ACCEPTANCE NOTICE

This non-Government document was adopted on 20 November 1981 and is approved for use by the DoD. The indicated industry group has furnished the clearance required by existing regulations. Copies of the document are stocked by the DoD Single Stock Point, Naval Publications and Forms Center, Philadelphia, PA 19120, for issue to DoD activities only. Contractors and Industry groups must obtain copies directly from:

The American Society of Mechanical Engineers
United Engineering Center, 345 E. 47th Street
New York, NY 10017 or

The American National Standards Institute
1430 Broadway, New York, NY 10018

Title of Document: Plain Washers

ANSI Document No.: ANSI B18.22.1-1965(R 1981)

Date of Specific Issue Adopted: 20 September 1965(R 1981)

Releasing Industry Group: The American Society of Mechanical Engineers

Custodians:
Army - AR
Navy - SH
Air Force - 99

Military Coordinating Activity:
Army - AR

(Project 5310-1139)

Review Activities:
Army - AV, ER, CR, EA
Navy - AS, MC
DLA - IS

User Activities:
Army - AT, ME
Navy - OS

Civil Agencies:
GSA-FSS

NOTICE: When reaffirmation, amendment, revision, or cancellation of this standard is initially proposed, the industry group responsible for this standard shall inform the Military Coordinating Activity of the proposed action and request their participation.

THIS DOCUMENT CONTAINS 1 PAGES.

FSC 5310

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

PROBLEM HARD COPY

AMERICAN NATIONAL STANDARD

PLAIN WASHERS

ANSI B18.22.1 - 1965 (R 1975)

(REAFFIRMATION AND REDESIGNATION
OF ASA B27.2-1965)

REAFFIRMED 1981

REAFFIRMED 1990

FOR CURRENT COMMITTEE PERSONNEL
PLEASE SEE ASME MANUAL AS-11

REAFFIRMED 1998

FOR CURRENT COMMITTEE PERSONNEL
PLEASE SEE ASME MANUAL AS-11

Sponsors

Society of Automotive Engineers
The American Society of Mechanical Engineers

Published by

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
United Engineering Center 345 East 47th Street New York, N. Y. 10017

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

ANSI B18.22.1-1965(R1981)
20 November 1981

ACCEPTANCE NOTICE

This non-Government document was adopted on 20 November 1981 and is approved for use by the DoD. The indicated industry group has furnished the clearance required by existing regulations. Copies of the document are stocked by the DoD Single Stock Point, Naval Publications and Forms Center, Philadelphia, PA 19120, for issue to DoD activities only. Contractors and Industry groups must obtain copies directly from:

The American Society of Mechanical Engineers
United Engineering Center, 345 E. 47th Street
New York, NY 10017

or

The American National Standards Institute
1430 Broadway, New York, NY 10018

Title of Document: Plain Washers
ANSI Document No. ANSI B18.22.1-1965 (R1981)
Date of Specific Issue Adopted: 20 September 1965 (R1981)
Releasing Industry Group: The American Society of Mechanical Engineers

Custodians:
Army – AR
Navy – SH
Air Force - 99

Military Coordinating Activity:
Army – AR
(Project 5310-1139)

Review Activities:
Army – AV, ER, CR, EA
Navy – AS, MC
DLA – IS

User Activities:
Army – AT, ME
Navy – OS

Civil Agencies:
GSA-FSS

NOTICE: When reaffirmation, amendment, revision, or cancellation of this standard is initially proposed, the industry group responsible for this standard shall inform the Military Coordinating Activity of the proposed action and request their participation.

FSC 5310

No part of this document may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Copyright, © , 1965, by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
Printed in U.S.A.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS

Not for Resale

Foreword

Responding to the request of the U.S. War Department, ASA Sectional Committee B27 on Standardization of Plain and Lock Washers was organized August, 1925, with the Society of Automotive Engineers and The American Society of Mechanical Engineers as joint sponsors. Since 1950 this committee has been known as Sectional Committee on Standardization of Washers and Machine Rings.

Subcommittee 1 on Plain Washers was appointed in May, 1928. A proposed standard submitted by the subcommittee in October, 1932, was revised after circulation for criticism and comment. A second revision of the proposed standard was prepared and distributed in May, 1935. The third and last revision of the proposal was referred to the sectional committee but did not receive the vote necessary for recommending its approval as an American Standard.

From 1937 until 1946 the Subcommittee 1 activity was dormant, owing in part to industry preoccupation with the war effort and in part to sectional committee concentration on the development of American Standards for lock washers, – there being some resistance to the concurrent development of both projects.

