

**ASME B1.1-1989**

(REVISION OF ANSI B1.1-1982)

# **Unified Inch Screw Threads**

**(UN and UNR Thread Form)**

**AN AMERICAN NATIONAL STANDARD**



The American Society of  
Mechanical Engineers

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## FOREWORD

(This Foreword is not part of ASME B1.1-1989.)

This Standard is the outgrowth of and supersedes previous editions that were published as B1-1924, B1.1-1935, B1.1-1949, B1.1-1960, B1.1-1974, and B1.1-1982. Throughout such development, special attention has been given to the practical aspects of thread standardization, and many details of the current Standard result from studies and tests based on user problems. For example, there was disclosed the need for free assembly in high-production industries and the desirability of making some provision for threads that require a coating. The tolerance classes 2A/2B were developed to meet these two major requirements as well as to provide a general standard for externally and internally threaded fasteners.

This issue includes: (a) latest symbols in accordance with latest issue on Nomenclature, ANSI/ASME B1.7M; (b) a clearer definition of acceptability criteria as described in ANSI/ASME B1.3M; (c) sketches and drawings altered to meet the latest legibility requirements. The diameter-pitch combinations remain the same as in previous editions.

The Unified Screw Threads Standard is an integrated system of threads for fastening purposes in mechanisms and structures. Its outstanding characteristic is general interchangeability of threads, achieved through the standardization of thread form, diameter-pitch combinations, and limits of size.

The Standard has as its original basis the work done more than a century ago by William Sellers in the United States and Sir Joseph Whitworth in Great Britain. Throughout the intervening years there have been many further developments and revisions, culminating in the system of Unified Threads approved and adopted for use by all inch-using countries.

The achievements represented by ASME B1.1 in development, standardization, and unification are the result of cooperation and coordination of many organizations, including The American Society of Mechanical Engineers, Society of Automotive Engineers, National Institute of Science and Technology (formerly National Bureau of Standards), Committee B1, the former National Screw Thread Commission, the former Interdepartmental Screw Thread Committee, British Standards Institution, Canadian Standards Association, and American National Standards Institute.

Unification of screw thread standards received its impetus from the need for interchangeability among the billions of fasteners used in the complex equipment of modern technology and made in different countries. Equally important, however, are international trade in mechanisms of all kinds and the servicing of transportation equipment which moves from country to country. These have made unification not only highly advantageous, but practically essential. In sizes  $\frac{1}{4}$  in. and larger, complete unification of certain thread series and six tolerance classes was signaled by the signing of an accord on November 18, 1948. Since that time, further unification has been extended into smaller sizes. Working through Technical Committee No. 1 of the International Organization for Standardization (ISO), the unified standard was adopted as an ISO inch screw thread standard, ISO 5864, parallel to the ISO metric screw thread system. Both systems have a common basic profile. The standard was subject to Quadripartite Standardization Agree-

ment (QSTAG) 247, in the ABCA Army Standardization Program of America, Britain, Canada, and Australia.

Suggestions for improvement of this Standard will be welcomed. They should be sent to the American National Standards Institute, 1430 Broadway, New York, New York, 10018.

ASME B1.1-1989 was approved by the American National Standards Institute (ANSI) on August 29, 1989.

#### NOTE

In the reprint of 4/98, page 147, Table C1, was corrected as follows: External (1), Major Diameter, Min., was corrected to read 18.722 for Nominal Size (in.) and Threads/in.  $\frac{3}{4}$ -10 or 0.750-10, Series Designation UNC, Metric Equivalents of Diameter 19.050 and Pitch 2.540, Class 3A.

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## UNIFIED INCH SCREW THREADS (UN AND UNR THREAD FORM)

### 1 GENERAL

#### 1.1 Scope

This Standard specifies the thread form, series, class, allowance, tolerance, and designation for unified screw threads. (In order to emphasize that unified screw threads are based on inch modules, they may be denoted unified inch screw threads.) Several variations in thread form have been developed for unified threads; however, this Standard covers only UN and UNR thread forms.

For easy reference, a metric translation of this Standard has been incorporated as Appendix C. Appendices A through C contain useful information that is supplementary to the sections of this Standard.

#### 1.2 Unified Screw Thread Standards

The standards for unified screw threads published in this Standard are in agreement with formal standards of the International Organization for Standardization for diameter-pitch combinations, designations, and tolerances for 60 deg. triangular form inch screw threads. Unified screw threads had their origin in an accord signed in Washington, D.C., on November 18, 1948, by representatives of standardizing bodies of Canada, the United Kingdom, and the United States, and have subsequently superseded American National screw threads.

#### 1.3 UN and UNR Screw Threads

UNR applies only to external threads; the difference between UN and UNR threads, in addition to designation, is that a flat or optional rounded root contour is specified for UN threads, while only a rounded root contour is specified for UNR threads.

#### 1.4 Interchangeability

Unified (UN/UNR) and its predecessor, American National screw threads, have substantially the same thread form, and threads of both standards having

the same diameter and pitch are mechanically interchangeable. The principal differences between these standards relate to the application of allowances, the variation of tolerances with size, differences in the amounts of pitch diameter tolerances for external and internal threads, and differences in thread designations. Unified inch and ISO metric screw threads are not mechanically interchangeable.

#### 1.5 Designations

Unified thread sizes (specific combinations of diameter and pitch) are identified by the letter combination "UN" in the thread symbol. In the unified standards, the pitch diameter tolerances for external threads differ from those for internal threads; for this reason the letter "A" is used in the thread symbol to denote an external thread and the letter "B," an internal thread. Where the letters "U," "A," or "B" do not appear in the thread designation, the threads conform to the outdated American National screw threads. Details regarding thread designations are given in Section 6.

#### 1.6 Reference Documents

The latest issues of the following documents form a part of this Standard to the extent specified herein.

##### *American National Standards*

When the following American National Standards referred to in this Standard are superseded by a revision approved by the American National Standards Institute, Inc., the revision shall apply.

ANSI/ASME B1.2

Gages and Gaging for Unified Inch Screw Threads

ANSI/ASME B1.3M

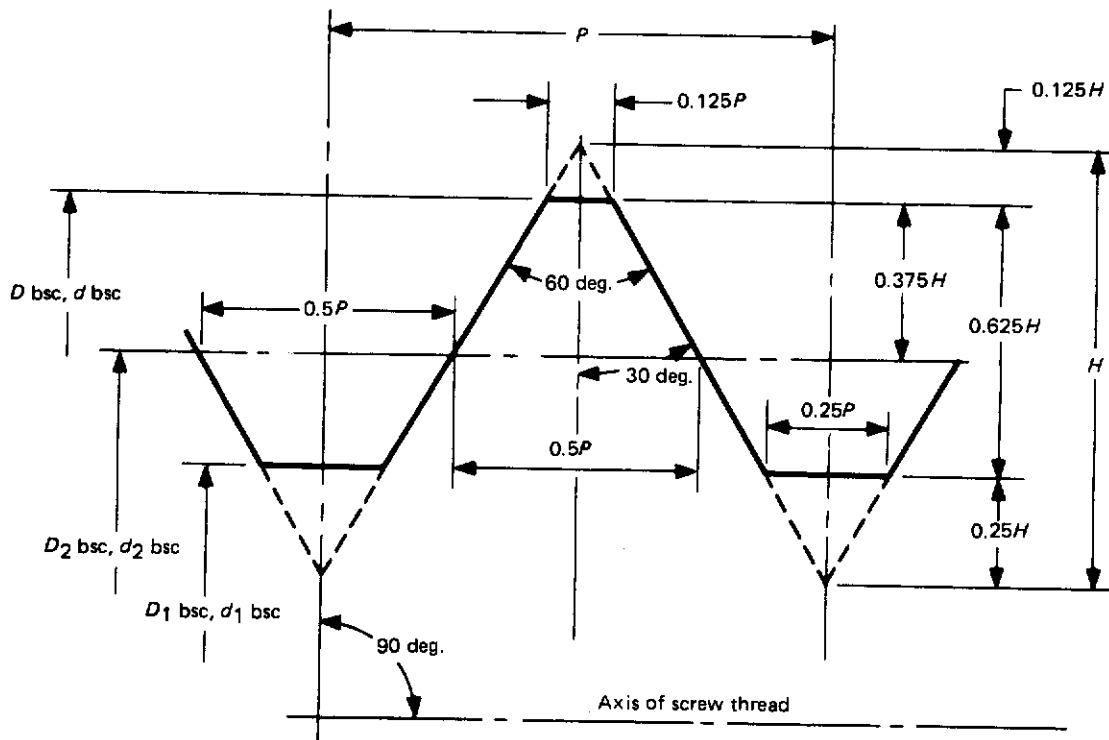
Screw Thread Gaging Systems for Dimensional Acceptability — Inch and Metric Screw Threads

ANSI/ASME B1.7M

Nomenclature, Definitions, and Letter Symbols for Screw Threads

ANSI B94.11M

Twist Drills



**FIG. 1 BASIC PROFILE FOR UN AND UNR SCREW THREADS**

*International Organization for Standardization*  
**ISO 68**  
 ISO General Purpose Screw Threads—Basic Profile

**1.7 Acceptability**

Acceptability of product threads shall be in accordance with ANSI/ASME B1.3M. Gages and gaging shall be in accordance with ANSI/ASME B1.2.

**1.8 Reference Temperature**

The reference temperature is 68°F for dimensions defined by this system.

**1.9 Units of Measure**

All dimensions in this Standard, including all tables, are in inches unless otherwise specified.

**1.10 Federal Government Use**

When this Standard is approved by the Department of Defense and federal agencies and is incor-

porated into FED-STD-H28/2, Screw-Thread Standards for Federal Services, Section 2, the use of this Standard by the federal government will be subject to all the requirements and limitations of FED-STD-H28/2.

**2 SCREW THREAD PROFILE**

**2.1 Scope**

The basic profile and design profiles are defined in this Section and are the basis of all thread dimensions given in this Standard.

**2.2 Basic Profile**

The basic profile for UN screw threads is identical to that for UNR screw threads and is shown in Fig. 1. Profile applies to an axial plane.

For reference, the basic profile for UN and UNR screw threads is identical to that for ISO metric screw threads shown in ISO 68.

## 2.3 Design Profiles

The design profiles define the maximum-material conditions for external and internal threads with no allowance and are derived from the basic profile. The design profiles of both external and internal screw threads vary from the basic profile.

**2.3.1 Design Profiles of External Threads.** The design profiles of external UN and UNR screw threads are included in Figs. 2 and 3. A flat root contour is specified for UN threads; however, it is permissible to provide for some threading tool crest wear. Therefore, a rounded root contour cleared beyond the  $0.25P$  flat width of the basic profile is optional. The rounded root also reduces the rate of threading tool crest wear and improves fatigue strength over that of a flat root thread.

(a) The root contour of external UNR screw threads shown in Figs. 2 and 3 shall have a smooth, continuous, nonreversing contour with a radius of curvature not less than  $0.108P$  at any point and shall blend tangentially into the flanks and any straight segment. At the maximum-material condition, the point of tangency shall be at a distance not less than  $0.625H$  below the basic major diameter.

(b) The design profiles of external UN and UNR screw threads have flat crests. However, in practice, product thread crests may be flat, or partially or corner rounded. A rounded crest tangent at a  $0.125P$  flat is shown as an option in Figs. 2 and 3.

**2.3.2 Design Profile of Internal Threads.** The design profile of the internal UN screw thread is included in Figs. 2 and 3 (*there is no internal UNR screw thread*). In practice it is necessary to provide for some threading tool crest wear; therefore, the root of the design profile is rounded and cleared beyond the  $0.125P$  flat width of the basic profile.

## 2.4 Formulas and Symbols

The formulas and symbols pertaining to the basic profile and the design profiles are given in Section 10.

## 3 SCREW THREAD SERIES

### 3.1 Thread Series Definition

Thread series are groups of diameter-pitch combinations distinguished from each other by the number of threads per inch applied to a series of specific diameters. There are two general series classifications: standard and special.

**3.1.1 Standard Series.** The standard series consists of three series with graded pitches (coarse, fine, and extra fine) and eight series with constant pitches (4, 6, 8, 12, 16, 20, 28, and 32 threads per inch). The standard series is shown in Table 2. Limits of size are shown in Table 3A. See Section 8 for limits of size.

**3.1.2 Special Series.** The special series consists of all threads with diameter-pitch combinations that are not included in the standard series. When allowances and tolerances of special series threads are derived from unified formulation as shown in Section 5, the threads are designated UNS or UNRS. Limits of size for selected combinations of UNS/UNRS threads are shown in Table 3B. If allowance and tolerance are not derived from unified formulation, the threads are designated special. See Section 6 for details of designation.

### 3.2 Order of Selection

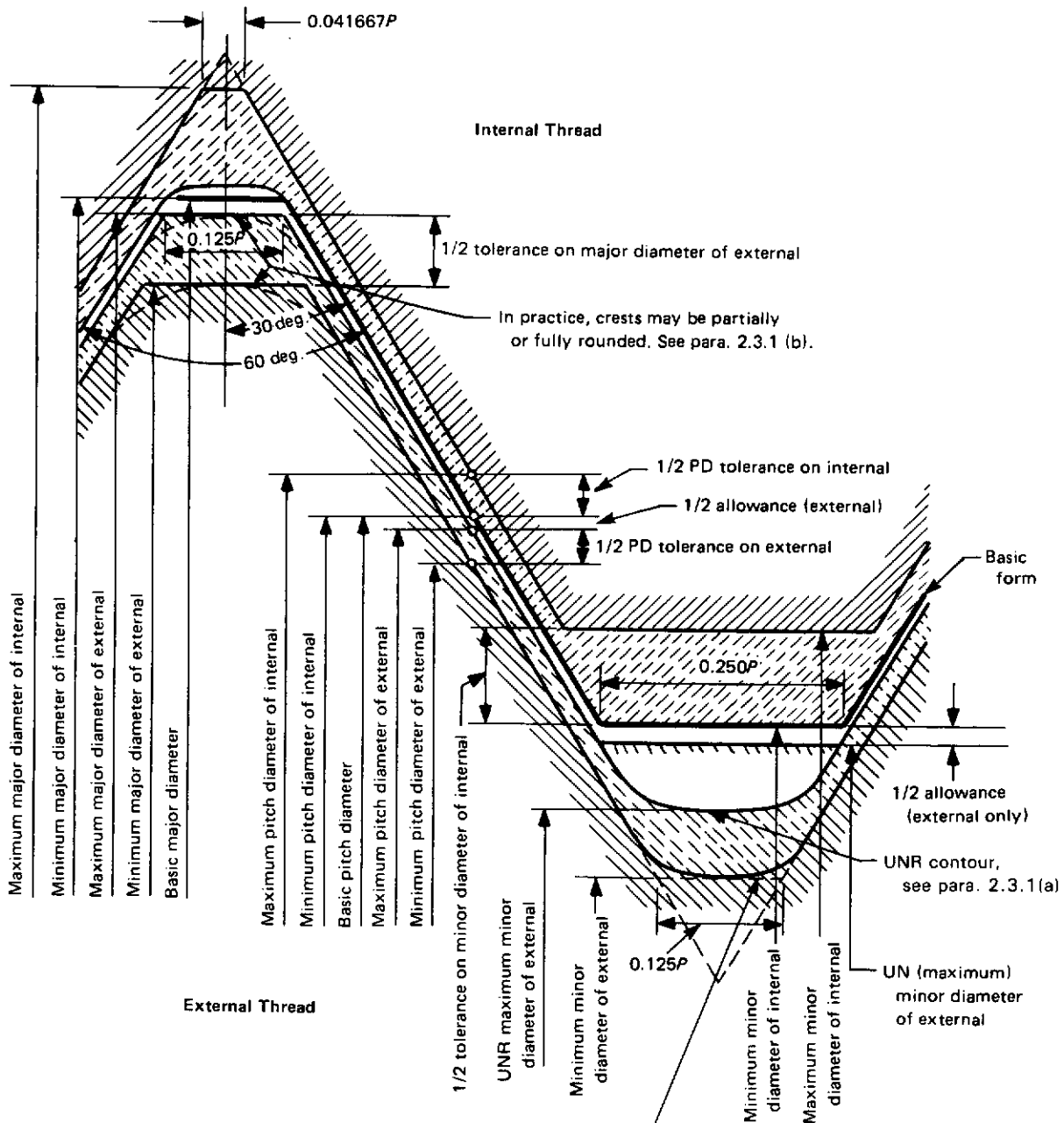
*Wherever possible, selection should be made from Table 3A, Standard Series—Unified Screw Threads, preference being given to the coarse and fine thread series. If threads in the standard series do not meet the requirements of design, reference should be made to the selected combinations in Table 3B. The third expedient is to design UNS/UNRS threads using tables of allowance and tolerance in Sections 12 and 13. The last resort is to design special threads and use the formulas for limits of size in Section 8.*

### 3.3 Coarse Thread Series Applications

The coarse thread series (UNC/UNRC) is generally used for the bulk production of screws, bolts, and nuts. It is commonly used in relatively low strength materials such as cast iron, aluminum, magnesium, brass, bronze, and plastic, because the coarse series threads provide more resistance to internal thread stripping than the fine or extra-fine series. Coarse series threads are advantageous where rapid assembly or disassembly is required, or if corrosion or damage from nicks due to handling or use is likely.

