55 0,11 0,29 0,07 0,55 0,8 0,86 0,55 0,15 0,55 0,11 0,29 0,01 0,75 0,8 0,75 0,65 0,55 0,11 0,29 0,01 0,75 0,8 0,85 0,75 0,65 0,55 0,13 0,25 0,11 0,75 0,8 0,85 0,75 0,85 0,75 0,27 0,55 0,19 0,75 1 1,06 0,94 0,8 0,85 0,75 0,75 0,75 0,75 0,75 0,94 1,6 1,66 1,52 1 1,06 0,34 0,31 0,37 1,52 1,6 1,68 1,52 1 1,06 0,39 2,01 0,37 1,52 1,6 1,68	000 units, in kg Type B Type C 0,29 0,07 0,255 0,19 0,555 0,19 0,557 0,19 0,51 0,37 2,01 0,37 2,01 0,37 2,01 0,37 2,01 0,37 2,90 0,89 6,43 2,10 12,54 3,66 12,54 3,66 23,08 5,16	d, Type A Type B Type C	Type A Type B	Type B	Type B			Type C	0 0		•	Type A			Type B			Type C		Appr (7,	oximate n 85 kg/dm	nass),	For
Indation Indation Transion Transion Type A Type B Type B Type C Type C Type B Type C <th< th=""><th>Type B Type C 0,29 0,07 0,26 0,11 0,35 0,19 0,55 0,19 0,81 0,25 2,01 0,37 2,90 0,89 6,43 2,10 12,54 3,66 23,08 5,16</th><th>max. max. ≡ min. max. ≡ min. max. = min. nom- nom- nom-</th><th>max max.≓ min, max.≡ min, max.≡ min, nax.</th><th>min, max. = min, max. = min, nom-</th><th>min, max. = min, max. = min, nom-</th><th>min. max. = min. nom-</th><th>min. max. = min. nom-</th><th>ć.</th><th>ć.</th><th>C .</th><th>-mou</th><th>max.</th><th>min.</th><th>-mon</th><th>тах.</th><th>min.</th><th>-mon</th><th>max.</th><th>min.</th><th>per 1</th><th>000 units,</th><th>in kg</th><th>size</th></th<>	Type B Type C 0,29 0,07 0,26 0,11 0,35 0,19 0,55 0,19 0,81 0,25 2,01 0,37 2,90 0,89 6,43 2,10 12,54 3,66 23,08 5,16	max. max. ≡ min. max. ≡ min. max. = min. nom- nom- nom-	max max.≓ min, max.≡ min, max.≡ min, nax.	min, max. = min, max. = min, nom-	min, max. = min, max. = min, nom-	min. max. = min. nom-	min. max. = min. nom-	ć.	ć.	C .	-mou	max.	min.	-mon	тах.	min.	-mon	max.	min.	per 1	000 units,	in kg	size
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0,75 1 106 0,94 0,8 0,85 0,75 0,34 0,81 0,25 0,94 1,6 1,56 1,52 1 1,06 0,94 0,49 2,01 0,37 1,52 1,6 1,52 1,6 1,66 1,52 1,12 2,90 0,89 1,52 1,6 1,52 1,6 1,66 1,52 1,12 2,90 0,89 1,91 2 2,09 1,91 2,09 1,93 2,10 1,91 2 2,09 1,91 2,30 1,93 2,10 2,4 2,5 2,6 2,4 2,5 2,6 4,83 12,54 3,66 2,89 3 3,11 2,89 8,41 2,308 5,16	0.81 0.25 2.01 0.37 2.01 0.37 2.90 0.89 6.43 2.10 12.54 3.66 23.08 5.16	3.2 3.32 8 7,78 11 10,73 7 6,78	3.32 8 7.78 11 10.73 7	8 7,78 11 10,73 7	11 10,73 7	10,73 7	2	7 6,78	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
0.94 1.6 1.68 1.52 1 1.06 0.94 0.49 2.01 0.37 1.52 1.6 1.52 1.6 1.68 1.52 1.12 2.90 0.49 1.52 1.6 1.52 1.68 1.52 1.12 2.90 0.89 1.91 2 2.09 1.91 2 2.09 1.89 5.16 1.91 2 2.09 1.91 2 2.94 6.43 2.10 2.4 2.5 2.6 2.4 2.5 2.6 3.6 3.6 2.4 2.5 2.6 2.4 2.5 2.6 3.6 3.6 2.89 3.11 2.89 3.11 2.89 3.11 2.308 5.16	2.01 0.37 2.90 0.89 6.43 2.10 12.54 3.66 23.08 5.16	3.6 3.72 9 8.78 12 11.73 8 7.78	3.72 9 8.78 12 11.73 8	9 8.78 12 11.73 8	12 11.73 8	11.73 8	æ		7,78	L	0,8	0,85	0,75	-	1,06	0,94	8.0 B	0,85	0,75	0,34	0,81	0,25	M4