In 1946 the Subcommittee 1 project was reactivated and in December of that year a new proposal for an American Standard was approved at a meeting of the sectional committee subject to confirming approval by letter ballot vote of the sectional committee. As the proposal received an overwhelming vote of approval in the letter ballot canvass, the sectional committee at a meeting in December, 1948, ordered its referral to the sponsor societies. It was subsequently approved by the sponsor societies and by the American Standards Association, and officially designated as an American Standard on August 31, 1949.

When the standard was brought up for triennial review it was decided to revise it editorially to include notes covering general applications, material, thickness, and defects which were inadvertently omitted from the 1949 original printing. A proposed revision dated June 1952, was approved by letter ballot vote of the sectional committee, sponsors, and American Standards Association. Official designation as an American Standard was given March 30, 1953.

Subsequent to publication of the 1953 issue certain changes and inclusion of an additional series of washers were proposed. A proposed revision dated February 1956 was approved by letter ballot vote of the Sectional Committee sponsors and the American Standards Association. Official designation as an American Standard was given on August 5, 1958.

Following issuance of the 1958 standard, Subcommittee 1 continued to refine the specifications for plain washers. Several meetings resulted in adjustment of the tolerances for inside and outside diameters to conform with good commercial stamping practices and the application of the same tolerances to both Type A and Type B washers. Also, to provide better guidance for users, it was agreed to tabulate the preferred sizes of Type A washers separately. A proposed revision dated November 1963, was circulated for simultaneous letter ballot approval of Subcommittee 1 and the Sectional Committee on November 18, 1963. All disapprovals and comments were resolved by circulation of suggested dispositions on February 12, 1965. The proposal was subsequently approved by the sponsor organizations and the American Standards Association and granted formal recognition as an American Standard on September 20, 1965.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

B27 Standardization of Washers and Machine Rings

R. P. Trowbridge, *Chairman,* Director, Engineering Standards Section, Engineering Staff, General Motors Technical Center, Warren, Michigan 48090

Personnel of Subcommittee No. 1 on Plain Washers

Perry House, *Chairman,* Delco Remy Division, General Motors Corp., Anderson, Indiana 46011
S. J. Adamek, Pheoll Mfg. Company, 5700 Roosevelt Road, Chicago, Illinois 60650
R. B. Belford, Industrial Fasteners Institute, 1517 Terminal Tower, Cleveland, Ohio 44113
V. F. Bohman, (Alternate to Mr. Van Horn), Bell Telephone Laboratories, Inc., 463 West St., New York, New York 10014
W. F. Borges, Wrought Washer Mfg. Co., 2100 South Bay St., Milwaukee, Wisconsin
F. J. Borowsky, President, George K. Garrett Division, MSL Industries, Inc., Torresdale Ave. @ Tolbut St., Philadelphia, Pennsylvania 19136
J. A. Boxall, Engineering Research, Ford Motor Co., P.O. Box 2053, Dearborn, Michigan
Bureau of Ships, Code 708C, Department of the Navy, Washington, D.C. 20360
C. P. Coldren, Reliance Division, Eaton Mfg. Company, Massillon, Ohio 44646
G. W. DeLoof, General Projects, Engineering Department, Fisher Body Division, General Motors Corp., Warren, Michigan 48090
R. C. Engelmann, Rock Island Arsenal, Rock Island, Illinois 61202
J. Freedman, (Alternate to Mr. Borowsky), George K. Garrett Division MSL Industries, Inc., Torresdale Ave. @ Tolbut St., Philadelphia, Pennsylvania 19136
A. L. Hager, C. Hager & Sons Hinge Mfg. Co., 139 Victor Street, St. Louis, Missouri 63104
W. M. Hanneman, 108 Spruce Lane, Hillsmere Shores, Annapolis, Maryland
H. P. Hopp, H. K. Metal Craft Mfg. Co., 35 Industrial Road, P.O. Box 275, Lodi, New Jersey
S. P. Hull, (Alternate to Mr. Hopp), H. K. Metal Craft Mfg. Co., 35 Industrial Road, P.O. Box 275, Lodi, New Jersey
T. P. Hurst, Shakeproof Division, Illinois Tool Works, St. Charles Road, Elgin, Illinois 60120
F. V. Kupchak, Manager, Corporate Standards 501–3Y58A, Westinghouse Electric Corporation, R&D Center, Pittsburgh, Pennsylvania 15235
C. B. Lanman, The Ohio Nut & Washer Co., Minge Junction, Ohio
J. B. Levy, Engineering Services, General Electric Company, 1 River Road, Schenectady, New York 12305
S. Roberts, Otis Elevator Company, 260 Eleventh Avenue, New York, New York 10001
K. G. Roth, Engineering Division, Mack Trucks, Inc., 601 S. Tenth St., Allentown, Pennsylvania
R. F. Scherer, (Alternate to Mr. Engelmann), Rock Island Arsenal, Rock Island, Illinois 61202
C. W. Stockwell, International Harvester Co., 7 South 600 County Line Rd., Hinsdale, Illinois 60521
R. H. Van Horn, Bell Telephone Laboratories, Inc., 463 West Street, New York, New York 10014
C. J. Walters, The Master Products Co., 6400 Park Avenue, S.E., Cleveland 5, Ohio
C. M. Wright, Helical Washer Institute, 7608 Sweetbriar Road, Route #1, Orchard Lake, Michigan