### 3.4 Fine Thread Series Applications

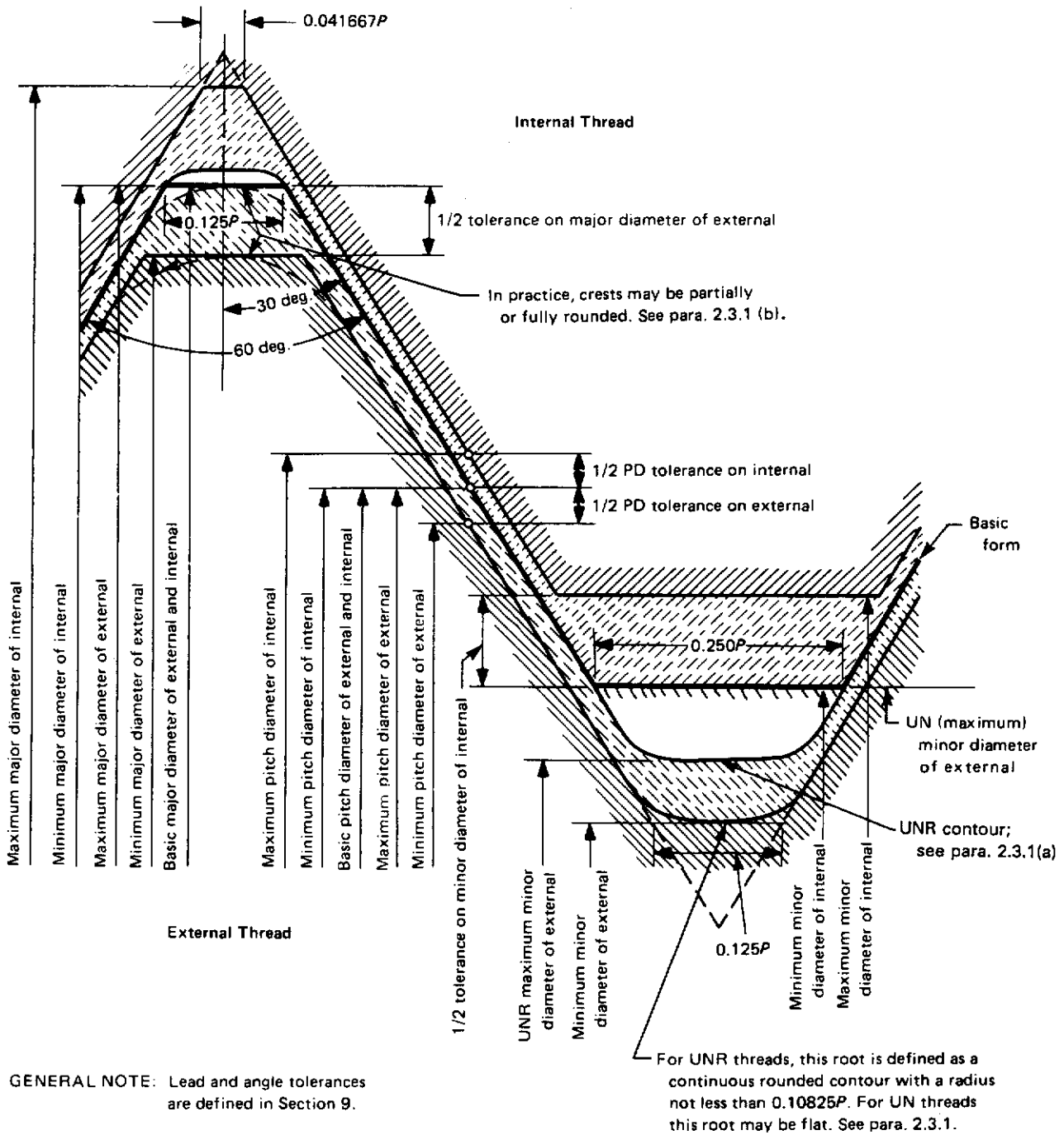
The fine thread series (UNF/UNRF) is commonly used for bolts and nuts in high strength applications. This series has less thread depth and a larger minor diameter than coarse series threads. Consequently, thinner walls are permitted for internal threads and



GENERAL NOTE: Lead and angle tolerances are defined in Section 9.

For UNR threads, this root is defined as a continuous rounded contour with a radius not less than  $0.10825P$ . For UN threads this root may be flat. See para. 2.3.1.

FIG. 2 DISPOSITION OF DIAMETRAL TOLERANCES, ALLOWANCE, AND CREST CLEARANCE FOR UNIFIED INCH SCREW THREAD CLASSES 1A, 2A, 1B, AND 2B



**FIG. 3 DISPOSITION OF DIAMETRAL TOLERANCES AND CREST CLEARANCES FOR UNIFIED INCH SCREW THREAD CLASSES 3A AND 3B**

more strength is available to external threads than for coarse series threads of the same nominal size. In order to prevent internal thread stripping, a longer length of engagement is required for fine series than for coarse series threads for thread materials of the same strength levels. However, for both fine and coarse series threads, length of engagement in tapped holes must be selected to meet strength requirements. Fine series threads have less tendency to loosen under vibration than coarse series threads, because of the smaller lead angle. This also allows for finer adjustment in cases such as a slotted nut and cotter pin assembly.

### 3.5 Extra-Fine Thread Series Applications

The extra-fine series (UNEF/UNREF) is used particularly for equipment and threaded parts that require fine adjustment, such as bearing retaining nuts, adjusting screws, etc., and for thin-wall tubing and thin nuts.

### 3.6 Constant-Pitch Thread Series Applications

The various constant-pitch series (UN/UNR) with 4, 6, 8, 12, 16, 20, 28, and 32 threads per inch, given in Table 2, offer a comprehensive range of diameter-pitch combinations for those purposes where the threads in the coarse, fine, and extra-fine series do not meet the particular requirements of the design. The primary sizes of the 8-UN, 12-UN, and 16-UN series shown in Table 2 are the most commonly used.

Whenever a thread in a constant-pitch series also appears in the UNC, UNF, or UNEF series, the symbols and tolerances for limits of size of those standard series are applicable.

**3.6.1 8-Thread Series.** The 8-thread series (8-UN) is a uniform-pitch series for large diameters or as a compromise between coarse and fine thread series. Although originally intended for high-pressure-joint bolts and nuts, it is now widely used as a substitute for the coarse thread series for diameters larger than 1 in.

**3.6.2 12-Thread Series.** The 12-thread series (12-UN) is a uniform-pitch series for large diameters requiring threads of medium-fine pitch. Although originally intended for boiler practice, it is now used as a continuation of the fine thread series for diameters larger than 1½ in.

**3.6.3 16-Thread Series.** The 16-thread series (16-UN) is a uniform-pitch series for large diameters re-

quiring fine-pitch threads. It is suitable for adjusting collars and retaining nuts and also serves as a continuation of the extra-fine thread series for diameters larger than 1<sup>11</sup>/<sub>16</sub> in.

### 3.7 Fine Threads for Thin-Wall Tubing

The limits of size for a 27-thread series, ranging from ¼ to 1 in. nominal size, are included in Table 3B. These threads are recommended for general use on thin-wall tubing. The minimum length of complete thread shall be one-third of the basic major diameter plus five threads ( $D/3 + 0.185$ ).

## 4 SCREW THREAD CLASSES

### 4.1 Thread Classes

Thread classes are distinguished from each other by the amounts of tolerance and allowance. Classes 1A, 2A, and 3A apply to external threads only, and Classes 1B, 2B, and 3B apply to internal threads only. Allowance is specified only for Classes 1A and 2A and the allowance is identical for both classes. Tolerance decreases as class number increases (e.g., tolerance for Class 3A is less than that for Class 2A, which is less than that for Class 1A).

**4.1.1 Class 2A and 2B Threads.** Class 2A (external) and Class 2B (internal) threads are the most commonly used thread classes for general applications, including production of bolts, screws, nuts, and similar threaded fasteners.

The maximum diameters of Class 2A uncoated threads are less than basic by the amount of the allowance. The allowance minimizes galling and seizing in high-cycle wrench assembly, or it can be used to accommodate plated finishes or other coating. However, for threads with additive finish, the maximum diameters of Class 2A may be exceeded by the amount of the allowance; i.e., the 2A maximum diameters apply to an unplated part or to a part before plating, whereas the basic diameters (the 2A maximum diameter plus allowance) apply to a part after plating. The minimum diameters of Class 2B threads, whether or not plated or coated, are basic, affording no allowance or clearance in assembly at maximum-material limits.

**4.1.2 Class 3A and 3B Threads.** Class 3A (external) and Class 3B (internal) threads provide for applications where closeness of fit and/or accuracy of thread elements are important. The maximum diameters of Class 3A threads and the minimum di-



ameters of Class 3B threads, whether or not plated or coated, are basic, affording no allowance or clearance for assembly at maximum-material limits.

**4.1.3 Class 1A and 1B Threads.** Class 1A (external) and Class 1B (internal) threads replaced American National Class 1 screw threads. These classes provide for applications where a liberal tolerance and an allowance are required to permit easy assembly even with slightly nicked threads. These classes are intended for ordnance and other special uses. Maximum diameters of Class 1A threads are less than basic by the amount of the allowance (the allowance is identical to that for Class 2A). The allowance is not available for plating or coating and, consequently, in some cases it may be necessary to make special provisions in thread manufacturing for accommodation of plating or coating. The minimum diameters of Class 1B threads, whether or not plated or coated, are basic and consequently afford no allowance or clearance for assembly at maximum-material limits.

**4.1.4 Class 2AG Threads.** Certain applications require an allowance for rapid assembly to permit application of the proper lubricant or for residual growth due to high-temperature expansion. In these applications, when the thread is coated and the 2A allowance is not permitted to be consumed by such coating, the thread class symbol is qualified by the addition of the letter G (old symbol for allowance) following the class symbol. Refer to paras. 6.2.1, 7.1, and 7.3 for more detailed information.

## 4.2 Combinations of Classes

The requirements for screw thread fits for specific applications are predicated on end use and can be met by specifying the proper combinations of thread classes for the components. For example, a Class 2A external thread may be used with a Class 1B, 2B, or 3B internal thread.

## 5 SCREW THREAD ALLOWANCE AND TOLERANCE

### 5.1 Allowance

Allowance is specified only for Class 1A and 2A external threads. For Class 1A threads, its purpose is to preclude the possibility of surface-to-surface fit between mating parts and it cannot be used to accommodate plating or coating. For Class 2A threads, the allowance may be used to accommodate plating

or coating. Allowance for Classes 1A and 2A is identical and is based on Class 2A pitch diameter tolerance for the respective series standard length of engagement and is applicable for all lengths of engagement.

Formulas for allowance are given in para. 5.8.1(a) and values are given in Sections 12 and 13.

Applications of allowances to the basic thread form are shown in Fig. 2.

EXAMPLE: 2.0625-12UNS-2A

From para. 5.8.1(a): Allowance  $es = 0.300 Td_2(2A)$ .

From para. 5.2, example (1):  $Td_2(2A) = 0.0061$ .

Therefore,  $es = 0.300 \times 0.0061 = 0.00183$ , or 0.0018 in. when rounded.

### 5.2 Pitch Diameter Tolerance, All Classes

NOTE: Refer to Table 2 for the standard series of diameter-pitch combinations. Allowances and tolerances for standard series threads are applied in Table 3A. All other diameter-pitch combinations are considered nonstandard. Allowances and tolerances for a selection of nonstandard threads are applied in Table 3B.

The pitch diameter tolerances specified in Table 3A for all classes of the UNC and UNF series are based on a length of engagement equal to the basic major (nominal) diameter and are applicable for lengths of engagement from five pitches to up to  $1\frac{1}{2}$  diameters. For the 4-UN, 6-UN, and 8-UN series, the pitch diameter tolerances specified for Classes 2A, 2B, 3A, and 3B are based on a length of engagement equal to the basic major (nominal) diameter and are applicable for lengths of engagement up to  $1\frac{1}{2}$  diameters.

The pitch diameter tolerances specified in Table 3A for all classes of the UNEF, 12-UN, 16-UN, 20-UN, 28-UN, and 32-UN series are based on a length of engagement of 9 pitches and are applicable for lengths of engagement from 5 to 15 pitches.

The pitch diameter tolerances specified in Table 3B for all classes of the UNS series are based on a length of engagement of 9 pitches and are applicable for lengths of engagement from 5 to 15 pitches.

Formulas for pitch diameter tolerance are given in paras. 5.8.1(c) and 5.8.2(b), and values are given in Sections 12 and 13.

Applications of tolerances to the thread form are shown in Figs. 2 and 3.

For special threads not included in Table 3B, the tolerances and allowances should be obtained from the tabulated tolerances or increments for special threads, if applicable, or computed from the formula values for standard lengths of engagement. For lengths of engagement over 15 to and including 30

itches, the pitch diameter tolerances are 1.25 times the formula values; and for lengths of engagement over 30 pitches, the tolerances are 1.50 times the formula values.

#### EXAMPLES:

- (1) 2.0625-12UNS-2A;  $LE = 1$  in. (12 pitches).  
Use Table 34 column for major diameter of 1.875 through 2.25. Read pitch diameter tolerance  $Td_2(2A)$  in 12 threads per inch row for length of engagement  $LE$  equal to 0.42 to 1.25 in. (5 to 15 pitches).  $Td_2 = 0.0061$  in.
- (2) 6.500-5UNS-SE2B;  $LE = 4$  in. (20 pitches).  
From para. 5.8.2(b):  $TD_2(2B) = 1.300 Td_2(2A)$ . Use Table 19 for  $Td_2(2A)$ , since 5 TPI is not tabulated in Table 37.

$$\begin{aligned} \text{Increment } D \text{ (not tabulated)} &= 0.0015 \sqrt{D} = 0.002799 \\ \text{Increment } LE \text{ (9 pitches)} &= 0.002012 \\ \text{Increment } P &= 0.005130 \\ Td_2(2A) \text{ for } LE = 9P &= 0.009941 \end{aligned}$$

$$\begin{aligned} TD_2(2B) \text{ for } LE = 9P &= 1.300 Td_2(2A) = 0.012923 \\ TD_2(2B) \text{ for } LE = 20P &= 1.25 TD_2(2B) = 0.016154 \\ &\text{or } 0.0162 \text{ in. when rounded.} \end{aligned}$$

### 5.3 Special Lengths of Engagement $LE$

For special applications, the required length of engagement might be the determining factor in the proper selection of thread tolerances. When design considerations require nonstandard pitches or extreme conditions of engagement not covered by the tables, the tolerances may be modified as explained below or calculated using the formulas.

It is particularly important that this increase in tolerance be noted by the user for external threads (Class 3A) callout. At times it is impossible for the producer to know the length of engagement with an internally threaded member. It may be necessary for the producer to lower the maximum values of pitch diameter when making such externally threaded components. Hence the increased tolerance noted.

#### 5.3.1 Long $LE$ Using Gage Length $LG$ Equal to $LE$

(a) For engagement lengths exceeding 1.5 diameters, for UNC, UNF, 4-UN, 6-UN, and 8-UN series, the pitch diameter tolerances shown in Table 3A should be increased as follows.

(1) For lengths of engagement over 1.5 to and including 3 diameters, the pitch diameter tolerances are 1.25 times the values for the standard lengths of engagement shown in Table 3A.

(2) For lengths of engagement over 3 diameters,

the tolerances are 1.50 times the values shown in Table 3A.

#### EXAMPLE:

$$\begin{aligned} &0.500-13UNC-SE2B;  $LE = 1$  in. (2 diameters). \\ &\text{From Table 3A or Table 20: } TD_2 = 0.0065. \\ &TD_2 \text{ for } LE \text{ of 2 diameters} = 1.25 Td_2 \text{ standard} \\ &= 1.25 \times 0.0065 \\ &= 0.0081 \text{ in.} \end{aligned}$$

(b) For engagement lengths exceeding 15 pitches, for UNEF, 12-UN, 16-UN, 20-UN, 28-UN, and 32-UN series, and for UNS threads in Table 3B, the pitch diameter tolerances shown in Tables 3A and 3B, as applicable, should be increased as follows.

(1) For lengths of engagement over 15 to and including 30 pitches, the pitch diameter tolerances are 1.25 times the values for the standard lengths of engagement shown in Tables 3A and 3B, as applicable.

(2) For lengths of engagement over 30 pitches, the tolerances are 1.50 times the values shown in Tables 3A and 3B, as applicable.