1,52 1,6 1,68 1,52 1,12 2,90 0,89 1,91 2 2,09 1,91 2 2,09 1,91 2 2,10 2,4 2,5 2,6 1,91 2 2,09 1,91 2,48 6,43 2,10 2,4 2,5 2,6 2,4 2,5 2,6 3,66 2,10 2,10 2,10 2,4 2,5 2,6 2,4 2,5 2,6 3,64 3,66 2,9 3,11 2,89 3,11 2,89 8,41 2,308 5,16	2.90 0,89 6,43 2,10 12.54 3,66 23,08 5,16	4.55 4.55 4.67 10 9.78 15 14.73 9 8.78	4.67 10 9.78 15 14.73 9	9,78 15 14,73 9	15 14,73 9	14,73 9	6	-	8,78	1	-	1,06	0,94	1,6	1,68	1,52	-	1,06	0,94	0,49	2,01	0,37	M5
1,91 2 2,09 1,91 2 2,09 1,91 2,48 6,43 2,10 2,4 2,5 2,6 2,4 2,5 2,6 3,66 3,66 2,4 2,5 2,6 2,4 2,5 2,6 3,66 3,66 2,69 3 3,11 2,89 8,41 2,308 5,16	6,43 2,10 12,54 3,66 23,08 5,16	5.5 5.62 12 11.73 18 17.73 11 10.73	5.62 12 11.73 18 17.73 11	11.73 18 17.73 11	18 17,73 11	17,73 11	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	9W
2,4 2,5 2,6 2,4 2,5 2,6 2,4 4,83 12,54 3,66 2,89 3 3,11 2,89 3 3,11 2,89 8,41 23,08 5,16	12,54 3,66 23,08 5,16	7.4 7.55 16 15,73 24 23,67 15 14,73	16 15,73 24 23,67 15	15,73 24 23,67 15	24 23,67 15	23,67 15	15		14,73		2	2,09	1,91	N	2,09	1,91	2	2,09	1,91	2,48	6,43	2,10	M8
2,89 3 3,11 2,89 3 3,11 2,89 8,41 23,08 5,16	23,08 5,16	9.3 9.52 20 19.67 30 29.67 18 17.73	9.52 20 19,67 30 29,67 18	19,67 30 29,67 18	30 29,67 18	29,67 18	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
	urpose washers given in ISO 7089 :1983, ISO 7092 :1983 and ISO 7093 1983.	11 11.27 24 23,67 37 36,61 20 19,67	24 23,67 37 36,61 20	24 23,67 37 36,61 20	37 36,61 20	36,61 20	20		19'61		ю 1	3,11	2,89	ŝ	3,11	2,89	e	3,11	2,89	8,41	23,08	5,16	M12

Table 1.

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3 Technical delivery conditions

Table 2.

	Material	Steel: St 2 K 60
Mechanical	As specified in	. DIN 1624.
properties	Hardness class	200 HV
	Vickers hardness HV 10	200 to 250
Geometrical	Product grade	F
tolerances	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 inspe	stion	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 HV1):

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	a h'	-	s') Type A Type B				t	Approxim (7,85 kg per 100 in	g∕dm³),
H12		Type A	Туре В		Limit deviations		Limit deviations		Type A	Туре В
6,5	M7	14	21	1,6	± 0.08	2	± 0,09	0,3	1,52	4,92

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

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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 d₂ 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.