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

AMERICAN STANDARD

Plain Washers

INTRODUCTORY NOTES

1.1 Scope

1.1.1 This standard covers two types of general purpose plain washers designated as Type A and Type B.

1.1.2 The inclusion of dimensional data in this standard is not intended to imply that all of the products described herein are production items. Consumers are requested to consult with manufacturers conceming lists of stock production sizes.

1.2 Types of Washers

1.2.1 Type A. The Type A plain washers were originally developed in a light, medium, heavy, and extra heavy series with proportions that were related to the dimensions of bolt heads and nuts principally to minimize embedding and to aid torquing. It is intended that these series designations should be discontinued and that the washers should be identified by their nominal dimensions. Washer selection should be made preferably from the preferred sizes shown in Table 1A. In the event the desired Type A washer is not listed in Table 1A, reference may be made to Table 1B.

1.2.2 Type B. The Type B plain washers are available in a narrow, regular and wide series with proportions designed to fulfill the customary purpose of distributing load over larger areas of lower strength materials. Suitable washer selection can be made by referring in Table 2 to the nominal screw or bolt size and selecting the appropriate width series for the application.

1.3 Dimensions

All dimensions in this standard are given in inches, unless otherwise stated.

1.4 Materials

1.4.1 Plain washers shall be made of ferrous or non-ferrous metal, plastic or other material as specified. The tolerances indicated in the tables are intended for metal washers only.

1.4.2 If hardened washers are required, they are available as a stamped product without break or gap and as a flat coiled product with gap narrow enough to prevent tangling. Suitable mechanical properties for hardened stamped plain washers are covered by ASTM specification A-325. Applicable properties for plain washers coiled from wire shall be AISI 1060 steel, or equivalent, heat treated to a hardness of Rockwell C 45-53.

1.5 Quality

Washers shall be free from burrs, loose scale, sharp edges and all other defects that might affect their serviceability.

1.6 Terminology

For definitions of terms relating to washers or features thereof used in this standard, refer to the American Standard Glossary of Terms for Mechanical Fasteners, ASA B18.12.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