#### EXAMPLE:

$$\begin{aligned} &1.5000-28UN-SE2A;  $LE = 2$  in. (56 pitches). \\ &\text{From Table 3A or Table 29: } Td_2 = 0.0042 \text{ for standard length of engagement.} \\ &Td_2 \text{ for } LE = 56 \text{ pitches} = 1.50 Td_2 \text{ standard} \\ &= 1.50 \times 0.0042 \\ &= 0.0063 \text{ in.} \end{aligned}$$

NOTE: See example in para. 5.3.1(c).

(c) *Major Diameter Tolerance and Length of Engagement for External Threads, All Classes.* External thread major diameter tolerances are based on pitch only and are applicable for all lengths of engagement, with this exception: where the external thread pitch diameter tolerance for long lengths of engagement exceeds 0.9 times the major diameter tolerance, the latter should be increased to 1.10 times the adjusted pitch diameter tolerance.

Formulas for the major diameter tolerance for external threads are given in para. 5.8.1(b) and values are given in Sections 12 and 13.

#### EXAMPLE:

$$\begin{aligned} &1.5000-28UN-SE2A;  $LE = 2$  in. (56 pitches). \\ &\text{From the example in para. 5.3.1(b), } Td_2 = 0.0063. \\ &\text{From Table 29, } Td = 0.0065, \text{ so } Td_2 = 0.969 Td. \text{ Therefore, } Td \\ &\text{must be adjusted to } 1.10 Td_2. \\ &\text{Adjusted } Td = 1.10 \times 0.0063 = 0.0069 \text{ in.} \end{aligned}$$

(d) *High Strength Materials Using Standard Pitch Diameter Tolerances.* For applications of long length of engagement of mating parts involving very high strength materials, increases in tolerances based on standard length of engagement may be detrimental. In these cases, the tolerances based on the standard

length of engagement may be applied to increased length of engagement threads. This requires the GO thread gages to have a special length equal to the length of engagement.

(e) *Standard Bolt, Added Allowance in Tapped Hole, EI Increases.* In some cases where greater than standard length of engagement is required, it is desirable to use standard externally threaded parts with tolerances based on standard length of engagement. For example, in the case of a standard bolt assembled into a tapped hole in aluminum, the designation of the bolt thread will conform to that of a thread for a standard length of engagement.

To assure proper assembly, the tapped hole thread into which the bolt is assembled must not interfere with the bolt thread. This could happen if no special provision were made in the tapped hole thread due to the cumulative effect of lead variation on the bolt thread, inasmuch as the increased length of engagement exceeds the thickness of the GO thread gage used for acceptance of the bolt thread. To avoid this condition, an allowance should be provided in the tapped hole, the amount of which should be the diameter equivalent of the cumulative lead variation for the increased length of engagement, which is one-half the pitch diameter tolerance of the bolt thread allowed for the standard length of engagement. This requires the GO thread and GO plain gages to have a special length equal to the length of engagement.

**EXAMPLE:**

0.5000-13UNC-SE2B;  $LE = 1$  in. (2 diameters); assembled with standard bolt thread.

Add allowance  $EI = \frac{1}{2}Td_2$  for standard bolt thread. From Table 4, column 5,  $\frac{1}{2}Td_2$  (standard) = 0.0025. Therefore, the thread is redesignated to indicate a nonstandard internal thread with the allowance of 0.0025 added to the basic size of 0.5000. New designation is 0.5025-13UNS-SE2B. Allowance is also added to the standard minor diameter size limits and to the adjusted pitch diameter size limits. See paras. 5.3.1(a) and 6.6.1.

(f) *Standard Internal Thread, Added Allowance on External Thread, es Increases.* In some cases where greater than standard length of engagement is required, it is desirable to use standard internally threaded parts with tolerances based on standard length of engagement.

The threaded rod onto which a standard clevis yoke is assembled must not interfere with the clevis yoke thread, since standard clevis yokes have extra internal threads. An allowance should be provided on the rod thread, the amount of which should be the diameter equivalent of the cumulative lead variation for the increased length of engagement, which is one-half the pitch diameter tolerance of clevis yoke thread allowed for the standard length of engage-

ment. The major diameter tolerance is not increased. This requires the GO thread and GO plain gages to have a special length equal to the length of engagement.

**EXAMPLE:**

0.3750-24UNF-SE2A;  $LE = 0.88$  in. (2.35 diameters); assembled with standard internal thread.

Add allowance, equal to  $\frac{1}{2}TD_2$  for standard internal thread. From Table 4, column 8,  $\frac{1}{2}TD_2$  (standard) = 0.00245, which is rounded to 0.0025. Therefore, the thread is redesignated to indicate a nonstandard external thread with the allowance of 0.0025 subtracted from the basic size of 0.3750. New designation is 0.3725-24UNS-SE2A. The added allowance is also subtracted from the standard major diameter size limits and from the adjusted pitch diameter size limits. See paras. 5.3.1(a) and 6.6.1.

**5.3.2 Long Length of Engagement Using Standard Thread Gage Limits.** ANSI/ASME B1.2 recommends that the length of the GO gage should approximate the length of engagement. However, it is sometimes more economical to accept these threads with GO thread gages made from standard gage blanks which have length approximating the standard lengths of engagement.

**NOTE:** When this is done, additional precautions are necessary to determine the effect of cumulative variation of lead and straightness of thread axis due to a long length of engagement.

If applicable, an additional allowance should be provided, preferably on the external thread, the amount of which should be the diameter equivalent of the cumulative lead variation for the increased length of engagement, equal to the sum of one-half the pitch diameter tolerances of the external and internal threads allowed for the standard length of engagement.

**EXAMPLE:**

0.3750-24UNF-2A;  $LE = 0.88$  in. (2.35 diameters); with external and internal thread gages of standard length.

Add allowance equal to  $\frac{1}{2}Td_2 + \frac{1}{2}TD_2$  for standard mating threads. From Table 4, column 5,  $\frac{1}{2}Td_2$  (standard) = 0.0019.

From Table 4, column 8,  $\frac{1}{2}TD_2$  (standard) = 0.00245. The sum of these, after rounding, is equal to 0.0044, which is the added allowance. Therefore, the thread is redesignated to indicate a nonstandard external thread, with the allowance of 0.0044 subtracted from the basic size of 0.3750. New designation is 0.3706-24UNS-2A. The added allowance is also subtracted from the standard major diameter and pitch diameter size limits. See para. 6.6.2.

#### 5.4 Minor Diameter Tolerance and Allowance for External Threads

The tolerance for minor diameter is for reference only. In dimensioning external threads, the minimum minor diameter is not specified, being established by the crest of an unworn tool. In practice, the minor diameter of an external thread is satisfactory when

accepted by a gage or gaging method that represents the maximum-material condition of the internal thread less the allowance  $es$ , if any. A formula for the minor diameter tolerance of external threads is given in para. 5.8.1(d).

### 5.5 Major Diameter Tolerance for Internal Threads

The tolerance for major diameter is for reference only. In dimensioning internal threads, the maximum major diameter is not specified, being established by the crest of an unworn tool. In practice, the major diameter of an internal thread is satisfactory when accepted by a gage or gaging method that represents the maximum-material condition of an external thread which has no allowance. A formula for the major diameter tolerance of internal threads is given in para. 5.8.2(a).

### 5.6 Minor Diameter Tolerance and Length of Engagement for Internal Threads

Formulas for the minor diameter tolerance for internal threads are given in para. 5.8.2(c) and values are given in Sections 12 and 13.

Internal thread minor diameter tolerances are suitable for lengths of engagement up to 1.5 diameters. For applications having shorter or longer lengths of engagement, it may be advantageous to decrease or increase the tolerance as explained below.

**5.6.1** The principal practical factors which govern minor diameter tolerance are ease of tapping, standard drill sizes, and height of engagement.

NOTE: Height of engagement is measured in a radial direction, while length of engagement is measured in an axial direction.

Height of engagement correlates with the stripping strength of the thread assembly and, therefore, also with the length of engagement. It also correlates with the tendency toward disengagement of the threads on one side when assembly is eccentric. The amount of possible eccentricity is one-half of the sum of the allowance and pitch diameter tolerances on both mating threads. For a given pitch, or height of thread, this sum increases with the diameter, and accordingly, this factor would require a decrease in minor diameter tolerance with an increase in thread diameter. However, such a decrease in tolerance often is not feasible without requiring special drill sizes; therefore, to be able to use as many as possible of

the available standard drill sizes listed in ANSI B94.11M, the minor diameter tolerance for Classes 1B and 2B of a given pitch for  $\frac{1}{4}$  in. diameter and larger is constant.

There may be applications where the lengths of engagement of the mating threads or the combination of materials used for mating threads are such that the maximum tolerance may not provide the desired strength of the fastening. Experience has shown that for lengths of engagement less than  $0.67D$  (the minimum thickness of standard nuts), the minor diameter tolerance may be reduced without causing tapping difficulties.

In other applications, the length of engagement of mating threads may be long because of design considerations or the combination of materials used for mating threads. As the threads engaged increase in number, their height of engagement may be shallower and still develop stripping strength greater than the external thread breaking strength. In these cases, the maximum tolerance should be increased to reduce the possibility of tapping difficulties.

It is particularly important to reduce the number of minor diameter tolerances to a practical minimum. This reduction is usually obvious to the producer of longer internally threaded components, but sometimes is not understood by the user. Tolerances for all recommended diameters, lengths of engagement, and selected pitches are given in Table 39 for Classes 1B and 2B, and in Table 40 for Class 3B.

In these Tables, the tolerances for lengths of engagement less than  $0.33D$  are 0.50 times the formula values. For lengths of engagement from  $0.33D$  to  $0.67D$ , the tolerances are 0.75 times the formula values; for lengths of engagement from  $0.67D$  to  $1.5D$ , the tolerances are equal to the formula values; and for lengths of engagement over  $1.5D$ , the tolerances are 1.25 times the formula values. Where the tolerance value so computed is more than  $0.394P$ , which corresponds to a resulting minimum thread height of 53%, the value is adjusted to equal  $0.394P$ .

### 5.7 Disposition of Allowance and Tolerance

The disposition of allowance, tolerance, and crest clearances for the various thread classes is shown in Figs. 2 and 3.

### 5.8 Formulas for Allowance and Tolerance

The following formulas for allowance and tolerance are used for unified formulation and apply to standard and special series screw threads.

The following symbols are used in the equations.

$D$  = basic major (nominal) diameter

$LE$  = length of engagement, in.

$P$  = pitch, in. =  $1/n$

$H$  = height of fundamental triangle  
=  $0.866025P$

$n$  = threads per inch

### 5.8.1 External Thread

#### (a) Allowance (External Threads)

(1) Classes 1A and 2A = 0.300 Class 2A pitch diameter tolerance

(2) Class 3A = no allowance

#### (b) Major Diameter Tolerance (External Threads)

(1) Class 1A =  $0.090 \sqrt[3]{P^2}$

(2) Classes 2A and 3A =  $0.060 \sqrt[3]{P^2}$

The tolerance for Class 2A coarse and the 8-thread series threads of unfinished, hot-rolled material is  $0.090 \sqrt[3]{P^2}$ . This does not apply to standard fasteners with rolled threads.

#### (c) Pitch Diameter Tolerance (External Threads)

(1) Class 1A = 1.500 Class 2A pitch diameter tolerance

(2) Class 2A<sup>1</sup> =  $0.0015 \sqrt[3]{D} + 0.0015 \sqrt{LE} + 0.015 \sqrt[3]{P^2}$

(3) Class 3A = 0.750 Class 2A pitch diameter tolerance

#### (d) Minor Diameter Tolerance (External Threads)

(1) *UNR Classes.* To intersection of rounded root with its centerline (see Figs. 2 and 3), equals pitch diameter tolerance for class of thread specified, plus  $H/8$  (see Table 6).

(2) *UN Classes 1A, 2A, and 3A.* To intersection of flat root with flanks of threads (see Figs. 2 and 3), equals pitch diameter tolerance for class of thread specified, plus  $H/4$  (see Table 6).

### 5.8.2 Internal Thread

#### (a) Major Diameter Tolerance (Internal Threads).

For Classes 1B, 2B, and 3B, equals  $H/6$  plus the pitch diameter tolerance of the class of thread under consideration.

#### (b) Pitch Diameter Tolerance (Internal Threads)

(1) Class 1B = 1.950 Class 2A pitch diameter tolerance (1.5 Class 2B)

(2) Class 2B = 1.300 Class 2A pitch diameter tolerance

(3) Class 3B = 0.975 Class 2A pitch diameter tolerance (0.750 Class 2B)

#### (c) Minor Diameter Tolerance (Internal Threads)

(1) *Classes 1B and 2B.* For all thread series and special threads in sizes less than  $1/4$  in., equals  $[0.05 \sqrt[3]{P^2} + 0.03P/D] - 0.002$  in., within the following limitations.

(a) Tolerances shall not be greater than  $0.394P$ . (This corresponds to 53% of the thread<sup>2</sup> and applies in the range of the smallest number sizes of the UNC and UNF thread series.)

(b) Tolerances shall not be less than  $0.25P - 0.4P^2$ . (This corresponds to a thread<sup>2</sup> of 65% for 80 to 24 threads per inch.)

The formulas are suitable for general applications having lengths of engagement up to 1.5 diameters.

For all thread series and special threads  $1/4$  in. and larger, 80 to 4 threads per inch, inclusive, equals  $0.25P - 0.4P^2$ . (This corresponds to a thread<sup>2</sup> of 64.5% for 80 threads per inch graduating to 71.8% for 4 threads per inch.) For all thread series and special threads  $1/4$  in. and larger with less than 4 threads per inch, equals  $0.15P$ .

(2) *Class 3B.* For all thread series, equals  $[0.05 \sqrt[3]{P^2} + 0.03P/D] - 0.002$  in., within the following limitations.

(a) Tolerance shall not be greater than  $0.394P$ . (This corresponds to 53% of the thread<sup>2</sup> and applies in the range of the smallest numbered sizes of the UNC and UNF thread series.)

(b) Tolerance shall not be less than:

(1) for 80 to 13 threads per inch, inclusive,  $0.23P - 1.5P^2$ . (This corresponds to a thread<sup>2</sup> of 67% for 80 threads per inch, graduating to 74% for 13 threads per inch.)

(2) for 12 threads per inch and coarser,  $0.120P$ . (This corresponds to a thread<sup>2</sup> of 74% and is the tolerance for all sizes 12 threads and coarser and 1 in. and larger.)

The formulas are suitable for general applications having lengths of engagement up to 1.5 diameters.

## 5.9 Circular Runout

Circular runout is the full indicator movement (see ANSI Y14.5M).

**5.9.1 Internal Thread.** When measurement is specified, the runout of the minor diameter cylinder with the pitch diameter cylinder on the internal thread shall not exceed its pitch diameter tolerance.

<sup>1</sup>See Table 19 for values of these terms corresponding to given values of diameter, length of engagement, and pitch.

<sup>2</sup>The percent of thread is based on the "old symmetrical" thread height of  $0.64952P$ . See Table 6, column 13.

**5.9.2 External Thread.** When measurement is specified, the runout of the major diameter cylinder with the pitch diameter cylinder on the external thread shall not exceed its pitch diameter tolerance.

### 5.10 Lead and Flank Angle Tolerances

See Section 9.

### 5.11 Coated or Plated Threads

See Section 7 for dimensional accommodation and limits for coated threads.

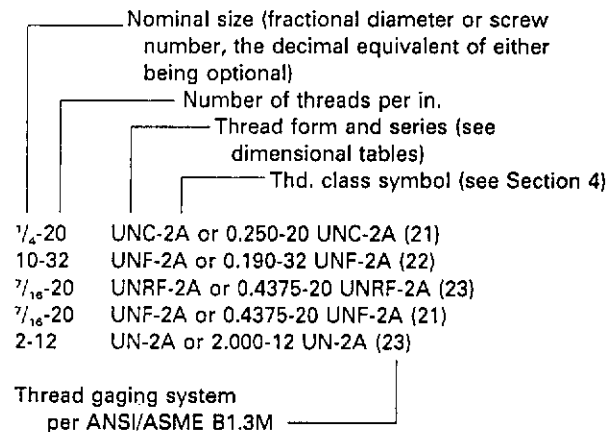
## 6 SCREW THREAD DESIGNATION

### 6.1 Basic Method of Designating

The basic method of designating a screw thread is used where the standard tolerances or limits of size based on the standard length of engagement are applicable, as indicated in Section 5.

