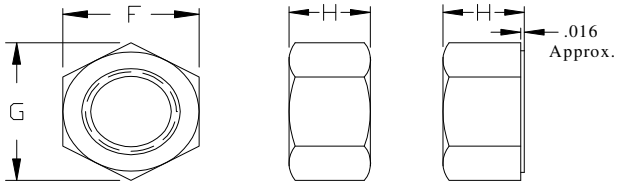
ASME B18.2.2-2015
(Revision of ASME B18.2.2-2010)

Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

Heavy Hex Nuts



Dimensions for Heavy Hex Nuts (ASME/ANSI B18.2.2)

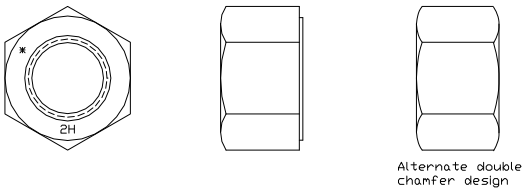
Diameter	Width Across Flats F			Thickness H			Width Across Corners G	
	Nom	max	min	Nom	max	min	max	min
1/4	1/2	0.500	0.488	15/64	0.250	0.218	0.577	0.556
5/16	9/16	0.562	0.546	19/64	0.314	0.280	0.650	0.622
3/8	11/16	0.688	0.669	23/64	0.377	0.341	0.794	0.762
7/16	3/4	0.750	0.728	27/64	0.441	0.403	0.866	0.768
1/2	7/8	0.875	0.850	31/64	0.504	0.464	1.010	0.969
9/16	15/16	0.938	0.909	35/64	0.568	0.526	1.083	1.037
5/8	1 1/16	1.062	1.031	39/64	0.631	0.587	1.227	1.175
3/4	1 1/4	1.250	1.213	47/64	0.758	0.710	1.443	1.382
7/8	1 7/16	1.438	1.394	55/64	0.885	0.833	1.660	1.589
1	1 5/8	1.625	1.575	35/64	0.575	0.519	1.876	1.796
1 1/8	1 13/16	1.812	1.756	1 7/64	1.139	1.079	2.093	2.002
1 1/4	2	2.000	1.938	1 7/32	1.251	1.187	2.309	2.209
1 3/8	2 3/16	2.188	2.119	1 11/32	1.378	1.310	2.526	2.416
1 1/2	2 3/8	2.375	2.300	1 15/32	1.505	1.433	2.742	2.622
1 5/8	2 9/16	2.562	2.481	1 19/32	1.632	1.556	2.959	2.828
1 3/4	2 3/4	2.750	2.663	1 23/32	1.759	1.679	3.175	3.035
1 7/8	2 15/16	2.938	2.844	1 27/32	1.886	1.802	3.392	3.242
2	3 1/8	3.125	3.025	1 31/32	2.013	1.925	3.608	3.449
2 1/4	3 1/2	3.500	3.388	2 13/64	2.251	2.155	4.041	3.862
2 1/2	3 7/8	3.875	3.750	2 29/64	2.505	2.401	4.474	4.275
2 3/4	4 1/4	4.250	4.113	2 45/64	2.759	2.647	4.907	4.688
3	4 5/8	4.625	4.475	2 61/64	3.013	2.893	5.340	5.102
3 1/4	5	5.000	4.838	3 3/16	3.252	3.124	5.774	5.515
3 1/2	5 3/8	5.375	5.200	3 7/16	3.506	3.370	6.207	5.928
3 3/4	5 3/4	5.750	5.563	3 11/16	3.760	3.616	6.640	6.341
4	6 1/8	6.125	5.925	3 15/16	4.014	3.862	7.073	6.755
4 1/4	6 1/2	6.500	6.283	4 3/16	4.268	4.152	7.506	6.755
4 1/2	6 7/8	6.875	6.650	4 7/16	4.522	4.400	7.939	7.581
5	7 5/8	7.625	7.375	4 15/16	5.030	4.896	8.805	8.408
5 1/2	8 3/8	8.375	8.100	5 7/16	5.538	5.392	9.671	9.234
6	9 1/8	9.125	8.825	5 15/16	6.046	5.888	10.537	10.060

Earnest Technical Bulletin

5/14/13

Heavy Hex Nuts

ASTM A194 Grade 2H



Earnest Machine Products offers Heavy Hex Nuts in sizes 1/4" to 5 1/2" manufactured to the Grade 2H strength level per ASTM A194.