AMERICAN STANDARD

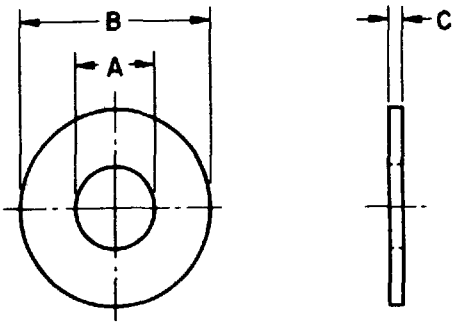


Table 1A Dimensions of Preferred Sizes of Type A Plain Washers**

Nominal Washer Size***			Inside Diameter A			Outside Diameter B			Thickness C		
			Basic	Tolerance		Basic	Tolerance		Basic	Max	Min
				Plus	Minus		Plus	Minus			
—	—		0.078	0.000	0.005	0.188	0.000	0.005	0.020	0.025	0.016
—	—		0.094	0.000	0.005	0.250	0.000	0.005	0.020	0.025	0.016
—	—		0.125	0.008	0.005	0.312	0.008	0.005	0.032	0.040	0.025
No. 6	0.138		0.156	0.008	0.005	0.375	0.015	0.005	0.049	0.065	0.036
No. 8	0.164		0.188	0.008	0.005	0.438	0.015	0.005	0.049	0.065	0.036
No. 10	0.190		0.219	0.008	0.005	0.500	0.015	0.005	0.049	0.065	0.036
3/16	0.188		0.250	0.015	0.005	0.562	0.015	0.005	0.049	0.065	0.036
No. 12	0.216		0.250	0.015	0.005	0.562	0.015	0.005	0.065	0.080	0.051
1/4	0.250	N	0.281	0.015	0.005	0.625	0.015	0.005	0.065	0.080	0.051
1/4	0.250	W	0.312	0.015	0.005	0.734*	0.015	0.007	0.065	0.080	0.051
5/16	0.312	N	0.344	0.015	0.005	0.688	0.015	0.007	0.065	0.080	0.051
5/16	0.312	W	0.375	0.015	0.005	0.875	0.030	0.007	0.083	0.104	0.064
3/8	0.375	N	0.406	0.015	0.005	0.812	0.015	0.007	0.065	0.080	0.051
3/8	0.375	W	0.438	0.015	0.005	1.000	0.030	0.007	0.083	0.104	0.064
7/16	0.438	N	0.469	0.015	0.005	0.922	0.015	0.007	0.065	0.080	0.051
7/16	0.438	W	0.500	0.015	0.005	1.250	0.030	0.007	0.083	0.104	0.064
1/2	0.500	N	0.531	0.015	0.005	1.062	0.030	0.007	0.095	0.121	0.074
1/2	0.500	W	0.562	0.015	0.005	1.375	0.030	0.007	0.109	0.132	0.086
9/16	0.562	N	0.594	0.015	0.005	1.156*	0.030	0.007	0.095	0.121	0.074
9/16	0.562	W	0.625	0.015	0.005	1.469*	0.030	0.007	0.109	0.132	0.086
5/8	0.625	N	0.656	0.030	0.007	1.312	0.030	0.007	0.095	0.121	0.074
5/8	0.625	W	0.688	0.030	0.007	1.750	0.030	0.007	0.134	0.160	0.108
3/4	0.750	N	0.812	0.030	0.007	1.469	0.030	0.007	0.134	0.160	0.108
3/4	0.750	W	0.812	0.030	0.007	2.000	0.030	0.007	0.148	0.177	0.122
7/8	0.875	N	0.938	0.030	0.007	1.750	0.030	0.007	0.134	0.160	0.108
7/8	0.875	W	0.938	0.030	0.007	2.250	0.030	0.007	0.165	0.192	0.136
1	1.000	N	1.062	0.030	0.007	2.000	0.030	0.007	0.134	0.160	0.108
1	1.000	W	1.062	0.030	0.007	2.500	0.030	0.007	0.165	0.192	0.136
1 1/8	1.125	N	1.250	0.030	0.007	2.250	0.030	0.007	0.134	0.160	0.108
1 1/8	1.125	W	1.250	0.030	0.007	2.750	0.030	0.007	0.165	0.192	0.136
1 1/4	1.250	N	1.375	0.030	0.007	2.500	0.030	0.007	0.165	0.192	0.136
1 1/4	1.250	W	1.375	0.030	0.007	3.000	0.030	0.007	0.165	0.192	0.136
1 3/8	1.375	N	1.500	0.030	0.007	2.750	0.030	0.007	0.165	0.192	0.136
1 3/8	1.375	W	1.500	0.045	0.010	3.250	0.045	0.010	0.180	0.213	0.153
1 1/2	1.500	N	1.625	0.030	0.007	3.000	0.030	0.007	0.165	0.192	0.136
1 1/2	1.500	W	1.625	0.045	0.010	3.500	0.045	0.010	0.180	0.213	0.153
1 5/8	1.625		1.750	0.045	0.010	3.750	0.045	0.010	0.180	0.213	0.153
1 3/4	1.750		1.875	0.045	0.010	4.000	0.045	0.010	0.180	0.213	0.153
1 7/8	1.875		2.000	0.045	0.010	4.250	0.045	0.010	0.180	0.213	0.153
2	2.000		2.125	0.045	0.010	4.500	0.045	0.010	0.180	0.213	0.153
2 1/4	2.250		2.375	0.045	0.010	4.750	0.045	0.010	0.220	0.248	0.193
2 1/2	2.500		2.625	0.045	0.010	5.000	0.045	0.010	0.238	0.280	0.210
2 3/4	2.750		2.875	0.065	0.010	5.250	0.065	0.010	0.259	0.310	0.228
3	3.000		3.125	0.065	0.010	5.500	0.065	0.010	0.284	0.327	0.249

*The 0.734 in., 1.156 in., and 1.469 in. outside diameters avoid washers which could be used in coin operated devices.

**Preferred sizes are for the most part from series previously designated "Standard Plate" and "SAE." Where common sizes existed in the two series, the SAE size is designated "N" (narrow) and the Standard Plate "W" (wide). These sizes as well as all other sizes of Type A Plain Washers are to be ordered by ID, OD, and thickness dimensions.

***Nominal washer sizes are intended for use with comparable nominal screw or bolt sizes.

Additional selected sizes of Type A Plain Washers are shown in Table 1B.