The designation specifies in sequence the nominal size, number of threads per inch, thread series symbol, thread class symbol, and gaging system per ANSI/ASME B1.3M (see Fig. 4). The nominal size is the basic major diameter and is specified as the fractional diameter, screw number, or their decimal equivalent. Where decimal equivalents are used for size callout, they shall be shown in four place decimals (omitting the cipher in the fourth place) for fractional sizes, and in three place decimals for number sizes. They shall be interpreted as being nominal size designations only and shall have no dimensional significance beyond the fractional size or number designation. The thread series symbol indicates the thread form (refer to Section 2), series, and tolerance formulation (refer to Section 3). The thread series symbols for the UN thread form are UNC, UNF, UNEF, or UN for only those sizes of the various series shown in Table 2 and UNS for any other intermediate and larger size diameter-pitch combination having tolerances to unified formulation. The corresponding thread series symbols for the UNR thread form are UNRC, UNRF, UNREF, or UNR. The symbol UNRS corresponds to UNS. The thread class symbols are 1A, 1B, 2A, 2B, 3A, or 3B, where the suffixes A and B relate to external and internal threads, respectively.

UNS threads and threads having special length of engagement require certain additional information as shown in paras. 6.4 and 6.6.



#### GENERAL NOTE:

Thread acceptability gaging system requirement of ANSI/ASME B1.3M may be added to the thread size designation as noted above or as specified in pertinent documentation, such as drawing or procurement document.

**FIG. 4 SCREW THREAD DESIGNATIONS**

### 6.2 Method of Designating Coated Threads

Specification on drawings of the before and after coating dimensions for screw threads is sometimes dictated by an engineering or production consideration that the size before and after coating be controlled. This results from coated screw threads having two stages of design — the before coating stage and the after coating stage. The threaded product may be produced by a supplier and coated by a user. In this case, it is necessary that a clear understanding of the coating requirements and the allowance for coating buildup be agreed upon by both supplier and user (see Section 7).

The before coating (plating) dimensions have a definite bearing on the strength of the screw threads. The before coating stage is, therefore, decidedly an engineering consideration; it is also a production consideration in requiring that proper allowance be made for the specified coating thickness. The finished parts should be of a size after coating that will allow them to be assembled with their coating components as intended.

Recommended methods for designating coated thread under various conditions are described in the following paragraph.

**6.2.1** For coated (or plated) Class 2A external threads, the basic (max.) major and basic (max.) pitch diameters shall be given, followed by the words

**AFTER COATING.** The major and pitch diameter limits of size before coating shall also be given, followed by the words **BEFORE COATING**.

## EXAMPLE:

$\frac{1}{4}$ -10 UNC-2A (21)  
Major diam. 0.7500 max. } AFTER  
PD 0.6850 max.<sup>3</sup> } COATING

Major diam. 0.7482–0.7353 } BEFORE  
PD 0.6832–0.6773<sup>4</sup> } COATING

Certain applications require an allowance for rapid assembly to permit application of the proper lubricant or for residual growth due to high-temperature expansion. In these applications, when the thread is coated and 2A allowance is not permitted to be consumed by such coating, the thread class symbol is qualified by the addition of the letter G (old symbol for allowance) following the class symbol; the maximum major and maximum pitch diameters are reduced below basic size by the amount of the 2A allowance and followed by the words **AFTER COATING**, thereby insuring that the allowance is maintained. The thread before coating must have special provisions to allow for coating thickness. The major and pitch diameter limits of size before coating (calculated in accordance with Section 7) shall also be given, followed by the letters **SPL** (special) and by the words **BEFORE COATING**.

## EXAMPLE:

$\frac{1}{4}$ -10 UNC-2AG (22)  
Major diam. 0.7482 max. } AFTER  
PD 0.6832 max.<sup>4</sup> } COATING

Major diam. 0.7464–0.7335 SPL } BEFORE  
PD 0.6814–0.6755 SPL<sup>5</sup> } COATING

Threads accepted to Class 2A limits before coating are accepted after coating by basic size Class 3A GO thread gages. The allowance given in the dimensional tables for Class 2A thread is sufficient to allow for a limited amount of coating as described in Section 7. However, if a greater coating thickness is required, it will be necessary to calculate the before coating limits in accordance with Section 7.

**6.2.2** For coated (or plated) Class 3A external threads, the maximum major and maximum pitch diameters may optionally be given, followed by the words **AFTER COATING**, thereby indicating that

the thread before coating must have special provisions to allow for coating thickness. The major and pitch diameter limits of size before coating (calculated in accordance with para. 7.5) shall be given, followed by the letters **SPL** (special) and by the words **BEFORE COATING**.

## EXAMPLE: Thickness of coating 0.0002 in. to 0.0003 in.

$\frac{1}{4}$ -28 UNF-3A (21)  
Major diam. 0.2500 max. } AFTER COATING  
PD 0.2268 max.<sup>6</sup> } (Optional)

Major diam. 0.2494–0.2431 SPL } BEFORE  
PD 0.2256–0.2235 SPL } COATING

**6.2.3** For coated (or plated) Class 1A external threads, the maximum major and maximum pitch diameters may optionally be given, followed by the words **AFTER COATING**, thereby indicating that the thread before coating must have special provisions to allow for coating thickness. The major and pitch diameter limits of size before coating (calculated in accordance with para. 7.5) shall be given, followed by the letters **SPL** (special) and by the words **BEFORE COATING**.

## EXAMPLE: Thickness of coating 0.0002 in. to 0.0003 in.

$\frac{1}{4}$ -20 UNC-1A (21)  
Major diam. 0.2489 max. } AFTER COATING  
PD 0.2164 max.<sup>7</sup> } (Optional)

Major diam. 0.2483–0.2363 SPL } BEFORE  
PD 0.2152–0.2100 SPL<sup>8</sup> } COATING

**6.2.4** Where an allowance is required to accommodate coating (or plating) on Class 1B, 2B, or 3B internal threads, the minimum minor and minimum pitch diameters may optionally be given, followed by the words **AFTER COATING**. The minor and pitch diameter limits of size before coating (calculated in accordance with para. 7.6) shall be given, followed by the letters **SPL** (special) and by the words **BEFORE COATING**.

## EXAMPLES: Thickness of coating 0.0002 in. to 0.0003 in.

$\frac{1}{4}$ -20 UNC-1B (21)  
Minor diam. 0.196 min. } AFTER COATING  
PD 0.2175 min. } (Optional)

Minor diam. 0.197–0.207 SPL } BEFORE  
PD 0.2187–0.2256 SPL } COATING

<sup>3</sup>Major and PD values are equal to basic and correspond to those in Table 3A for Class 3A.

<sup>4</sup>Major and PD limits are those in Table 3A for Class 2A.

<sup>5</sup>Major and PD limits correspond to those in Table 3A for Class 2A minus the coating allowance.

<sup>6</sup>Major and PD limits are those in Table 3A for Class 3A.

<sup>7</sup>Major and PD limits are those in Table 3A for Class 1A.

<sup>8</sup>Major and PD limits correspond to those in Table 3A for Class 1A minus the coating allowance.

$\frac{1}{4}$ -10 UNC-2B (22)  
 Minor diam. 0.642 min. } AFTER COATING  
 PD 0.6850 min. } (Optional)

Minor diam. 0.643–0.663 SPL } BEFORE  
 PD 0.6862–0.6935 SPL } COATING

$\frac{1}{4}$ -28 UNF-3B (23)  
 Minor diam. 0.2110 min. } AFTER COATING  
 PD 0.2268 min. } (Optional)

Minor diam. 0.2116–0.2194 SPL } BEFORE  
 PD 0.2280–0.2308 SPL } COATING

NOTE: The after coating limits for all of the examples above are the minor and PD values in Table 3A for the respective class of thread.

### 6.3 Method of Designating Left-Hand Threads

Unless otherwise specified, threads are right hand; a left-hand thread shall be designated LH as follows.

EXAMPLE:

$\frac{1}{4}$ -20 UNC-3A-LH (21)

### 6.4 Method of Designating UNS Threads

UNS threads are special combinations of diameter and pitch with tolerance to unified formulation.

UNS threads have the basic form of designation set out above, supplemented always by the limits of size.

EXAMPLES:

$\frac{1}{4}$ -24 UNS-3A (21)  
 Major diam. 0.2500–0.2428  
 PD 0.2229–0.2201  
 Minor diam. 0.205 max.

0.495-20 UNS-3A (21)  
 Major diam. 0.4950–0.4869  
 PD 0.4625–0.4593  
 Minor diam. 0.441 max.

1.200-10 UNS-2B (21)  
 Minor diam. 1.092–1.113  
 PD 1.1350–1.1432  
 Major diam. 1.200 min.

### 6.5 Designations for Other Threads

Threads having tolerances that do not conform to unified formulation and threads having multiple start or lead, or special form, also require additional considerations in the thread designation. The recom-

mended methods of designating these threads are described in the following paragraphs.

**6.5.1 Method of Designating Threads Having Tolerances Not to Unified Formulation.** If a standard series thread is altered in any respect other than revised pitch diameter limits for a special length of engagement, the modification of crests, or the adjustment of the limits of size to accommodate coating, as shown above, it is designated in accordance with the following.

EXAMPLES:

$\frac{7}{16}$ -24 Unified Form SPL-EXT\* (22)  
 Major diam. 0.4340–0.4280 SPL  
 PD 0.4065–0.4025 SPL  
 Minor diam. 0.3889 max.  
 LE 0.38

$\frac{1}{2}$ -13 Unified Form SPL-INT\* (22)  
 Minor diam. 0.424–0.434 SPL  
 PD 0.4500–0.4580 SPL  
 Major diam. 0.5000 min.  
 LE 0.50

**6.5.2 Method of Designating Multiple Start Threads.** If a thread is required with a multiple start or lead, it is designated by specifying in sequence the nominal size, pitch (in decimals or threads per inch), and lead (in decimals or fractions) as follows.

EXAMPLE:

$\frac{3}{4}$ -0.0625P-0.1875L Unified Form SPL-EXT\* (23)  
 Major diam. 0.7485–0.7391  
 PD 0.7079–0.7003 SPL  
 Minor diam. 0.6808 max.  
 LE 0.75

**6.5.3 Method of Designating Special Form Threads.** If a thread for design consideration requires a variation from unified standard thread contour and is not covered by another recognized standard, such as when the detail of the root differs from that for the standard thread form, the designation shall not include either the letters "UN" or the word "UNIFIED," but shall be as follows.

EXAMPLE:

$\frac{7}{8}$ -18 SPL 60 deg. Form-EXT\* (22)  
 Major diam. 0.8750–0.8668  
 PD 0.8384–0.8343  
 Minor diam. 0.8068 max.  
 LE 0.69

\*Where the thread designation is used in text or is shown on a drawing and a leader line does not indicate the specific position, then add EXT or INT to the designation.



### 6.6 Method of Designating Threads Having Special Length of Engagement

In the assembly of threads in mating parts, the length of engagement varies according to the design requirements. It should be noted that the length of engagement is not necessarily the same as the full thread length provided on the part, but is the length of assembled thread in the mating parts.

Where a standard series thread has a special length of engagement differing from that for which the standard pitch diameter tolerances are applicable as indicated in Section 5, the thread class symbol is qualified by the addition of the letters SE (special engagement) preceding the class symbol. The specification of the special pitch diameter limits of size and the length of engagement *LE*, rounded to a two place decimal, are a requirement.

#### EXAMPLES:

$\frac{1}{2}$ -13 UNC-SE2A (23)  
PD 0.4485-0.4423  
*LE* 1.00

$\frac{1}{4}$ -24 UNS-SE3A (23)  
Major diam. 0.2500-0.2428  
PD 0.2229-0.2194  
*LE* 0.88

**6.6.1** In some cases where greater than standard length of engagement is required, it is desirable to use standard externally threaded parts with tolerances based on standard length of engagement. For example, in the case of a standard bolt assembled into a tapped hole in aluminum, the designation of the bolt thread will conform to that of a thread for a standard length of engagement.

The designation for the tapped hole thread should include the allowance in the basic size, the pitch diameter limits of size, and the length of gage, in addition to the information normally given. See para. 5.3.1(e).

EXAMPLE: Requiring use of 1.00 long GO thread and GO plain gages  
0.5025-13 UNS-SE2B (21)  
Minor diam. 0.420-0.437  
PD 0.4525-0.4606  
*LG* 1.00

Similarly, where greater than standard length of engagement is required, it is desirable to use standard internally threaded parts with tolerances based on standard length of engagement. Therefore, the external thread is provided with an added allowance. See para. 5.3.1(f).

The designation for the external thread should include the added allowance in the basic size, the pitch

diameter limits of size, and the length of gage, in addition to the information normally given.

EXAMPLE: Requiring use of 0.88 long GO thread and GO plain gages  
0.3725-24 UNS-SE2A (21)  
Major diam. 0.3714-0.3642  
PD 0.3443-0.3396  
*LG* 0.88

**6.6.2** When a long length of engagement is required and standard length GO thread and GO plain gages are to be used, the thread designation should indicate the thread modifications and a standard gage length, *LG* Std. (see para. 5.3.2).

EXAMPLES: With additional allowance indicating use of standard length GO thread and GO plain gages  
0.5058-13 UNS-2B (22)  
Minor diam. 0.423-0.440  
PD 0.4558-0.4623  
*LG* Std.

0.3706-24 UNS-2A (22)  
Major diam. 0.3695-0.3623  
PD 0.3424-0.3386  
*LG* Std.

**6.6.3** For applications of long length of engagement of mating parts involving very high strength materials, increases in tolerances based on standard length of engagement may be detrimental. In these cases, the tolerances based on the standard length of engagement may be applied to increased length of engagement threads. This requires the GO thread gages to have a special length equal to the length of engagement as specified.

The designations for restricted applications should be qualified with the abbreviation SPL (special) as shown in the examples below. See para. 5.3.1(d).

EXAMPLES: Requiring use of 1.00 long GO thread and GO plain gages  
0.500-20 UNF-3A SPL (21)  
*LG* 1.00 SPL  
  
0.500-20 UNF-3B SPL (21)  
*LG* 1.00 SPL

NOTE: In drawings, tolerances tabulated for the standard length of engagement in ASME B1.1 shall apply over the full length of engagement.

### 6.7 Method of Designating Threads Having Modified Crests

It is occasionally necessary to modify the limits of size of the major diameter of an external thread or the minor diameter of an internal thread within the maximum-material limits established for standard series and special threads in order to fit a specific pur-

pose, but without change in class of thread or pitch diameter limits. (It should be noted that standard pitch diameter gages may be used to accept such threads.) Such threads shall be specified with the established thread designation, followed by a statement of the modified diameter limits and the designation MOD. This practice also applies to modifications of internal thread minor diameters described in para. 5.6.1.

**EXAMPLES:**

$\frac{3}{8}$ -24 UNF-3A MOD (21)  
Major diam. 0.3720-0.3648 MOD

1 $\frac{1}{2}$ -10 UNS-3B MOD (21)  
Minor diam. 1.398-1.409 MOD  
PD 1.4350-1.4412  
Major diam. 1.500 min.

## 7 DIMENSIONAL ACCOMMODATION OF COATING OR PLATING FOR 60 DEG. THREADS

### 7.1 Introduction

It is not within the scope of this Standard to make recommendations for thickness of, or to specify limits for, coatings. However, it will aid mechanical interchangeability if certain principles are followed wherever conditions permit. The following guides should be helpful in determining the amount and direction of the alterations to establish applicable limits of size before coating. Some commonly used and firmly established processes for heavy coatings, such as hot dip galvanizing, do not fall within the scope of this Section.

**NOTE:** The term *coating* refers to one or more applications of additive material to threads, including dry film lubricants, but excluding soft or liquid lubricants that are readily displaced in assembly and gaging. Plating is therefore included as coating in the text.

This Standard specifies limits of size that pertain whether threads are coated or uncoated. Only in Class 2A threads is the allowance available to accommodate coatings. Thus, in all classes of internal threads and in all Class 1A, 2AG, and 3A external threads, limits of size must be adjusted before plating to provide suitable provision for the desired coating.

### 7.2 Material Limits for Coated Threads

Unless otherwise specified, size limits for standard external thread Class 2A apply prior to coating. The external thread allowance may thus be used to accommodate the coating thickness on coated parts,

provided that the maximum coating thickness is no more than one-fourth of the allowance (see Fig. 5). Thus, the thread after coating is subject to acceptance using a basic Class 3A size GO thread gage and a Class 2A thread gage for either minimum material or NOT GO. Where external thread has no allowance, or allowance must be maintained after coating, and for standard internal threads, sufficient allowance must be provided prior to coating to assure that finished product threads do not exceed the maximum-material limits specified. For thread Class 3A, Class 2A allowances in accordance with Tables 20 to 30 or Table 32 should be applied whenever possible (see paras. 7.4, 7.5, and 7.6).

### 7.3 Dimensional Effects of Coating

On a cylindrical surface, the effect of coating is to change the diameter by twice the coating thickness, one coating thickness on each side of the cylinder. Because the coating thickness is measured perpendicular to the coated surface, while the pitch diameter is measured perpendicular to the thread axis, the effect of a uniformly coated thread flank on the pitch diameter is a change of four times the thickness of coating on the flank (see Fig. 5). The diameters of external threads before coating will be smaller, while the diameters of internal threads before coating will be larger, than the coated diameters.