1.) Manufacture: These hex nuts are manufactured in accordance with the latest revision of the following industry standards:

ASME B18.2.2	Dimensional Requirements
ASTM A194	Material and Physical Properties
ASME B1.1	Thread Requirements

2.) Threads: Threads are made to the requirements of ANSI B1.1 Unified Threads, 2B Fit. Thread acceptance based on ANSI B1.3, System 21

3.) Material and Physical Properties: These nuts are made from grade 2H material as specified by ASTM A194.

Proof Load: 175,000 psi min

Chemical Composition Requirements

Carbon (C)	Manganese (Mn)	Phosphorus (P)	Sulfur (S)	Silicon (Si)
Min	Max	Max	Max	Max
0.40	1.00	0.04	0.05	0.40

Hardness

Nominal Nut Size	Rockwell Hardness
1/4 thru 1 1/2	Rc 24 – 35
1 5/8 thru 5 1/2	Rb 95 – Rc 35

4.) Dimensions: heavy hex nuts are made to the dimensions specified in ASME B18.2.2

Size	Width Across Flats	Thickness		Size	Width Across Flats	Thickness
1/4	1/2	15/64		1 3/4	2 3/4	1 23/32
5/16	9/16	19/64		1 7/8	2 15/16	1 27/32
3/8	11/16	23/64		2	3 1/8	1 31/32
7/16	3/4	27/64		2 1/4	3 1/2	2 13/64
1/2	7/8	31/64		2 1/2	3 7/8	2 29/64
9/16	15/16	35/64		2 3/4	4 1/4	2 45/64
5/8	1 1/16	39/64		3	4 5/8	2 61/64
3/4	1 1/4	47/64		3 1/4	5	3 3/16
7/8	1 7/16	55/64		3 1/2	5 3/8	3 7/16
1	1 5/8	63/64		3 3/4	5 3/4	3 11/16
1 1/8	1 13/16	1 7/64		4	6 1/8	3 15/16
1 1/4	2	1 7/32		4 1/4	6 1/2	4 3/16
1 3/8	2 3/16	1 11/32		4 1/2	6 7/8	4 7/16
1 1/2	2 3/8	1 15/32		5	7 5/8	4 31/32
1 5/8	2 9/16	1 19/32		5 1/2	8 3/8	5 7/16

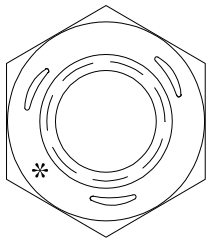
Earnest Technical Bulletin

Heavy Hex Nuts

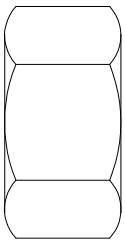
ASTM A593 Grade C

2/22/10

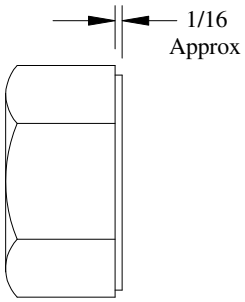
Earnest Machine Products line of Grade C heavy hex nuts are made to the dimensional requirements of ANSI B18.2.2 for Heavy Hex Nuts and the material and strength requirements of ASTM A563.



Grade C
(three circumferential lines 120° apart & manufacturers ID)



up to 7/16" are double chamfered



sizes above 7/16" may be washer faced

Grade C

The physical and material properties are per the requirements of ASTM A563 for Grade C strength level.