See Introductory Notes on Page 5.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

PLAIN WASHERS

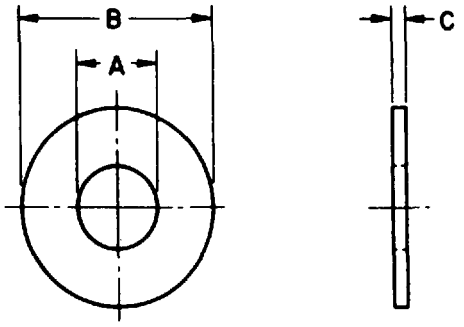


Table 1B Dimensions of Additional Selected Sizes of Type A Plain Washers

Inside Diameter A			Outside Diameter B			Thickness C		
Basic	Tolerance		Basic	Tolerance		Basic	Max	Min
	Plus	Minus		Plus	Minus			
0.094	0.000	0.005	0.219	0.000	0.005	0.020	0.025	0.016
0.125	0.000	0.005	0.250	0.000	0.005	0.022	0.028	0.017
0.156	0.008	0.005	0.312	0.008	0.005	0.035	0.048	0.027
0.172	0.008	0.005	0.406	0.015	0.005	0.049	0.065	0.036
0.188	0.008	0.005	0.375	0.015	0.005	0.049	0.065	0.036
0.203	0.008	0.005	0.469	0.015	0.005	0.049	0.065	0.036
0.219	0.008	0.005	0.438	0.015	0.005	0.049	0.065	0.036
0.234	0.008	0.005	0.531	0.015	0.005	0.049	0.065	0.036
0.250	0.015	0.005	0.500	0.015	0.005	0.049	0.065	0.036
0.266	0.015	0.005	0.625	0.015	0.005	0.049	0.065	0.036
0.312	0.015	0.005	0.875	0.015	0.007	0.065	0.080	0.051
0.375	0.015	0.005	0.734*	0.015	0.007	0.065	0.080	0.051
0.375	0.015	0.005	1.125	0.015	0.007	0.065	0.080	0.051
0.438	0.015	0.005	0.875	0.030	0.007	0.083	0.104	0.064
0.438	0.015	0.005	1.375	0.030	0.007	0.083	0.104	0.064
0.500	0.015	0.005	1.125	0.030	0.007	0.083	0.104	0.064
0.500	0.015	0.005	1.625	0.030	0.007	0.083	0.104	0.064
0.562	0.015	0.005	1.250	0.030	0.007	0.109	0.132	0.086
0.562	0.015	0.005	1.875	0.030	0.007	0.109	0.132	0.086
0.625	0.015	0.005	1.375	0.030	0.007	0.109	0.132	0.086
0.625	0.015	0.005	2.125	0.030	0.007	0.134	0.160	0.108
0.688	0.030	0.007	1.469*	0.030	0.007	0.134	0.160	0.108
0.688	0.030	0.007	2.375	0.030	0.007	0.165	0.192	0.136
0.812	0.030	0.007	1.750	0.030	0.007	0.148	0.177	0.122
0.812	0.030	0.007	2.875	0.030	0.007	0.165	0.192	0.136
0.938	0.030	0.007	2.000	0.030	0.007	0.165	0.192	0.136
0.938	0.030	0.007	3.375	0.045	0.010	0.180	0.213	0.153
1.062	0.030	0.007	2.250	0.030	0.007	0.165	0.192	0.136
1.062	0.045	0.010	3.875	0.045	0.010	0.238	0.280	0.210
1.250	0.030	0.007	2.500	0.030	0.007	0.165	0.192	0.136
1.375	0.030	0.007	2.750	0.030	0.007	0.165	0.192	0.136
1.500	0.045	0.010	3.000	0.045	0.010	0.180	0.213	0.153
1.625	0.045	0.010	3.250	0.045	0.010	0.180	0.213	0.153
1.688	0.045	0.010	3.500	0.045	0.010	0.180	0.213	0.153
1.812	0.045	0.010	3.750	0.045	0.010	0.180	0.213	0.153
1.938	0.045	0.010	4.000	0.045	0.010	0.180	0.213	0.153
2.062	0.045	0.010	4.250	0.045	0.010	0.180	0.213	0.153

***The 0.734 in. and 1.469 in. outside diameters avoid washers which could be used in coin operated devices.**
The above sizes are to be ordered by ID, OD, and thickness dimensions.
Preferred Sizes of Type A Plain Washers are shown in Table 1A.
See Introductory Notes on Page 5.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