### 7.4 External Thread With Allowance Available for Coating

**7.4.1 Maximum and Minimum Coating Thickness Specified.** The amount of the allowance on the pitch diameter is sufficient for uniform coating if four times the maximum coating thickness is equal to or less than the allowance tabulated in Tables 3A, 3B, 20 to 30, or 32.

**7.4.2 Only Nominal or Minimum Coating Thickness Specified.** If no coating thickness tolerance is given, it is recommended that a tolerance of plus 50% of the nominal or minimum thickness be assumed. Then the amount of the allowance on the pitch diameter is sufficient for uniform coating if six times the specified coating thickness is equal to or less than the allowance tabulated in Tables 3A, 3B, 20 to 30, or 32.

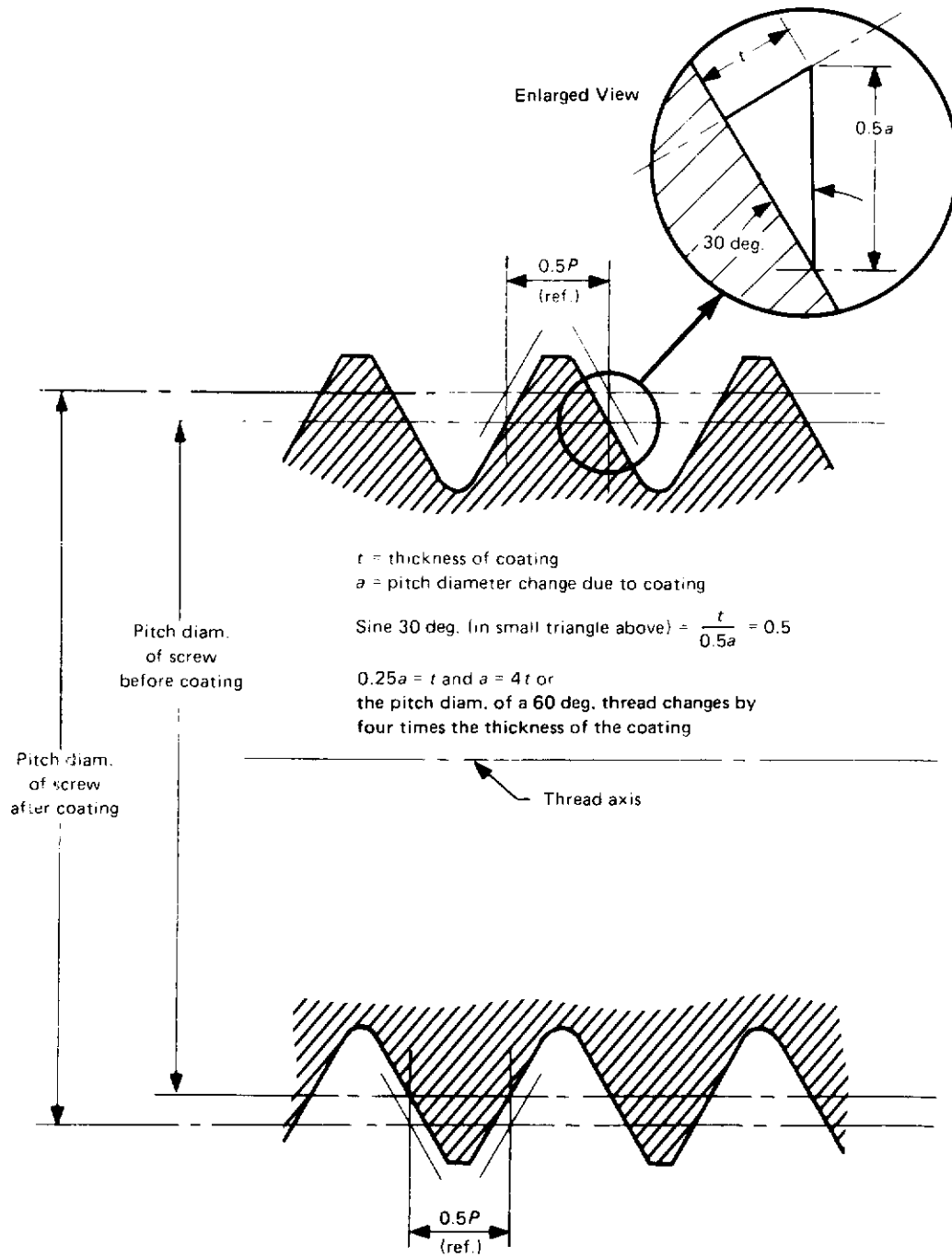


FIG. 5 RATIO OF PITCH DIAMETER CHANGE TO THICKNESS OF COATING ON 60 DEG. THREADS

## 7.5 External Thread With No Allowance for Coating

**7.5.1 Maximum and Minimum Coating Thickness Specified.** To determine before coating gaging limits for a uniformly coated thread, decrease:

- (a) the maximum pitch diameter by four times the maximum coating thickness;
- (b) the minimum pitch diameter by four times the minimum coating thickness;
- (c) the maximum major diameter by two times the maximum coating thickness;
- (d) the minimum major diameter by two times the minimum coating thickness.

**EXAMPLE:**

$\frac{3}{8}$ -16 UNC-2A (21) AFTER COATING  
Coating thickness 0.0002–0.0003 in.

To determine the before coating maximum-material sizes, decrease the maximum pitch diameter of 0.3331 in. by 0.0012 in. ( $4 \times 0.0003$ ) to 0.3319 in., and the maximum major diameter of 0.3737 in. by 0.0006 in. ( $2 \times 0.0003$ ) to 0.3731 in. For the before coating minimum sizes, decrease the minimum pitch diameter of 0.3287 in. by 0.0008 in. ( $4 \times 0.0002$ ) to 0.3279 in., and the minimum major diameter of 0.3643 in. by 0.0004 in. ( $2 \times 0.0002$ ) to 0.3639 in. The before coating sizes should be included in the thread designation (see para. 6.2.1).

**7.5.2 Only Nominal or Minimum Coating Thickness Specified.** If no coating thickness tolerance is given, it is recommended that a tolerance of plus 50% of the nominal or minimum thickness be assumed. Then, to determine before coating gaging limits for a uniformly coated thread, decrease:

- (a) the maximum pitch diameter by six times the coating thickness;
- (b) the minimum pitch diameter by four times the coating thickness;
- (c) the maximum major diameter by three times the coating thickness;
- (d) the minimum major diameter by two times the coating thickness.

**EXAMPLE:**

$\frac{1}{2}$ -13 UNC-3A (22)  
Coating thickness 0.0004 in.

Since the allowance for Class 2A thread is 0.0015 in., the nominal or minimum coating thickness that may be applied is equal to 0.0015 in. divided by six, or 0.00025 in. (the maximum thickness of coating that may be applied is equal to 0.0015 divided by four or 0.00038 in.). This is not sufficient for the required nominal or minimum coating of 0.0004 in. specified,

so additional adjustments to the before coating pitch and major diameters must be made.

To determine the before coating maximum-material sizes, decrease the maximum pitch diameter of 0.4500 in. by 0.0024 in. ( $6 \times 0.0004$ ) to 0.4476 in., and the maximum major diameter of 0.5000 in. by 0.0012 in. ( $3 \times 0.0004$ ) to 0.4988 in. For the before coating minimum sizes, decrease the minimum pitch diameter of 0.4463 in. by 0.0016 in. ( $4 \times 0.0004$ ) to 0.4447 in., and the minimum major diameter of 0.4891 in. by 0.0008 in. ( $2 \times 0.0004$ ) to 0.4883 in. The before coating sizes should be included in the thread designation (see para. 6.2.1).

**7.5.3 Adjusted Size Limits.** It should be noted in the preceding examples that the before coating material limit tolerances are less than the tolerances after coating. This is because the coating tolerance consumes some of the product tolerance. In some instances, there may be insufficient pitch diameter tolerance available in the before coating condition, so that additional adjustments and controls will be necessary.

**7.5.4 Strength.** On small thread sizes (0.190 in. and smaller), there is a possibility that coating thickness adjustments will cause base material (minimum) conditions that may significantly affect the strength of externally threaded parts. Limitations on coating thickness, or part redesign, may be necessary.

## 7.6 Internal Threads

Standard internal threads provide no allowance for coating thickness. To determine before coating gaging limits for a uniformly coated thread, increase:

- (a) the minimum pitch diameter by four times the maximum coating thickness, if specified, or by six times the minimum or nominal coating thickness, if not specified;
- (b) the maximum pitch diameter by four times the minimum or nominal coating thickness;
- (c) the minimum minor diameter by two times the maximum coating thickness, if specified, or by three times the minimum or nominal coating thickness, if not specified;
- (d) the maximum minor diameter by two times the minimum or nominal coating thickness.

## 7.7 Other Considerations

It is essential to adequately review all possibilities and consider limitations in the threading and coating production processes before finalizing the coating

process and the allowance required to accommodate the coating. A no allowance thread after coating shall not transgress the basic profile, and is therefore subject to acceptance using a basic Class 3A, 1B, 2B, or 3B size GO thread gage.

## 8 STANDARD SERIES THREADS (UN/UNR) AND LIMITS OF SIZE FOR STANDARD SERIES AND UNS/UNRS SERIES THREADS

### 8.1 Standard Series

The standard series for unified inch screw threads is listed in Table 2. Although the designations shown are for the UN thread form, UNR designations may be used in all cases.

### 8.2 Limits of Size

The limits of size are defined by the design profile at its maximum-material condition and the minimum profile at the minimum-material condition. The limits are specified as diameters (major diameter, minor diameter, pitch diameter), and the practical interpretation of these limits on a three-dimensional threaded product depends on the method of inspection. These dimensions serve as a basis for measurement and gaging of the thread, but the methods, techniques, and equipment used for thread evaluation establish the degree of thread conformance to the tabulated dimensions. Current techniques for measuring and gaging do not verify exact conformance of a thread to its specified maximum and minimum envelope. See ANSI/ASME B1.3M for gaging systems for dimensional acceptability.

**8.2.1** Limits of size for the majority of the standard series are shown in Table 3A. Omissions are the secondary size range in the 4-UN series, all sizes over 6

in. in the 6-UN series, and all sizes over 6 in. in the 8-UN series. Refer to Table 2 for a list of secondary sizes.

**8.2.2** The limits of size for selected combinations of diameter and pitch with tolerances and allowances to unified formulation (designated UNS) are shown in Table 3B.

**8.2.3** Limits of size not given may be calculated from the formulas given in the following paragraphs. Formulas and symbols for thread form are given in Section 10.

### 8.3 Formulas for Limits of Size

These formulas were used to calculate the values shown in Tables 3A and 3B for standard series and selected combinations, respectively. The following symbols are used in the equations.

- $D$  bsc = basic major (nominal) diameter
- $h_s$  = height of external thread (see Table 6)
- $h_n$  = height of internal thread (see Table 6)
- $h_{as}$  = screw addendum height (see Table 6)
- $h_b$  =  $2h_{as}$  (see Table 6)
- $D_2$  bsc = basic pitch diameter ( $D - h_b$ ) (see Tables 8 through 18)
- $d_3$  = UNR series design minor diameter [ $d_1 - (H/8)$ ] (see Tables 8 through 18)
- $D_1$  bsc = basic minor diameter ( $D - 2h_n$ ) (see Tables 8 through 18)
- $P$  = pitch, in.

To obtain limits of size using the formulas, see Table 6 for basic thread form data, Section 11 for basic dimensions, Sections 12 and 13 for allowances and tolerances, or Section 5 for formulas of allowance and tolerance. For easy reference, outline guides for determining limits of size of external and internal threads are given in Tables 1A and 1B.

*Section 8 continues on page 53.*

TABLE 1A OUTLINE GUIDE FOR DETERMINING LIMITS OF SIZE OF EXTERNAL THREADS

Thread Class	Major Diameter $d$		Pitch Diameter $d_2$		Minor Diameter $d_1$
	Maximum	Minimum	Maximum	Minimum	
1A	Nominal size minus allowance	Maximum, minus tolerance	Maximum major diameter minus $h_b$ (Table 6, col. 13)	Maximum, minus tolerance	See paras. 8.3.1(e) and (f). Established by crest of new tool and minimum minor diameter of GO thread gage.
2A	Nominal size minus allowance	Maximum, minus tolerance	Maximum major diameter minus $h_b$ (Table 6, col. 13)	Maximum, minus tolerance	See paras. 8.3.1(e) and (f). Established by crest of new tool and minimum minor diameter of GO thread gage.
3A	Nominal size	Maximum, minus tolerance	Maximum major diameter minus $h_b$ (Table 6, col. 13)	Maximum, minus tolerance	See paras. 8.3.1(e) and (f). Established by crest of new tool and minimum minor diameter of GO thread gage.

TABLE 1B OUTLINE GUIDE FOR DETERMINING LIMITS OF SIZE OF INTERNAL THREADS

Thread Class	Minor Diameter $D_1$		Pitch Diameter $D_2$		Major Diameter $D$
	Minimum	Maximum	Minimum	Maximum	
1B	Nominal size minus $2h_n$ (Table 6, col. 15)	Minimum, plus tolerance	Nominal size minus $h_b$ (Table 6, col. 13)	Minimum, plus tolerance	See paras. 8.3.2(a) and (b). Established by crest of new tool and maximum major diameter of GO thread gage.
2B	Nominal size minus $2h_n$ (Table 6, col. 15)	Minimum, plus tolerance	Nominal size minus $h_b$ (Table 6, col. 13)	Minimum, plus tolerance	See paras. 8.3.2(a) and (b). Established by crest of new tool and maximum major diameter of GO thread gage.
3B	Nominal size minus $2h_n$ (Table 6, col. 15)	Minimum, plus tolerance	Nominal size minus $h_b$ (Table 6, col. 13)	Minimum, plus tolerance	See paras. 8.3.2(a) and (b). Established by crest of new tool and maximum major diameter of GO thread gage.

TABLE 2 STANDARD SERIES THREADS (UN/UNR)

Nominal Size		Basic Major Diameter	Threads/in.											Nominal Size
			Series With Graded Pitches			Series With Constant Pitches								
Primary	Secondary		Coarse UNC	Fine UNF	Extra-Fine UNEF	4-UN	6-UN	8-UN	12-UN	16-UN	20-UN	28-UN	32-UN	
0	...	0.0600	...	80	...	...	...	...	...	...	...	...	0	
...	1	0.0730	64	72	...	...	...	...	...	...	...	...	1	
2	...	0.0860	56	64	...	...	...	...	...	...	...	...	2	
...	3	0.0990	48	56	...	...	...	...	...	...	...	...	3	
4	...	0.1120	40	48	...	...	...	...	...	...	...	...	4	
5	...	0.1250	40	44	...	...	...	...	...	...	...	...	5	
6	...	0.1380	32	40	...	...	...	...	...	...	...	UNC	6	
8	...	0.1640	32	36	...	...	...	...	...	...	...	UNC	8	
10	...	0.1900	24	32	...	...	...	...	...	...	...	UNF	10	
...	12	0.2160	24	28	32	...	...	...	...	...	UNF	UNEF	12	
1/4	...	0.2500	20	28	32	...	...	...	...	UNC	UNF	UNEF	1/4	
5/16	...	0.3125	18	24	32	...	...	...	...	20	28	UNEF	5/16	
3/8	...	0.3750	16	24	32	...	...	...	...	UNC	20	28	UNEF	3/8
7/16	...	0.4375	14	20	28	...	...	...	...	16	UNF	UNEF	32	7/16
1/2	...	0.5000	13	20	28	...	...	...	...	16	UNF	UNEF	32	1/2
9/16	...	0.5625	12	18	24	...	...	...	UNC	16	20	28	32	9/16
5/8	...	0.6250	11	18	24	...	...	...	12	16	20	28	32	5/8
...	11/16	0.6875	...	...	24	...	...	...	12	16	20	28	32	11/16
3/4	...	0.7500	10	16	20	...	...	...	12	UNF	UNEF	28	32	3/4
...	13/16	0.8125	...	...	20	...	...	...	12	16	UNEF	28	32	13/16
7/8	...	0.8750	9	14	20	...	...	...	12	16	UNEF	28	32	7/8
...	15/16	0.9375	...	...	20	...	...	...	12	16	UNEF	28	32	15/16
1	...	1.0000	8	12	20	...	...	UNC	UNF	16	UNEF	28	32	1
...	1 1/16	1.0625	...	...	18	...	...	8	12	16	20	28	...	1 1/16
1 1/8	...	1.1250	7	12	18	...	...	8	UNF	16	20	28	...	1 1/8
...	1 3/16	1.1875	...	...	18	...	...	8	12	16	20	28	...	1 3/16
1 1/4	...	1.2500	7	12	18	...	...	8	UNF	16	20	28	...	1 1/4
...	1 5/16	1.3125	...	...	18	...	...	8	12	16	20	28	...	1 5/16
1 3/8	...	1.3750	6	12	18	...	UNC	8	UNF	16	20	28	...	1 3/8
...	1 7/16	1.4375	...	...	18	...	6	8	12	16	20	28	...	1 7/16
1 1/2	...	1.5000	6	12	18	...	UNC	8	UNF	16	20	28	...	1 1/2
...	1 9/16	1.5625	...	...	18	...	6	8	12	16	20	...	...	1 9/16
1 5/8	...	1.6250	...	...	18	...	6	8	12	16	20	...	...	1 5/8
...	1 11/16	1.6875	...	...	18	...	6	8	12	16	20	...	...	1 11/16
1 3/4	...	1.7500	5	...	...	...	6	8	12	16	20	...	...	1 3/4
...	1 13/16	1.8125	...	...	...	...	6	8	12	16	20	...	...	1 13/16
1 7/8	...	1.8750	...	...	...	...	6	8	12	16	20	...	...	1 7/8
...	1 15/16	1.9375	...	...	...	...	6	8	12	16	20	...	...	1 15/16
2	...	2.0000	4 1/2	...	...	...	6	8	12	16	20	...	...	2
...	2 1/8	2.1250	...	...	...	...	6	8	12	16	20	...	...	2 1/8
2 1/4	...	2.2500	4 1/2	...	...	...	6	8	12	16	20	...	...	2 1/4
...	2 3/8	2.3750	...	...	...	...	6	8	12	16	20	...	...	2 3/8
2 1/2	...	2.5000	4	...	...	UNC	6	8	12	16	20	...	...	2 1/2
...	2 5/8	2.6250	...	...	...	4	6	8	12	16	20	...	...	2 5/8
2 3/4	...	2.7500	4	...	...	UNC	6	8	12	16	20	...	...	2 3/4
...	2 7/8	2.8750	...	...	...	4	6	8	12	16	20	...	...	2 7/8