Material: Steel with the following minimum chemical composition requirements (per Heat of steel used)

Carbon	**Manganese**	**Phosphorus**	**Sulfur**
.55 max	(not specified)	.12 max	.15 max

Proof Load Strength:

Sizes	Proof Load
1/4 to 4”: Coarse (UNC) Thread	144,000 psi

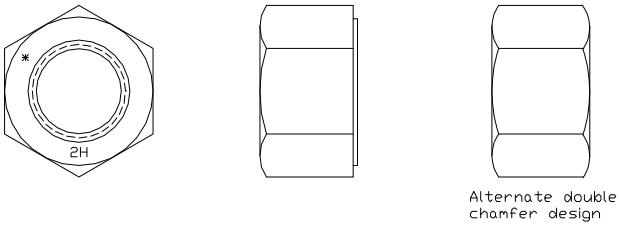
Hardness: Rb 78 to Rc 38

Earnest Technical Bulletin

9/28/15

Heavy Hex Structural Nuts

Hot Dip Galvanized and Waxed



Earnest Machine Products offers heavy hex nuts that are hot dip galvanized (zinc) coated and lubricated with a wax. These nuts are available in Grade 2H (per ASTM A194) in sizes from 1/2” to 2 1/2” and Grade DH (per ASTM A563) in sizes 1/2" to 1 1/2".

The hot dip galvanized is applied to the requirements of ASTM A153 (ASTM F2329) and are tapped oversized to the thread requirements listed in ASTM A563. Tapping the threads oversized ensures proper assembly with hot dip galvanized structural bolts.

The wax is designed to provide torque tension performance for lubricated assemblies as defined by AISC guidelines. The wax is applied on top of the hot dip galvanizing and has a blue dye added to clearly identify them as “lubricated” nuts (per requirements of ASTM A563).

			Grade 2H (tapped oversized)	Grade DH (tapped oversized)
Material and Physical Properties:	**Proof Load**:		150,000 psi min	150,000 psi min
	Material:		Medium Carbon Steel	Medium Carbon Steel
	Hardness:	1/2” to 1-1/2”	Rc 24 to Rc 35	Rc 24 to Rc 38
		1-5/8” to 4”	Rb 95 to Rc 35	Rc 24 to Rc 38

Dimensions: Heavy hex structural nuts per ASME B18.2.6 are made to the dimensions specified in ASME B18.2.2

Size	Width Across Flats	Thickness	Overtapping Allowance
1/2 – 13	7/8	31/64	.018
5/8 – 11	1-1/16	39/64	.020
3/4 – 10	1-1/4	47/64	.020
7/8 – 9	1-7/16	55/64	.022
1 – 8	1-5/8	63/64	.024
1 1/8 – 7	1-13/16	1-7/64	.024
1 1/4 – 7	2	1-7/32	.024
1 3/8 – 6	2-3/16	1-11/32	.027
1 1/2 – 6	2-3/8	1-15/32	.027
1 3/4 – 5	2-3/4	1-23/32	.050
2 – 4 1/2	3-1/8	1-31/32	.050
2 1/4 – 4 1/2	3-1/2	2-13/64	.050
2 1/2 - 4	3-7/8	2-29/64	.050

Note that hot dip galvanized nuts can be sold with and without a lubricant applied to them. Earnest line of hot dip galvanized nuts are lubricated with a wax that has a blue dye added to clearly mark the nuts as lubricated. The torque that is used to assemble these nuts should be based on the designers or applications requirements. The torques listed below are based on testing requirements.

Size	Torque when used with A325 Bolts		Torque when used with A490 Bolts
1/2	60 ft-lb		70 ft-b
5/8	120 ft-lb		150 ft-lb
3/4	200 ft-lb		250 ft-lb
7/8	350 ft-lb		450 ft-lb
1	500 ft-lb		650 ft-lb
1 1/8	650 ft-lb		900 ft-lb
1 1/4	900 ft-lb		1300 ft-lb
1 3/8	1150 ft-lb		1700 ft-lb
1 1/2	1550 ft-lb		2200 ft-lb

ASME B18.2.2-2015
(Revision of ASME B18.2.2-2010)

Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers
Two Park Avenue • New York, NY • 10016 USA

Date of Issuance: November 30, 2015

This Standard will be revised when the Society approves the issuance of a new edition.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Interpretations are published on the Committee Web page and under go.asme.org/InterpsDatabase. Periodically certain actions of the ASME B18 Committee may be published as Cases. Cases are published on the ASME Web site under the B18 Committee Page at go.asme.org/B18committee as they are issued.