AMERICAN STANDARD

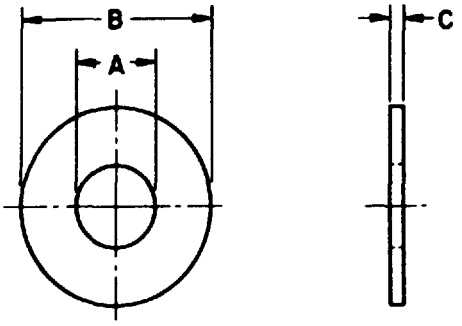


Table 2 Dimensions of Type B Plain Washers

Nominal Washer Size**		Series	Inside Diameter A			Outside Diameter B			Thickness C		
			Basic	Tolerance		Basic	Tolerance		Basic	Max	Min
				Plus	Minus		Plus	Minus			
		Narrow	0.068	0.000	0.005	0.125	0.000	0.005	0.025	0.028	0.022
No. 0	0.060	Regular	0.068	0.000	0.005	0.188	0.000	0.005	0.025	0.028	0.022
		Wide	0.068	0.000	0.005	0.250	0.000	0.005	0.025	0.028	0.022
		Narrow	0.084	0.000	0.005	0.156	0.000	0.005	0.025	0.028	0.022
No. 1	0.073	Regular	0.084	0.000	0.005	0.219	0.000	0.005	0.025	0.028	0.022
		Wide	0.084	0.000	0.005	0.281	0.000	0.005	0.032	0.036	0.028
		Narrow	0.094	0.000	0.005	0.188	0.000	0.005	0.025	0.028	0.022
No. 2	0.086	Regular	0.094	0.000	0.005	0.250	0.000	0.005	0.032	0.036	0.028
		Wide	0.094	0.000	0.005	0.344	0.000	0.005	0.032	0.036	0.028
		Narrow	0.109	0.000	0.005	0.219	0.000	0.005	0.025	0.028	0.022
No. 3	0.099	Regular	0.109	0.000	0.005	0.312	0.000	0.005	0.032	0.036	0.028
		Wide	0.109	0.008	0.005	0.406	0.008	0.005	0.040	0.045	0.036
		Narrow	0.125	0.000	0.005	0.250	0.000	0.005	0.032	0.036	0.028
No. 4	0.112	Regular	0.125	0.008	0.005	0.375	0.008	0.005	0.040	0.045	0.036
		Wide	0.125	0.008	0.005	0.438	0.008	0.005	0.040	0.045	0.036
		Narrow	0.141	0.000	0.005	0.281	0.000	0.005	0.032	0.036	0.028
No. 5	0.125	Regular	0.141	0.008	0.005	0.406	0.008	0.005	0.040	0.045	0.036
		Wide	0.141	0.008	0.005	0.500	0.008	0.005	0.040	0.045	0.036
		Narrow	0.156	0.000	0.005	0.312	0.000	0.005	0.032	0.036	0.028
No. 6	0.138	Regular	0.156	0.008	0.005	0.438	0.008	0.005	0.040	0.045	0.036
		Wide	0.156	0.008	0.005	0.562	0.008	0.005	0.040	0.045	0.036
		Narrow	0.188	0.008	0.005	0.375	0.008	0.005	0.040	0.045	0.036
No. 8	0.164	Regular	0.188	0.008	0.005	0.500	0.008	0.005	0.040	0.045	0.036
		Wide	0.188	0.008	0.005	0.625	0.015	0.005	0.063	0.071	0.056
		Narrow	0.203	0.008	0.005	0.406	0.008	0.005	0.040	0.045	0.036
No. 10	0.190	Regular	0.203	0.008	0.005	0.562	0.008	0.005	0.040	0.045	0.036
		Wide	0.203	0.008	0.005	0.734*	0.015	0.007	0.063	0.071	0.056
		Narrow	0.234	0.008	0.005	0.438	0.008	0.005	0.040	0.045	0.036
No. 12	0.216	Regular	0.234	0.008	0.005	0.625	0.015	0.005	0.063	0.071	0.056
		Wide	0.234	0.008	0.005	0.875	0.015	0.007	0.063	0.071	0.056
		Narrow	0.281	0.015	0.005	0.500	0.015	0.005	0.063	0.071	0.056
¼	0.250	Regular	0.281	0.015	0.005	0.734*	0.015	0.007	0.063	0.071	0.056
		Wide	0.281	0.015	0.005	1.000	0.015	0.007	0.063	0.071	0.056

*The 0.734 in. outside diameter avoids washers which could be used in coin operated devices.

**Nominal washer sizes are intended for use with comparable nominal screw or bolt sizes.

Inside and outside diameters shall be concentric within at least the inside diameter tolerance.

Washers shall be flat within 0.005 in. for basic outside diameters up to and including 0.875 in. and within 0.010 in. for larger outside diameters.

For larger sizes see Page 9.