TABLE 2 STANDARD SERIES THREADS (UN/UNR) (CONT'D)

Nominal Size		Basic Major Diameter	Threads/in.											Nominal Size
			Series With Graded Pitches			Series With Constant Pitches								
Primary	Secondary		Coarse UNC	Fine UNF	Extra-Fine UNEF	4-UN	6-UN	8-UN	12-UN	16-UN	20-UN	28-UN	32-UN	
3	...	3.0000	4	...	...	UNC	6	8	12	16	20	...	...	3
...	3 1/8	3.1250	...	...	...	4	6	8	12	16	...	...	...	3 1/8
3 1/4	...	3.2500	4	...	...	UNC	6	8	12	16	...	...	...	3 1/4
...	3 3/8	3.3750	...	...	...	4	6	8	12	16	...	...	...	3 3/8
3 1/2	...	3.5000	4	...	...	UNC	6	8	12	16	...	...	...	3 1/2
...	3 5/8	3.6250	...	...	...	4	6	8	12	16	...	...	...	3 5/8
3 3/4	...	3.7500	4	...	...	UNC	6	8	12	16	...	...	...	3 3/4
...	3 7/8	3.8750	...	...	...	4	6	8	12	16	...	...	...	3 7/8
4	...	4.0000	4	...	...	UNC	6	8	12	16	...	...	...	4
...	4 1/8	4.1250	...	...	...	4	6	8	12	16	...	...	...	4 1/8
4 1/4	...	4.2500	...	...	...	4	6	8	12	16	...	...	...	4 1/4
...	4 3/8	4.3750	...	...	...	4	6	8	12	16	...	...	...	4 3/8
4 1/2	...	4.5000	...	...	...	4	6	8	12	16	...	...	...	4 1/2
...	4 5/8	4.6250	...	...	...	4	6	8	12	16	...	...	...	4 5/8
4 3/4	...	4.7500	...	...	...	4	6	8	12	16	...	...	...	4 3/4
...	4 7/8	4.8750	...	...	...	4	6	8	12	16	...	...	...	4 7/8
5	...	5.0000	...	...	...	4	6	8	12	16	...	...	...	5
...	5 1/8	5.1250	...	...	...	4	6	8	12	16	...	...	...	5 1/8
5 1/4	...	5.2500	...	...	...	4	6	8	12	16	...	...	...	5 1/4
...	5 3/8	5.3750	...	...	...	4	6	8	12	16	...	...	...	5 3/8
5 1/2	...	5.5000	...	...	...	4	6	8	12	16	...	...	...	5 1/2
...	5 5/8	5.6250	...	...	...	4	6	8	12	16	...	...	...	5 5/8
5 3/4	...	5.7500	...	...	...	4	6	8	12	16	...	...	...	5 3/4
...	5 7/8	5.8750	...	...	...	4	6	8	12	16	...	...	...	5 7/8
6	...	6.0000	...	...	...	4	6	8	12	16	...	...	...	6

GENERAL NOTE:

Series designation shown indicates the UN thread form; however, the UNR thread form may be specified by substituting UNR in place of UN in all designations for external use only.



TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
0-80 or 0.060-80	UNF	2A	0.0005	0.0595	0.0563	...	0.0514	0.0496	0.0018	0.0446	2B	0.0465	0.0514	0.0519	0.0542	0.0023	0.0600
		3A	0.0000	0.0600	0.0568	...	0.0519	0.0506	0.0013	0.0451	3B	0.0465	0.0514	0.0519	0.0536	0.0017	0.0600
1-64 or 0.073-64	UNC	2A	0.0006	0.0724	0.0686	...	0.0623	0.0603	0.0020	0.0538	2B	0.0561	0.0623	0.0629	0.0655	0.0026	0.0730
		3A	0.0000	0.0730	0.0692	...	0.0629	0.0614	0.0015	0.0544	3B	0.0561	0.0623	0.0629	0.0648	0.0019	0.0730
1-72 or 0.073-72	UNF	2A	0.0006	0.0724	0.0689	...	0.0634	0.0615	0.0019	0.0559	2B	0.0580	0.0635	0.0640	0.0665	0.0025	0.0730
		3A	0.0000	0.0730	0.0695	...	0.0640	0.0626	0.0014	0.0565	3B	0.0580	0.0635	0.0640	0.0659	0.0019	0.0730
2-56 or 0.086-56	UNC	2A	0.0006	0.0854	0.0813	...	0.0738	0.0717	0.0021	0.0642	2B	0.0667	0.0737	0.0744	0.0772	0.0028	0.0860
		3A	0.0000	0.0860	0.0819	...	0.0744	0.0728	0.0016	0.0648	3B	0.0667	0.0737	0.0744	0.0765	0.0021	0.0860
2-64 or 0.086-64	UNF	2A	0.0006	0.0854	0.0816	...	0.0753	0.0733	0.0020	0.0668	2B	0.0691	0.0753	0.0759	0.0786	0.0027	0.0860
		3A	0.0000	0.0860	0.0822	...	0.0759	0.0744	0.0015	0.0674	3B	0.0691	0.0753	0.0759	0.0779	0.0020	0.0860
3-48 or 0.099-48	UNC	2A	0.0007	0.0983	0.0938	...	0.0848	0.0825	0.0023	0.0734	2B	0.0764	0.0845	0.0855	0.0885	0.0030	0.0990
		3A	0.0000	0.0990	0.0945	...	0.0855	0.0838	0.0017	0.0741	3B	0.0764	0.0845	0.0855	0.0877	0.0022	0.0990
3-56 or 0.099-56	UNF	2A	0.0007	0.0983	0.0942	...	0.0867	0.0845	0.0022	0.0771	2B	0.0797	0.0865	0.0874	0.0902	0.0028	0.0990
		3A	0.0000	0.0990	0.0949	...	0.0874	0.0858	0.0016	0.0778	3B	0.0797	0.0865	0.0874	0.0895	0.0021	0.0990
4-40 or 0.112-40	UNC	2A	0.0008	0.1112	0.1061	...	0.0950	0.0925	0.0025	0.0814	2B	0.0849	0.0939	0.0958	0.0991	0.0033	0.1120
		3A	0.0000	0.1120	0.1069	...	0.0958	0.0939	0.0019	0.0822	3B	0.0849	0.0939	0.0958	0.0982	0.0024	0.1120
4-48 or 0.112-48	UNF	2A	0.0007	0.1113	0.1068	...	0.0978	0.0954	0.0024	0.0864	2B	0.0894	0.0968	0.0985	0.1016	0.0031	0.1120
		3A	0.0000	0.1120	0.1075	...	0.0985	0.0967	0.0018	0.0871	3B	0.0894	0.0968	0.0985	0.1008	0.0023	0.1120
5-40 or 0.125-40	UNC	2A	0.0008	0.1242	0.1191	...	0.1080	0.1054	0.0026	0.0944	2B	0.0979	0.1062	0.1088	0.1121	0.0033	0.1250
		3A	0.0000	0.1250	0.1199	...	0.1088	0.1069	0.0019	0.0952	3B	0.0979	0.1062	0.1088	0.1113	0.0025	0.1250
5-44 or 0.125-44	UNF	2A	0.0007	0.1243	0.1195	...	0.1095	0.1070	0.0025	0.0972	2B	0.1004	0.1079	0.1102	0.1134	0.0032	0.1250
		3A	0.0000	0.1250	0.1202	...	0.1102	0.1083	0.0019	0.0979	3B	0.1004	0.1079	0.1102	0.1126	0.0024	0.1250
6-32 or 0.138-32	UNC	2A	0.0008	0.1372	0.1312	...	0.1169	0.1141	0.0028	0.1000	2B	0.104	0.114	0.1177	0.1214	0.0037	0.1380
		3A	0.0000	0.1380	0.1320	...	0.1177	0.1156	0.0021	0.1008	3B	0.1040	0.1140	0.1177	0.1204	0.0027	0.1380
6-40 or 0.138-40	UNF	2A	0.0008	0.1372	0.1321	...	0.1210	0.1184	0.0026	0.1074	2B	0.111	0.119	0.1218	0.1252	0.0034	0.1380
		3A	0.0000	0.1380	0.1329	...	0.1218	0.1198	0.0020	0.1082	3B	0.1110	0.1186	0.1218	0.1243	0.0025	0.1380
8-32 or 0.164-32	UNC	2A	0.0009	0.1631	0.1571	...	0.1428	0.1399	0.0029	0.1259	2B	0.130	0.139	0.1437	0.1475	0.0038	0.1640
		3A	0.0000	0.1640	0.1580	...	0.1437	0.1415	0.0022	0.1268	3B	0.1300	0.1389	0.1437	0.1465	0.0028	0.1640
8-36 or 0.164-36	UNF	2A	0.0008	0.1632	0.1577	...	0.1452	0.1424	0.0028	0.1301	2B	0.134	0.142	0.1460	0.1496	0.0036	0.1640
		3A	0.0000	0.1640	0.1585	...	0.1460	0.1439	0.0021	0.1309	3B	0.1340	0.1416	0.1460	0.1487	0.0027	0.1640

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

ASME B1.1-1989

UNIFIED INCH SCREW THREADS

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	Min.
10-24 or 0.190-24	UNC	2A	0.0010	0.1890	0.1818	...	0.1619	0.1586	0.0033	0.1394	2B	0.145	0.156	0.1629	0.1672	0.0043	0.1900
		3A	0.0000	0.1900	0.1828	...	0.1629	0.1604	0.0025	0.1404	3B	0.1450	0.1555	0.1629	0.1661	0.0032	0.1900
10-32 or 0.190-32	UNF	2A	0.0009	0.1891	0.1831	...	0.1688	0.1658	0.0030	0.1519	2B	0.156	0.164	0.1697	0.1736	0.0039	0.1900
		3A	0.0000	0.1900	0.1840	...	0.1697	0.1674	0.0023	0.1528	3B	0.1560	0.1641	0.1697	0.1726	0.0029	0.1900
12-24 or 0.216-24	UNC	2A	0.0010	0.2150	0.2078	...	0.1879	0.1845	0.0034	0.1654	2B	0.171	0.181	0.1889	0.1933	0.0044	0.2160
		3A	0.0000	0.2160	0.2088	...	0.1889	0.1863	0.0026	0.1664	3B	0.1710	0.1807	0.1889	0.1922	0.0033	0.2160
12-28 or 0.216-28	UNF	2A	0.0010	0.2150	0.2085	...	0.1918	0.1886	0.0032	0.1724	2B	0.177	0.186	0.1928	0.1970	0.0042	0.2160
		3A	0.0000	0.2160	0.2095	...	0.1928	0.1904	0.0024	0.1734	3B	0.1770	0.1857	0.1928	0.1959	0.0031	0.2160
12-32 or 0.216-32	UNEF	2A	0.0009	0.2151	0.2091	...	0.1948	0.1917	0.0031	0.1779	2B	0.182	0.190	0.1957	0.1998	0.0041	0.2160
		3A	0.0000	0.2160	0.2100	...	0.1957	0.1933	0.0024	0.1788	3B	0.1820	0.1895	0.1957	0.1988	0.0031	0.2160
1/4-20 or 0.250-20	UNC	1A	0.0011	0.2489	0.2367	...	0.2164	0.2108	0.0056	0.1894	1B	0.196	0.207	0.2175	0.2248	0.0073	0.2500
		2A	0.0011	0.2489	0.2408	0.2367	0.2164	0.2127	0.0037	0.1894	2B	0.196	0.207	0.2175	0.2224	0.0049	0.2500
		3A	0.0000	0.2500	0.2419	...	0.2175	0.2147	0.0028	0.1905	3B	0.1960	0.2067	0.2175	0.2211	0.0036	0.2500
1/4-28 or 0.250-28	UNF	1A	0.0010	0.2490	0.2392	...	0.2258	0.2208	0.0050	0.2064	1B	0.211	0.220	0.2268	0.2333	0.0065	0.2500
		2A	0.0010	0.2490	0.2425	...	0.2258	0.2225	0.0033	0.2064	2B	0.211	0.220	0.2268	0.2311	0.0043	0.2500
		3A	0.0000	0.2500	0.2435	...	0.2268	0.2243	0.0025	0.2074	3B	0.2110	0.2190	0.2268	0.2300	0.0032	0.2500
1/4-32 or 0.250-32	UNEF	2A	0.0010	0.2490	0.2430	...	0.2287	0.2255	0.0032	0.2118	2B	0.216	0.224	0.2297	0.2339	0.0042	0.2500
		3A	0.0000	0.2500	0.2440	...	0.2297	0.2273	0.0024	0.2128	3B	0.2160	0.2229	0.2297	0.2328	0.0031	0.2500
5/16-18 or 0.3125-18	UNC	1A	0.0012	0.3113	0.2982	...	0.2752	0.2691	0.0061	0.2452	1B	0.252	0.265	0.2764	0.2843	0.0079	0.3125
		2A	0.0012	0.3113	0.3026	0.2982	0.2752	0.2712	0.0040	0.2452	2B	0.252	0.265	0.2764	0.2817	0.0053	0.3125
		3A	0.0000	0.3125	0.3038	...	0.2764	0.2734	0.0030	0.2464	3B	0.2520	0.2630	0.2764	0.2803	0.0039	0.3125
5/16-20 or 0.3125-20	UN	2A	0.0012	0.3113	0.3032	...	0.2788	0.2748	0.0040	0.2518	2B	0.258	0.270	0.2800	0.2852	0.0052	0.3125
		3A	0.0000	0.3125	0.3044	...	0.2800	0.2770	0.0030	0.2530	3B	0.2580	0.2680	0.2800	0.2839	0.0039	0.3125
5/16-24 or 0.3125-24	UNF	1A	0.0011	0.3114	0.3006	...	0.2843	0.2788	0.0055	0.2618	1B	0.267	0.277	0.2854	0.2925	0.0071	0.3125
		2A	0.0011	0.3114	0.3042	...	0.2843	0.2806	0.0037	0.2618	2B	0.267	0.277	0.2854	0.2902	0.0048	0.3125
		3A	0.0000	0.3125	0.3053	...	0.2854	0.2827	0.0027	0.2629	3B	0.2670	0.2754	0.2854	0.2890	0.0036	0.3125
5/16-28 or 0.3125-28	UN	2A	0.0010	0.3115	0.3050	...	0.2883	0.2849	0.0034	0.2689	2B	0.274	0.282	0.2893	0.2937	0.0044	0.3125
		3A	0.0000	0.3125	0.3060	...	0.2893	0.2867	0.0026	0.2699	3B	0.2740	0.2807	0.2893	0.2926	0.0033	0.3125
5/16-32 or 0.3125-32	UNEF	2A	0.0010	0.3115	0.3055	...	0.2912	0.2880	0.0032	0.2743	2B	0.279	0.286	0.2922	0.2964	0.0042	0.3125
		3A	0.0000	0.3125	0.3065	...	0.2922	0.2898	0.0024	0.2753	3B	0.2790	0.2847	0.2922	0.2953	0.0031	0.3125

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TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