Errata to codes and standards may be posted on the ASME Web site under the Committee Pages to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in codes and standards. Such errata shall be used on the date posted.

The B18 Committee Page can be found at go.asme.org/B18committee. There is an option available to automatically receive an e-mail notification when errata are posted to a particular code or standard. This option can be found on the appropriate Committee Page after selecting “Errata" in the "Publication Information" section.

The American Society of Mechanical Engineers
Two Park Avenue, New York, NY 10016-5990

CONTENTS

FOREWORD

American National Standards Committee B18 for the standardization of bolts, screws, nuts, rivets, and similar fasteners was organized in March 1922 as Sectional Committee B18 under the aegis of the American Engineering Standards Committee (later the American Standards Association, then the United States of America Standards Institute, Inc.) with the Society of Automotive Engineers and the American Society of Mechanical Engineers as joint sponsors. Subcommittee 2 was subsequently established and charged with the responsibility for technical content of standards covering wrench head bolts and nuts.

Subcommittee 2, after appraisal of the requirements of industry, developed a proposed standard series of bolt head and nut dimensions. This proposal was finally approved and designated a Tentative American Standard in February 1927.

A first revision of the document was designated as an American Standard in March 1933 and was followed by a second revision that was granted approval as an American Standard in January 1941.

Following reorganization of the B18 Committee in 1947, Subcommittee 2 was asked to expand the standard on head proportions into a complete product standard. A proposal covering square and hexagon head bolts and nuts, hexagon head cap screws, and automotive hexagon head bolts was prepared and submitted to the B18 Committee in April 1950. While this draft was under consideration, the B18 Committee received a proposal from the British Standards Institution for unification of dimensions on products incorporating unified screw threads. The Committee welcomed the opportunity of discussing the proposals and an American-British-Canadian Conference was held in New York on June 1 and 2, 1950.

It was agreed in the conference that the essentials of unification could be accomplished by selection of mutually satisfactory across-the-flats dimensions, since this would permit the use of the same wrenches and because other features would rarely affect interchangeability. After due consideration, suitable existing across-the-flats dimensions were selected for the hexagon products affected.

In its meeting of October 13, 1950, Subcommittee 2 agreed to incorporate into the proposed standard the conference recommendations on $\frac{1}{4}$ in. hexagon head bolts, $\frac{5}{8}$ in. hexagon head cap screws and automotive hexagon head bolts, and $\frac{7}{16}$ in. light and regular hexagon and square nuts. At a subsequent meeting of Subcommittee 2, further changes were adopted in order to combine the light and regular series of nuts, and to combine the automotive hexagon head bolt, hexagon head cap screw, and regular hexagon head close tolerance bolt.

In view of the progress made in the United States and the urgency of standardization for mutual defense, the British Standards Institution sponsored a second conference in London in April 1951 to complete the unification of certain hexagon bolts and nuts.

At a meeting on June 8, 1951, Subcommittee 2 reaffirmed its acceptance of the unified dimensions that correspond with those in the March 1951 draft, but attempted to select better nomenclature for the unified products. A final draft incorporating the nomenclature "Finished Hexagon Bolts and Nuts" and containing numerous editorial changes was submitted for letter ballot in September 1951. Following approval by the B18 Committee and the sponsors, the proposal was presented to the American Standards Association for approval and designation as an American Standard. This was granted on March 24, 1952.