See Introductory Notes on Page 5.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

PLAIN WASHERS

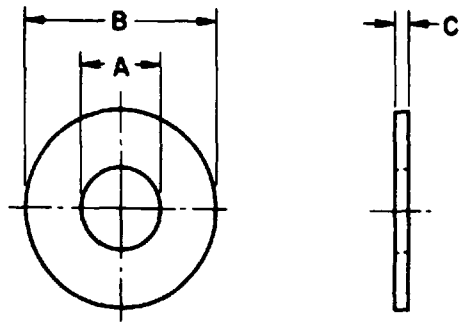


Table 2 Dimensions of Type B Plain Washers (Continued)

Nominal Washer Size**		Series	Inside Diameter A			Outside Diameter B			Thickness C		
			Basic	Tolerance		Basic	Tolerance		Basic	Max	Min
				Plus	Minus		Plus	Minus			
5/16	0.312	Narrow	0.344	0.015	0.005	0.625	0.015	0.005	0.063	0.071	0.056
		Regular	0.344	0.015	0.005	0.875	0.015	0.007	0.063	0.071	0.056
		Wide	0.344	0.015	0.005	1.125	0.015	0.007	0.063	0.071	0.056
3/8	0.375	Narrow	0.406	0.015	0.005	0.734*	0.015	0.007	0.063	0.071	0.056
		Regular	0.406	0.015	0.005	1.000	0.015	0.007	0.063	0.071	0.056
		Wide	0.406	0.015	0.005	1.250	0.030	0.007	0.100	0.112	0.090
7/16	0.438	Narrow	0.469	0.015	0.005	0.875	0.015	0.007	0.063	0.071	0.056
		Regular	0.469	0.015	0.005	1.125	0.015	0.007	0.063	0.071	0.056
		Wide	0.469	0.015	0.005	1.469*	0.030	0.007	0.100	0.112	0.090
1/2	0.500	Narrow	0.531	0.015	0.005	1.000	0.015	0.007	0.063	0.071	0.056
		Regular	0.531	0.015	0.005	1.250	0.030	0.007	0.100	0.112	0.090
		Wide	0.531	0.015	0.005	1.750	0.030	0.007	0.100	0.112	0.090
9/16	0.562	Narrow	0.594	0.015	0.005	1.125	0.015	0.007	0.063	0.071	0.056
		Regular	0.594	0.015	0.005	1.469*	0.030	0.007	0.100	0.112	0.090
		Wide	0.594	0.015	0.005	2.000	0.030	0.007	0.100	0.112	0.090
5/8	0.625	Narrow	0.656	0.030	0.007	1.250	0.030	0.007	0.100	0.112	0.090
		Regular	0.656	0.030	0.007	1.750	0.030	0.007	0.100	0.112	0.090
		Wide	0.656	0.030	0.007	2.250	0.030	0.007	0.160	0.174	0.146
3/4	0.750	Narrow	0.812	0.030	0.007	1.375	0.030	0.007	0.100	0.112	0.090
		Regular	0.812	0.030	0.007	2.000	0.030	0.007	0.100	0.112	0.090
		Wide	0.812	0.030	0.007	2.500	0.030	0.007	0.160	0.174	0.146
7/8	0.875	Narrow	0.938	0.030	0.007	1.469*	0.030	0.007	0.100	0.112	0.090
		Regular	0.938	0.030	0.007	2.250	0.030	0.007	0.160	0.174	0.146
		Wide	0.938	0.030	0.007	2.750	0.030	0.007	0.160	0.174	0.146
1	1.000	Narrow	1.062	0.030	0.007	1.750	0.030	0.007	0.100	0.112	0.090
		Regular	1.062	0.030	0.007	2.500	0.030	0.007	0.160	0.174	0.146
		Wide	1.062	0.030	0.007	3.000	0.030	0.007	0.160	0.174	0.146
1 1/8	1.125	Narrow	1.188	0.030	0.007	2.000	0.030	0.007	0.100	0.112	0.090
		Regular	1.188	0.030	0.007	2.750	0.030	0.007	0.160	0.174	0.146
		Wide	1.188	0.030	0.007	3.250	0.030	0.007	0.160	0.174	0.146
1 1/4	1.250	Narrow	1.312	0.030	0.007	2.250	0.030	0.007	0.160	0.174	0.146
		Regular	1.312	0.030	0.007	3.000	0.030	0.007	0.160	0.174	0.146
		Wide	1.312	0.045	0.010	3.500	0.045	0.010	0.250	0.266	0.234

*The 0.734 in. and 1.469 in. outside diameters avoid washers which could be used in coin operated devices.
**Nominal washer sizes are intended for use with comparable nominal screw or bolt sizes.
Inside and outside diameters shall be concentric within at least the inside diameter tolerance.
Washers shall be flat within 0.005 in. for basic outside diameters up to and including 0.875 in., and within 0.010 in. for larger outside diameters.
For larger sizes see Page 10.
See Introductory Notes on Page 5.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale