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Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allow- ance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
3/8-16 or 0.375-16	UNC	1A	0.0013	0.3737	0.3595	...	0.3331	0.3266	0.0065	0.2992	1B	0.307	0.321	0.3344	0.3429	0.0085	0.3750
		2A	0.0013	0.3737	0.3643	0.3595	0.3331	0.3287	0.0044	0.2992	2B	0.307	0.321	0.3344	0.3401	0.0057	0.3750
		3A	0.0000	0.3750	0.3656	...	0.3344	0.3311	0.0033	0.3005	3B	0.3070	0.3182	0.3344	0.3387	0.0043	0.3750
3/8-20 or 0.375-20	UN	2A	0.0012	0.3738	0.3657	...	0.3413	0.3372	0.0041	0.3143	2B	0.321	0.332	0.3425	0.3479	0.0054	0.3750
		3A	0.0000	0.3750	0.3669	...	0.3425	0.3394	0.0031	0.3155	3B	0.3210	0.3297	0.3425	0.3465	0.0040	0.3750
		1A	0.0011	0.3739	0.3631	...	0.3468	0.3411	0.0057	0.3243	1B	0.330	0.340	0.3479	0.3553	0.0074	0.3750
3/8-24 or 0.375-24	UNF	2A	0.0011	0.3739	0.3667	...	0.3468	0.3430	0.0038	0.3243	2B	0.330	0.340	0.3479	0.3528	0.0049	0.3750
		3A	0.0000	0.3750	0.3678	...	0.3479	0.3450	0.0029	0.3254	3B	0.3300	0.3372	0.3479	0.3516	0.0037	0.3750
		2A	0.0011	0.3739	0.3674	...	0.3507	0.3471	0.0036	0.3313	2B	0.336	0.345	0.3518	0.3564	0.0046	0.3750
3/8-28 or 0.375-28	UN	3A	0.0000	0.3750	0.3685	...	0.3518	0.3491	0.0027	0.3324	3B	0.3360	0.3426	0.3518	0.3553	0.0035	0.3750
		2A	0.0010	0.3740	0.3680	...	0.3537	0.3503	0.0034	0.3368	2B	0.341	0.349	0.3547	0.3591	0.0044	0.3750
		3A	0.0000	0.3750	0.3690	...	0.3547	0.3522	0.0025	0.3378	3B	0.3410	0.3469	0.3547	0.3580	0.0033	0.3750
7/16-14 or 0.4375-14	UNC	1A	0.0014	0.4361	0.4206	...	0.3897	0.3826	0.0071	0.3511	1B	0.360	0.376	0.3911	0.4003	0.0092	0.4375
		2A	0.0014	0.4361	0.4258	0.4206	0.3897	0.3850	0.0047	0.3511	2B	0.360	0.376	0.3911	0.3972	0.0061	0.4375
		3A	0.0000	0.4375	0.4272	...	0.3911	0.3876	0.0035	0.3525	3B	0.3600	0.3717	0.3911	0.3957	0.0046	0.4375
7/16-16 or 0.4375-16	UN	2A	0.0014	0.4361	0.4267	...	0.3955	0.3909	0.0046	0.3616	2B	0.370	0.384	0.3969	0.4028	0.0059	0.4375
		3A	0.0000	0.4375	0.4281	...	0.3969	0.3935	0.0034	0.3630	3B	0.3700	0.3800	0.3969	0.4014	0.0045	0.4375
		1A	0.0013	0.4362	0.4240	...	0.4037	0.3975	0.0062	0.3767	1B	0.383	0.395	0.4050	0.4131	0.0081	0.4375
7/16-20 or 0.4375-20	UNF	2A	0.0013	0.4362	0.4281	...	0.4037	0.3995	0.0042	0.3767	2B	0.383	0.395	0.4050	0.4104	0.0054	0.4375
		3A	0.0000	0.4375	0.4294	...	0.4050	0.4019	0.0031	0.3780	3B	0.3830	0.3916	0.4050	0.4091	0.0041	0.4375
		2A	0.0011	0.4364	0.4299	...	0.4132	0.4096	0.0036	0.3938	2B	0.399	0.407	0.4143	0.4189	0.0046	0.4375
7/16-28 or 0.4375-28	UNEF	3A	0.0000	0.4375	0.4310	...	0.4143	0.4116	0.0027	0.3949	3B	0.3990	0.4051	0.4143	0.4178	0.0035	0.4375
		2A	0.0010	0.4365	0.4305	...	0.4162	0.4128	0.0034	0.3993	2B	0.404	0.411	0.4172	0.4216	0.0044	0.4375
		3A	0.0000	0.4375	0.4315	...	0.4172	0.4147	0.0025	0.4003	3B	0.4040	0.4094	0.4172	0.4205	0.0033	0.4375
1/2-13 or 0.500-13	UNC	1A	0.0015	0.4985	0.4822	...	0.4485	0.4411	0.0074	0.4069	1B	0.417	0.434	0.4500	0.4597	0.0097	0.5000
		2A	0.0015	0.4985	0.4876	0.4822	0.4485	0.4435	0.0050	0.4069	2B	0.417	0.434	0.4500	0.4565	0.0065	0.5000
		3A	0.0000	0.5000	0.4891	...	0.4500	0.4463	0.0037	0.4084	3B	0.4170	0.4284	0.4500	0.4548	0.0048	0.5000
1/2-16 or 0.500-16	UN	2A	0.0014	0.4986	0.4892	...	0.4580	0.4533	0.0047	0.4241	2B	0.432	0.446	0.4594	0.4655	0.0061	0.5000
		3A	0.0000	0.5000	0.4906	...	0.4594	0.4559	0.0035	0.4255	3B	0.4320	0.4419	0.4594	0.4640	0.0046	0.5000
		1A	0.0013	0.4987	0.4865	...	0.4662	0.4598	0.0064	0.4392	1B	0.446	0.457	0.4675	0.4759	0.0084	0.5000
1/2-20 or 0.500-20	UNF	2A	0.0013	0.4987	0.4906	...	0.4662	0.4619	0.0043	0.4392	2B	0.446	0.457	0.4675	0.4731	0.0056	0.5000
		3A	0.0000	0.5000	0.4919	...	0.4675	0.4643	0.0032	0.4405	3B	0.4460	0.4537	0.4675	0.4717	0.0042	0.5000

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1/2-28 or 0.500-28	UNEF	2A	0.0011	0.4989	0.4924	...	0.4757	0.4720	0.0037	0.4563	2B	0.461	0.470	0.4768	0.4816	0.0048	0.5000
		3A	0.0000	0.5000	0.4935	...	0.4768	0.4740	0.0028	0.4574	3B	0.4610	0.4676	0.4768	0.4804	0.0036	0.5000
1/2-32 or 0.500-32	UN	2A	0.0010	0.4990	0.4930	...	0.4787	0.4752	0.0035	0.4618	2B	0.466	0.474	0.4797	0.4842	0.0045	0.5000
		3A	0.0000	0.5000	0.4940	...	0.4797	0.4771	0.0026	0.4628	3B	0.4660	0.4719	0.4797	0.4831	0.0034	0.5000
9/16-12 or 0.5625-12	UNC	1A	0.0016	0.5609	0.5437	...	0.5068	0.4990	0.0078	0.4617	1B	0.472	0.490	0.5084	0.5186	0.0102	0.5625
		2A	0.0016	0.5609	0.5495	0.5437	0.5068	0.5016	0.0052	0.4617	2B	0.472	0.490	0.5084	0.5152	0.0068	0.5625
		3A	0.0000	0.5625	0.5511	...	0.5084	0.5045	0.0039	0.4633	3B	0.4720	0.4843	0.5084	0.5135	0.0051	0.5625
9/16-16 or 0.5625-16	UN	2A	0.0014	0.5611	0.5517	...	0.5205	0.5158	0.0047	0.4866	2B	0.495	0.509	0.5219	0.5280	0.0061	0.5625
		3A	0.0000	0.5625	0.5531	...	0.5219	0.5184	0.0035	0.4880	3B	0.4950	0.5040	0.5219	0.5265	0.0046	0.5625
9/16-18 or 0.5625-18	UNF	1A	0.0014	0.5611	0.5480	...	0.5250	0.5182	0.0068	0.4950	1B	0.502	0.515	0.5264	0.5353	0.0089	0.5625
		2A	0.0014	0.5611	0.5524	...	0.5250	0.5205	0.0045	0.4950	2B	0.502	0.515	0.5264	0.5323	0.0059	0.5625
		3A	0.0000	0.5625	0.5538	...	0.5264	0.5230	0.0034	0.4964	3B	0.5020	0.5106	0.5264	0.5308	0.0044	0.5625
9/16-20 or 0.5625-20	UN	2A	0.0013	0.5612	0.5531	...	0.5287	0.5245	0.0042	0.5017	2B	0.508	0.520	0.5300	0.5355	0.0055	0.5625
		3A	0.0000	0.5625	0.5544	...	0.5300	0.5268	0.0032	0.5030	3B	0.5080	0.5162	0.5300	0.5341	0.0041	0.5625
9/16-24 or 0.5625-24	UNEF	2A	0.0012	0.5613	0.5541	...	0.5342	0.5303	0.0039	0.5117	2B	0.517	0.527	0.5354	0.5405	0.0051	0.5625
		3A	0.0000	0.5625	0.5553	...	0.5354	0.5325	0.0029	0.5129	3B	0.5170	0.5244	0.5354	0.5392	0.0038	0.5625
9/16-28 or 0.5625-28	UN	2A	0.0011	0.5614	0.5549	...	0.5382	0.5345	0.0037	0.5188	2B	0.524	0.532	0.5393	0.5441	0.0048	0.5625
		3A	0.0000	0.5625	0.5560	...	0.5393	0.5365	0.0028	0.5199	3B	0.5240	0.5301	0.5393	0.5429	0.0036	0.5625
9/16-32 or 0.5625-32	UN	2A	0.0010	0.5615	0.5555	...	0.5412	0.5377	0.0035	0.5243	2B	0.529	0.536	0.5422	0.5467	0.0045	0.5625
		3A	0.0000	0.5625	0.5565	...	0.5422	0.5396	0.0026	0.5253	3B	0.5290	0.5344	0.5422	0.5456	0.0034	0.5625
5/8-11 or 0.625-11	UNC	1A	0.0016	0.6234	0.6052	...	0.5644	0.5561	0.0083	0.5152	1B	0.527	0.546	0.5660	0.5767	0.0107	0.6250
		2A	0.0016	0.6234	0.6113	0.6052	0.5644	0.5589	0.0055	0.5152	2B	0.527	0.546	0.5660	0.5732	0.0072	0.6250
		3A	0.0000	0.6250	0.6129	...	0.5660	0.5619	0.0041	0.5168	3B	0.5270	0.5391	0.5660	0.5714	0.0054	0.6250
5/8-12 or 0.625-12	UN	2A	0.0016	0.6234	0.6120	...	0.5693	0.5639	0.0054	0.5242	2B	0.535	0.553	0.5709	0.5780	0.0071	0.6250
		3A	0.0000	0.6250	0.6136	...	0.5709	0.5668	0.0041	0.5258	3B	0.5350	0.5463	0.5709	0.5762	0.0053	0.6250
5/8-16 or 0.625-16	UN	2A	0.0014	0.6236	0.6142	...	0.5830	0.5782	0.0048	0.5491	2B	0.557	0.571	0.5844	0.5906	0.0062	0.6250
		3A	0.0000	0.6250	0.6156	...	0.5844	0.5808	0.0036	0.5505	3B	0.5570	0.5662	0.5844	0.5890	0.0046	0.6250
5/8-18 or 0.625-18	UNF	1A	0.0014	0.6236	0.6105	...	0.5875	0.5805	0.0070	0.5575	1B	0.565	0.578	0.5889	0.5980	0.0091	0.6250
		2A	0.0014	0.6236	0.6149	...	0.5875	0.5828	0.0047	0.5575	2B	0.565	0.578	0.5889	0.5949	0.0060	0.6250
		3A	0.0000	0.6250	0.6163	...	0.5889	0.5854	0.0035	0.5589	3B	0.5650	0.5730	0.5889	0.5934	0.0045	0.6250

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
5/8-20 or 0.625-20	UN	2A	0.0013	0.6237	0.6156	...	0.5912	0.5869	0.0043	0.5642	2B	0.571	0.582	0.5925	0.5981	0.0056	0.6250
		3A	0.0000	0.6250	0.6169	...	0.5925	0.5893	0.0032	0.5655	3B	0.5710	0.5787	0.5925	0.5967	0.0042	0.6250
5/8-24 or 0.625-24	UNEF	2A	0.0012	0.6238	0.6166	...	0.5967	0.5927	0.0040	0.5742	2B	0.580	0.590	0.5979	0.6031	0.0052	0.6250
		3A	0.0000	0.6250	0.6178	...	0.5979	0.5949	0.0030	0.5754	3B	0.5800	0.5869	0.5979	0.6018	0.0039	0.6250
5/8-28 or 0.625-28	UN	2A	0.0011	0.6239	0.6174	...	0.6007	0.5969	0.0038	0.5813	2B	0.586	0.595	0.6018	0.6067	0.0049	0.6250
		3A	0.0000	0.6250	0.6185	...	0.6018	0.5990	0.0028	0.5824	3B	0.5860	0.5926	0.6018	0.6055	0.0037	0.6250
5/8-32 or 0.625-32	UN	2A	0.0011	0.6239	0.6179	...	0.6036	0.6000	0.0036	0.5867	2B	0.591	0.590	0.6047	0.6093	0.0046	0.6250
		3A	0.0000	0.6250	0.6190	...	0.6047	0.6020	0.0027	0.5878	3B	0.5910	0.5969	0.6047	0.6082	0.0035	0.6250
1 1/16-12 or 0.6875-12	UN	2A	0.0016	0.6859	0.6745	...	0.6318	0.6264	0.0054	0.5867	2B	0.597	0.615	0.6334	0.6405	0.0071	0.6875
		3A	0.0000	0.6875	0.6761	...	0.6334	0.6293	0.0041	0.5883	3B	0.5970	0.6085	0.6334	0.6387	0.0053	0.6875
1 1/16-16 or 0.6875-16	UN	2A	0.0014	0.6861	0.6767	...	0.6455	0.6407	0.0048	0.6116	2B	0.620	0.634	0.6469	0.6531	0.0062	0.6875
		3A	0.0000	0.6875	0.6781	...	0.6469	0.6433	0.0036	0.6130	3B	0.6200	0.6284	0.6469	0.6515	0.0046	0.6875
1 1/16-20 or 0.6875-20	UN	2A	0.0013	0.6862	0.6781	...	0.6537	0.6494	0.0043	0.6267	2B	0.633	0.645	0.6550	0.6606	0.0056	0.6875
		3A	0.0000	0.6875	0.6794	...	0.6550	0.6518	0.0032	0.6280	3B	0.6330	0.6412	0.6550	0.6592	0.0042	0.6875
1 1/16-24 or 0.6875-24	UNEF	2A	0.0012	0.6863	0.6791	...	0.6592	0.6552	0.0040	0.6367	2B	0.642	0.652	0.6604	0.6656	0.0052	0.6875
		3A	0.0000	0.6875	0.6803	...	0.6604	0.6574	0.0030	0.6379	3B	0.6420	0.6494	0.6604	0.6643	0.0039	0.6875
1 1/16-28 or 0.6875-28	UN	2A	0.0011	0.6864	0.6799	...	0.6632	0.6594	0.0038	0.6438	2B	0.649	0.657	0.6643	0.6692	0.0049	0.6875
		3A	0.0000	0.6875	0.6810	...	0.6643	0.6615	0.0028	0.6449	3B	0.6490	0.6551	0.6643	0.6680	0.0037	0.6875
1 1/16-32 or 0.6875-32	UN	2A	0.0011	0.6864	0.6804	...	0.6661	0.6625	0.0036	0.6492	2B	0.654	0.661	0.6672	0.6718	0.0046	0.6875
		3A	0.0000	0.6875	0.6815	...	0.6672	0.6645	0.0027	0.6503	3B	0.6540	0.6594	0.6672	0.6707	0.0035	0.6875
3/4-10 or 0.750-10	UNC	1A	0.0018	0.7482	0.7288	...	0.6832	0.6744	0.0088	0.6291	1B	0.642	0.663	0.6850	0.6965	0.0115	0.7500
		2A	0.0018	0.7482	0.7353	0.7288	0.6832	0.6773	0.0059	0.6291	2B	0.642	0.663	0.6850	0.6927	0.0077	0.7500
		3A	0.0000	0.7500	0.7371	...	0.6850	0.6806	0.0044	0.6309	3B	0.6420	0.6545	0.6850	0.6907	0.0057	0.7500
3/4-12 or 0.750-12	UN	2A	0.0017	0.7483	0.7369	...	0.6942	0.6887	0.0055	0.6491	2B	0.660	0.678	0.6959	0.7031	0.0072	0.7500
		3A	0.0000	0.7500	0.7386	...	0.6959	0.6918	0.0041	0.6508	3B	0.6600	0.6707	0.6959	0.7013	0.0054	0.7500
3/4-16 or 0.750-16	UNF	1A	0.0015	0.7485	0.7343	...	0.7079	0.7004	0.0075	0.6740	1B	0.682	0.696	0.7094	0.7192	0.0098	0.7500
		2A	0.0015	0.7485	0.7391	...	0.7079	0.7029	0.0050	0.6740	2B	0.682	0.696	0.7094	0.7159	0.0065	0.7500
		3A	0.0000	0.7500	0.7406	...	0.7094	0.7056	0.0038	0.6755	3B	0.6820	0.6908	0.7094	0.7143	0.0049	0.7500
3/4-20 or 0.750-20	UNEF	2A	0.0013	0.7487	0.7406	...	0.7162	0.7118	0.0044	0.6892	2B	0.696	0.707	0.7175	0.7232	0.0057	0.7500
		3A	0.0000	0.7500	0.7419	...	0.7175	0.7142	0.0033	0.6905	3B	0.6960	0.7037	0.7175	0.7218	0.0043	0.7500