It was recognized that the standard was in need of additional refinements, therefore Subcommittee 2 began work immediately to eliminate these shortcomings. A proposed revision removing inconsistencies with respect to fillets, improving the length tolerances on heavy hexagon bolts, and incorporating numerous other corrections and clarifications of an editorial nature resulted. The most noteworthy editorial change was a decision to combine the coverage for hexagon cap screws and square head set screws from the B18.2 standard with the coverage for slotted head cap screws and slotted headless set screws from the B18.6 standard for publication in a separate document. The requirements for the unified hexagon cap screws and finished

hexagon bolts being identical in the overlapping sizes, the data would now be available in two publications. Following approvals by the B18 Committee and sponsor organizations, the proposal was submitted to the American Standards Association and declared an American Standard on February 2, 1955.

A revision of this Standard comprised of numerous editorial corrections and inclusion of an appendix for grade markings was duly approved and designated an American Standard on April 18, 1960.

At a meeting in February 1960, Subcommittee 2 approved a recommendation to reduce the head heights for heavy, heavy semifinished, and heavy finished hexagon bolt, which was subsequently approved by letter ballot of the B18 Committee on August 16, 1960. A proposed standard for heavy hexagon structural bolts submitted and accepted by Subcommittee 2 at its October 17, 1960 meeting was approved by letter ballot of the B18 Committee on May 9, 1961. To meet the urgent needs of the steel construction industry, it was considered necessary to publish the standard for the structural bolts immediately. Consequently, Appendix IV to ASA B18.2-1960 containing coverage for the revised heavy hexagon bolts and the new heavy hexagon structural bolts was released in 1962.

In October 1961, Subcommittee 2 appointed a subgroup to review all product standards for square and hexagon bolts, screws, and nuts, and to recommend simplifications that would be compatible with technical, production, and distribution advances that had occurred over the prior several years. The subgroup presented its recommendations at a meeting of Subcommittee 2 in October 1962. It was agreed that the internally and externally threaded products should be published in separate documents as suggested, and draft proposals for each were completed.

The proposed revision for square and hex nuts incorporated the following subgroup recommendations: discontinuation of regular semifinished nuts; elimination of regular hexagon and heavy hexagon nuts in sizes $\frac{1}{4}$ in. through 1 in.; elimination of finished hexagon nuts in sizes larger than $1\frac{1}{2}$ in.; elimination of the washer face semifinished style on finished series nuts in sizes $\frac{5}{8}$ in. and smaller and heavy series nuts in sizes $\frac{7}{16}$ in. and smaller; removal of machine screw nuts (these nuts are now contained in B18.6.3); and adoption of an abbreviated product nomenclature. Letter ballot of this proposal to the B18 Committee resulted in approval. Following acceptance by the sponsor organizations the revision was submitted to the American Standards Association and designated ASA B18.2.2 on September 8, 1965.

Subcommittee 2 continued to further develop refinements initiated by the simplification subgroup and to study changes suggested by consumer interests. This work culminated in Subcommittee acceptance of a 1970 proposal incorporating, in addition to numerous editorial changes, revisions to the requirements on angularity of bearing face and countersink diameters for the various hex nuts and heavy hex nuts, and inclusion of an appendix covering the gaging of slots in slotted nuts.

The proposed revision, after approval by letter ballot of the B18 Committee in March 1970, was subsequently approved by the sponsors and submitted to the American National Standards Institute for designation as an American National Standard. This was granted on January 18, 1972.

A proposed revision of this Standard agreed upon by Subcommittee 2 incorporated a provision to enable consumers to specify heavy hex nuts and heavy hex jam nuts with close bearing face angularity, when required; clarified intent with regard to width across flats on nuts produced from bar stock; deleted coverage for hex castle nuts from the appendices; and included numerous editorial refinements. This proposal was formally approved by letter ballot of the subcommittee and the B18 Committee. Following its acceptance by the sponsor organizations the revision was referred to the American National Standards Institute and granted approval as an American National Standard on February 27, 1987.

In March 2009 the B18.2 Subcommittee undertook a revision of this Standard. The format has been updated to meet the requirements of ASME B18.12.1. Regular pattern machine screw nuts have been moved from ASME B18.6.3, and the small pattern machine screw nuts have been added to this Standard. The hex flange nut that was previously referred to as IFI-145 has been added. Coupling nuts have been added. Many of the sizes came from the IFI-128 and others were based on what has been used for many years by industry. This proposal was formally approved by letter ballot of the subcommittee and the B18 Committee. Following its acceptance by the sponsor organizations, the revision was referred to the American National Standards Institute and granted approval as an American National Standard on August 24, 2010.