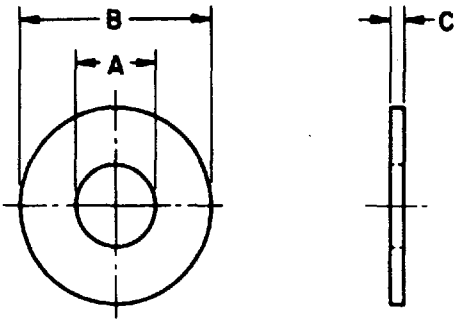


Table 2 Dimensions of Type B Plain Washers (Concluded)

Nominal Washer Size*		Series	Inside Diameter A			Outside Diameter B			Thickness C		
			Basic	Tolerance		Basic	Tolerance		Basic	Max	Min
				Plus	Minus		Plus	Minus			
1⅜	1.375	Narrow	1.438	0.030	0.007	2.500	0.030	0.007	0.160	0.174	0.146
		Regular	1.438	0.030	0.007	3.250	0.030	0.007	0.160	0.174	0.146
		Wide	1.438	0.045	0.010	3.750	0.045	0.010	0.250	0.266	0.234
1½	1.500	Narrow	1.562	0.030	0.007	2.750	0.030	0.007	0.160	0.174	0.146
		Regular	1.562	0.045	0.010	3.500	0.045	0.010	0.250	0.266	0.234
		Wide	1.562	0.045	0.010	4.000	0.045	0.010	0.250	0.266	0.234
1⅝	1.625	Narrow	1.750	0.030	0.007	3.000	0.030	0.007	0.160	0.174	0.146
		Regular	1.750	0.045	0.010	3.750	0.045	0.010	0.250	0.266	0.234
		Wide	1.750	0.045	0.010	4.250	0.045	0.010	0.250	0.266	0.234
1¾	1.750	Narrow	1.875	0.030	0.007	3.250	0.030	0.007	0.160	0.174	0.146
		Regular	1.875	0.045	0.010	4.000	0.045	0.010	0.250	0.266	0.234
		Wide	1.875	0.045	0.010	4.500	0.045	0.010	0.250	0.266	0.234
1⅞	1.875	Narrow	2.000	0.045	0.010	3.500	0.045	0.010	0.250	0.266	0.234
		Regular	2.000	0.045	0.010	4.250	0.045	0.010	0.250	0.266	0.234
		Wide	2.000	0.045	0.010	4.750	0.045	0.010	0.250	0.266	0.234
2	2.000	Narrow	2.125	0.045	0.010	3.750	0.045	0.010	0.250	0.266	0.234
		Regular	2.125	0.045	0.010	4.500	0.045	0.010	0.250	0.266	0.234
		Wide	2.125	0.045	0.010	5.000	0.045	0.010	0.250	0.266	0.234
2¼	2.250	Narrow	2.375	0.045	0.010	4.000	0.045	0.010	0.250	0.266	0.234
		Regular	2.375	0.045	0.010	5.000	0.045	0.010	0.250	0.266	0.234
		Wide	2.375	0.065	0.010	5.500	0.065	0.010	0.375	0.393	0.357
2½	2.500	Narrow	2.625	0.045	0.010	4.500	0.045	0.010	0.250	0.266	0.234
		Regular	2.625	0.065	0.010	5.500	0.065	0.010	0.375	0.393	0.357
		Wide	2.625	0.065	0.010	6.000	0.065	0.010	0.375	0.393	0.357
2¾	2.750	Narrow	2.875	0.045	0.010	5.000	0.045	0.010	0.250	0.266	0.234
		Regular	2.875	0.065	0.010	6.000	0.065	0.010	0.375	0.393	0.357
		Wide	2.875	0.065	0.010	6.500	0.065	0.010	0.375	0.393	0.357
3	3.000	Narrow	3.125	0.065	0.010	5.500	0.065	0.010	0.375	0.393	0.357
		Regular	3.125	0.065	0.010	6.500	0.065	0.010	0.375	0.393	0.357
		Wide	3.125	0.065	0.010	7.000	0.065	0.010	0.375	0.393	0.357

*Nominal washer sizes are intended for use with comparable nominal screw or bolt sizes.

Inside and outside diameters shall be concentric within at least the inside diameter tolerance.

Washers of sizes shown above shall be flat within 0.010 in.

See Introductory Notes on Page 5.

Copyright ASME International
Provided by IHS under license with ASME
No reproduction or networking permitted without license from IHS
Not for Resale