In September 2014 the B18.2 Subcommittee agreed to revise this Standard. Updates to the standard include correcting and expanding tabulated dimensions of small pattern hex machine screw nuts, revising washer face diameter tolerancing to be consistent with cap screws, a revised procedure for thread acceptance gaging of jam nuts, and a nonmandatory appendix with a procedure for measuring bearing surface runout. This revision was approved as an American National Standard on August 12, 2015.

ASME B18 COMMITTEE
Standardization of Bolts, Nuts, Rivets, Screws, Washers, and Similar Fasteners

(The following is the roster of the Committee at the time of approval of this Standard.)

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General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions or a Case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, B18 Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued for the purpose of providing alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Standard and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

Interpretations. Upon request, the B18 Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the B18 Standards Committee at go.asme.org/Inquiry.

The request for an interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The B18 Standards Committee regularly holds meetings and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the B18 Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at go.asme.org/B18committee.

Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)

1 INTRODUCTION

1.1 Scope

1.1.1 This Standard is intended to cover the complete general and dimensional data for the various types of inch series square and hex nuts, including machine screw nuts and coupling nuts, addressed by this Standard. Also included are appendices covering gaging of slots in slotted nuts, wrench openings for nuts, formulas on which dimensional data are based, and measurement of bearing surface runout. It should be understood that where questions arise concerning acceptance of product, the dimensions in the tables shall govern over recalculation by formula.

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

1.2 Comparison to ISO Standards

There are no comparable ISO inch fastener standards.

1.3 Dimensions

Unless otherwise indicated, units of measurement are expressed in inches.

1.4 Options

Where options are allowed, they shall be selected at the manufacturer's discretion unless otherwise specified by the purchaser.

1.5 Terminology References

For definitions of terminology not specifically defined in this Standard, refer to ASME B18.12.

2 REFERENCES

Unless otherwise specified, the standards referenced shall be the latest edition at the time of order placement.

ASME B1.1, Unified Inch Screw Threads (UN and UNR Thread Form)

ASME B1.3, Screw Thread Gaging Systems for Acceptability: Inch and Metric Screw Threads (UN, UNR, UNJ, M, and MJ)

ASME B18.12, Glossary of Terms for Mechanical Fasteners

ASME B18.18, Quality Assurance for Fasteners

ASME B18.24, Part Identifying Number (PIN) Code System for B18 Fastener Products

ASME B107 Series, Standards for Hand Tools

Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

ASTM A563, Standard Specification for Carbon and Alloy Steel Nuts

ASTM F467, Standard Specification for Nonferrous Nuts for General Use

ASTM F594, Standard Specification for Stainless Steel Nuts

ASTM F1941, Specification for Electrodeposited Coatings on Threaded Fasteners [Unified Inch Screw Threads (UN/UNR)]

Publisher: American Society for Testing and Materials (ASTM International), 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959 (www.astm.org)

SAE J995, Mechanical and Material Requirements for Steel Nuts

Publisher: SAE International, 400 Commonwealth Drive, Warrendale, PA 15096 (www.sae.org)

3 GENERAL DATA

3.1 Width Across Flats

The width across flats of nut shall be the overall distance measured, perpendicular to the axis of nut, between two opposite sides of the nut in accordance with the notes on respective dimensional tables.

Maximum width across flats shall not be exceeded, except as stated below. No transverse section through the nut between 25% and 75% of the actual nut thickness as measured from the bearing surface shall be less than the minimum width across flats.

NOTE: Nonferrous milled-from-bar hex nuts: The minimum across flats dimensions of nonferrous milled-from-bar hex nuts shall not be less than the values tabulated in Tables 1-1 through 13. The maximum across flats size may be greater than the tabulated values in Tables 1-1 through 13, but shall not be equal to or