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

ASME B1.1-1989

UNIFIED INCH SCREW THREADS

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
3/4-28 or 0.750-28	UN	2A	0.0012	0.7488	0.7423	...	0.7256	0.7218	0.0038	0.7062	2B	0.711	0.720	0.7268	0.7318	0.0050	0.7500
		3A	0.0000	0.7500	0.7435	...	0.7268	0.7239	0.0029	0.7074	3B	0.7110	0.7176	0.7268	0.7305	0.0037	0.7500
3/4-32 or 0.750-32	UN	2A	0.0011	0.7489	0.7429	...	0.7286	0.7250	0.0036	0.7117	2B	0.716	0.724	0.7297	0.7344	0.0047	0.7500
		3A	0.0000	0.7500	0.7440	...	0.7297	0.7270	0.0027	0.7128	3B	0.7160	0.7219	0.7297	0.7333	0.0036	0.7500
13/16-12 or 0.8125-12	UN	2A	0.0017	0.8108	0.7994	...	0.7567	0.7512	0.0055	0.7116	2B	0.722	0.740	0.7584	0.7656	0.0072	0.8125
		3A	0.0000	0.8125	0.8011	...	0.7584	0.7543	0.0041	0.7133	3B	0.7220	0.7329	0.7584	0.7638	0.0054	0.8125
13/16-16 or 0.8125-16	UN	2A	0.0015	0.8110	0.8016	...	0.7704	0.7655	0.0049	0.7365	2B	0.745	0.759	0.7719	0.7782	0.0063	0.8125
		3A	0.0000	0.8125	0.8031	...	0.7719	0.7683	0.0036	0.7380	3B	0.7450	0.7533	0.7719	0.7766	0.0047	0.8125
13/16-20 or 0.8125-20	UNEF	2A	0.0013	0.8112	0.8031	...	0.7787	0.7743	0.0044	0.7517	2B	0.758	0.770	0.7800	0.7857	0.0057	0.8125
		3A	0.0000	0.8125	0.8044	...	0.7800	0.7767	0.0033	0.7530	3B	0.7580	0.7662	0.7800	0.7843	0.0043	0.8125
13/16-28 or 0.8125-28	UN	2A	0.0012	0.8113	0.8048	...	0.7881	0.7843	0.0038	0.7687	2B	0.774	0.782	0.7893	0.7943	0.0050	0.8125
		3A	0.0000	0.8125	0.8060	...	0.7893	0.7864	0.0029	0.7699	3B	0.7740	0.7801	0.7893	0.7930	0.0037	0.8125
13/16-32 or 0.8125-32	UN	2A	0.0011	0.8114	0.8054	...	0.7911	0.7875	0.0036	0.7742	2B	0.779	0.786	0.7922	0.7969	0.0047	0.8125
		3A	0.0000	0.8125	0.8065	...	0.7922	0.7895	0.0027	0.7753	3B	0.7790	0.7844	0.7922	0.7958	0.0036	0.8125
7/8-9 or 0.875-9	UNC	1A	0.0019	0.8731	0.8523	...	0.8009	0.7914	0.0095	0.7408	1B	0.755	0.778	0.8028	0.8151	0.0123	0.8750
		2A	0.0019	0.8731	0.8592	0.8523	0.8009	0.7946	0.0063	0.7408	2B	0.755	0.778	0.8028	0.8110	0.0082	0.8750
		3A	0.0000	0.8750	0.8611	...	0.8028	0.7981	0.0047	0.7427	3B	0.7550	0.7681	0.8028	0.8089	0.0061	0.8750
7/8-12 or 0.875-12	UN	2A	0.0017	0.8733	0.8619	...	0.8192	0.8137	0.0055	0.7741	2B	0.785	0.803	0.8209	0.8281	0.0072	0.8750
		3A	0.0000	0.8750	0.8636	...	0.8209	0.8168	0.0041	0.7758	3B	0.7850	0.7948	0.8209	0.8263	0.0054	0.8750
7/8-14 or 0.875-14	UNF	1A	0.0016	0.8734	0.8579	...	0.8270	0.8189	0.0081	0.7884	1B	0.798	0.814	0.8286	0.8392	0.0106	0.8750
		2A	0.0016	0.8734	0.8631	...	0.8270	0.8216	0.0054	0.7884	2B	0.798	0.814	0.8286	0.8356	0.0070	0.8750
		3A	0.0000	0.8750	0.8647	...	0.8286	0.8245	0.0041	0.7900	3B	0.7980	0.8068	0.8286	0.8339	0.0053	0.8750
7/8-16 or 0.875-16	UN	2A	0.0015	0.8735	0.8641	...	0.8329	0.8280	0.0049	0.7900	2B	0.807	0.821	0.8344	0.8407	0.0063	0.8750
		3A	0.0000	0.8750	0.8656	...	0.8344	0.8308	0.0036	0.8005	3B	0.8070	0.8158	0.8344	0.8391	0.0047	0.8750
7/8-20 or 0.875-20	UNEF	2A	0.0013	0.8737	0.8656	...	0.8412	0.8368	0.0044	0.8142	2B	0.821	0.832	0.8425	0.8482	0.0057	0.8750
		3A	0.0000	0.8750	0.8669	...	0.8425	0.8392	0.0033	0.8155	3B	0.8210	0.8287	0.8425	0.8468	0.0043	0.8750
7/8-28 or 0.875-28	UN	2A	0.0012	0.8738	0.8673	...	0.8506	0.8468	0.0038	0.8312	2B	0.836	0.845	0.8518	0.8568	0.0050	0.8750
		3A	0.0000	0.8750	0.8685	...	0.8518	0.8489	0.0029	0.8324	3B	0.8360	0.8426	0.8518	0.8555	0.0037	0.8750
7/8-32 or 0.875-32	UN	2A	0.0011	0.8739	0.8679	...	0.8536	0.8500	0.0036	0.8367	2B	0.841	0.849	0.8547	0.8594	0.0047	0.8750
		3A	0.0000	0.8750	0.8690	...	0.8547	0.8520	0.0027	0.8378	3B	0.8410	0.8469	0.8547	0.8583	0.0036	0.8750

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

29

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1 <sup>5</sup> / <sub>16</sub> -12 or 0.9375-12	UN	2A	0.0017	0.9358	0.9244	...	0.8817	0.8760	0.0057	0.8366	2B	0.847	0.865	0.8834	0.8908	0.0074	0.9375
		3A	0.0000	0.9375	0.9261	...	0.8834	0.8793	0.0041	0.8383	3B	0.8470	0.8575	0.8834	0.8889	0.0055	0.9375
1 <sup>5</sup> / <sub>16</sub> -16 or 0.9375-16	UN	2A	0.0015	0.9360	0.9266	...	0.8954	0.8904	0.0050	0.8615	2B	0.870	0.884	0.8969	0.9034	0.0065	0.9375
		3A	0.0000	0.9375	0.9281	...	0.8969	0.8932	0.0037	0.8630	3B	0.8700	0.8783	0.8969	0.9018	0.0049	0.9375
1 <sup>5</sup> / <sub>16</sub> -20 or 0.9375-20	UNEF	2A	0.0014	0.9361	0.9280	...	0.9036	0.8991	0.0045	0.8766	2B	0.883	0.895	0.9050	0.9109	0.0059	0.9375
		3A	0.0000	0.9375	0.9294	...	0.9050	0.9016	0.0034	0.8780	3B	0.8830	0.8912	0.9050	0.9094	0.0044	0.9375
1 <sup>5</sup> / <sub>16</sub> -28 or 0.9375-28	UN	2A	0.0012	0.9363	0.9298	...	0.9131	0.9091	0.0040	0.8937	2B	0.899	0.907	0.9143	0.9195	0.0052	0.9375
		3A	0.0000	0.9375	0.9310	...	0.9143	0.9113	0.0030	0.8949	3B	0.8990	0.9051	0.9143	0.9182	0.0039	0.9375
1 <sup>5</sup> / <sub>16</sub> -32 or 0.9375-32	UN	2A	0.0011	0.9364	0.9304	...	0.9161	0.9123	0.0038	0.8992	2B	0.904	0.911	0.9172	0.9221	0.0049	0.9375
		3A	0.0000	0.9375	0.9315	...	0.9172	0.9144	0.0028	0.9003	3B	0.9040	0.9094	0.9172	0.9209	0.0037	0.9375
1-8 or 1.000-8	UNC	1A	0.0020	0.9980	0.9755	...	0.9168	0.9067	0.0101	0.8492	1B	0.865	0.890	0.9188	0.9320	0.0132	1.0000
		2A	0.0020	0.9980	0.9830	0.9755	0.9168	0.9100	0.0068	0.8492	2B	0.865	0.890	0.9188	0.9276	0.0088	1.0000
		3A	0.0000	1.0000	0.9850	...	0.9188	0.9137	0.0051	0.8512	3B	0.8650	0.8797	0.9188	0.9254	0.0066	1.0000
1-12 or 1.000-12	UNF	1A	0.0018	0.9982	0.9810	...	0.9441	0.9353	0.0088	0.8990	1B	0.910	0.928	0.9459	0.9573	0.0114	1.0000
		2A	0.0018	0.9982	0.9868	...	0.9441	0.9382	0.0059	0.8990	2B	0.910	0.928	0.9459	0.9535	0.0076	1.0000
		3A	0.0000	1.0000	0.9886	...	0.9459	0.9415	0.0044	0.9008	3B	0.9100	0.9198	0.9459	0.9516	0.0057	1.0000
1-14 or 1.000-14	UNS (5)	1A	0.0017	0.9983	0.9828	...	0.9519	0.9435	0.0084	0.9132	1B	0.923	0.938	0.9536	0.9645	0.0109	1.0000
		2A	0.0017	0.9983	0.9880	...	0.9519	0.9463	0.0056	0.9132	2B	0.923	0.938	0.9536	0.9609	0.0073	1.0000
		3A	0.0000	1.0000	0.9897	...	0.9536	0.9494	0.0042	0.9149	3B	0.9230	0.9315	0.9536	0.9590	0.0054	1.0000
1-16 or 1.000-16	UN	2A	0.0015	0.9985	0.9891	...	0.9579	0.9529	0.0050	0.9240	2B	0.932	0.946	0.9594	0.9659	0.0065	1.0000
		3A	0.0000	1.0000	0.9906	...	0.9594	0.9557	0.0037	0.9255	3B	0.9320	0.9408	0.9594	0.9643	0.0049	1.0000
1-20 or 1.000-20	UNEF	2A	0.0014	0.9986	0.9905	...	0.9661	0.9616	0.0045	0.9391	2B	0.946	0.957	0.9675	0.9734	0.0059	1.0000
		3A	0.0000	1.0000	0.9919	...	0.9675	0.9641	0.0034	0.9405	3B	0.9460	0.9537	0.9675	0.9719	0.0044	1.0000
1-28 or 1.000-28	UN	2A	0.0012	0.9988	0.9923	...	0.9756	0.9716	0.0040	0.9562	2B	0.961	0.970	0.9768	0.9820	0.0052	1.0000
		3A	0.0000	1.0000	0.9935	...	0.9768	0.9738	0.0030	0.9574	3B	0.9610	0.9676	0.9768	0.9807	0.0039	1.0000
1-32 or 1.000-32	UN	2A	0.0011	0.9989	0.9929	...	0.9786	0.9748	0.0038	0.9617	2B	0.966	0.974	0.9797	0.9846	0.0049	1.0000
		3A	0.0000	1.0000	0.9940	...	0.9797	0.9769	0.0028	0.9628	3B	0.9660	0.9719	0.9797	0.9834	0.0037	1.0000
1 <sup>1</sup> / <sub>16</sub> -8 or 1.0625-8	UN	2A	0.0020	1.0605	1.0455	...	0.9793	0.9725	0.0068	0.9117	2B	0.927	0.952	0.9813	0.9902	0.0089	1.0625
		3A	0.0000	1.0625	1.0475	...	0.9813	0.9762	0.0051	0.9137	3B	0.9270	0.9422	0.9813	0.9880	0.0067	1.0625

(Notes follow at end of table)

**TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)**

ASME B1.1-1989

UNIFIED INCH SCREW THREADS

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1 1/16-12 or 1.0625-12	UN	2A	0.0017	1.0608	1.0494	...	1.0067	1.0010	0.0057	0.9616	2B	0.972	0.990	1.0084	1.0158	0.0074	1.0625
		3A	0.0000	1.0625	1.0511	...	1.0084	1.0042	0.0042	0.9633	3B	0.9720	0.9823	1.0084	1.0139	0.0055	1.0625
1 1/16-16 or 1.0625-16	UN	2A	0.0015	1.0610	1.0516	...	1.0204	1.0154	0.0050	0.9865	2B	0.995	1.009	1.0219	1.0284	0.0065	1.0625
		3A	0.0000	1.0625	1.0531	...	1.0219	1.0182	0.0037	0.9880	3B	0.9950	1.0033	1.0219	1.0268	0.0049	1.0625
1 1/16-18 or 1.0625-18	UNEF	2A	0.0014	1.0611	1.0524	...	1.0250	1.0203	0.0047	0.9950	2B	1.002	1.015	1.0264	1.0326	0.0062	1.0625
		3A	0.0000	1.0625	1.0538	...	1.0264	1.0228	0.0036	0.9964	3B	1.0020	1.0105	1.0264	1.0310	0.0046	1.0625
1 1/16-20 or 1.0625-20	UN	2A	0.0014	1.0611	1.0530	...	1.0286	1.0241	0.0045	1.0016	2B	1.008	1.020	1.0300	1.0359	0.0059	1.0625
		3A	0.0000	1.0625	1.0544	...	1.0300	1.0266	0.0034	1.0030	3B	1.0080	1.0162	1.0300	1.0344	0.0044	1.0625
1 1/16-28 or 1.0625-28	UN	2A	0.0012	1.0613	1.0548	...	1.0381	1.0341	0.0040	1.0187	2B	1.024	1.032	1.0393	1.0445	0.0052	1.0625
		3A	0.0000	1.0625	1.0560	...	1.0393	1.0363	0.0030	1.0199	3B	1.0240	1.0301	1.0393	1.0432	0.0039	1.0625
1 1/8-7 or 1.125-7	UNC	1A	0.0022	1.1228	1.0982	...	1.0300	1.0191	0.0109	0.9527	1B	0.970	0.998	1.0322	1.0463	0.0141	1.1250
		2A	0.0022	1.1228	1.1064	1.0982	1.0300	1.0228	0.0072	0.9527	2B	0.970	0.998	1.0322	1.0416	0.0094	1.1250
		3A	0.0000	1.1250	1.1086	...	1.0322	1.0268	0.0054	0.9549	3B	0.9700	0.9875	1.0322	1.0393	0.0071	1.1250
1 1/8-8 or 1.125-8	UN	2A	0.0021	1.1229	1.1079	1.1004	1.0417	1.0348	0.0069	0.9741	2B	0.990	1.015	1.0438	1.0528	0.0090	1.1250
		3A	0.0000	1.1250	1.1100	...	1.0438	1.0386	0.0052	0.9762	3B	0.9900	1.0047	1.0438	1.0505	0.0067	1.1250
1 1/8-12 or 1.125-12	UNF	1A	0.0018	1.1232	1.1060	...	1.0691	1.0601	0.0090	1.0240	1B	1.035	1.053	1.0709	1.0826	0.0117	1.1250
		2A	0.0018	1.1232	1.1118	...	1.0691	1.0631	0.0060	1.0240	2B	1.035	1.053	1.0709	1.0787	0.0078	1.1250
		3A	0.0000	1.1250	1.1136	...	1.0709	1.0664	0.0045	1.0258	3B	1.0350	1.0448	1.0709	1.0768	0.0059	1.1250
1 1/8-16 or 1.125-16	UN	2A	0.0015	1.1235	1.1141	...	1.0829	1.0779	0.0050	1.0490	2B	1.057	1.071	1.0844	1.0909	0.0065	1.1250
		3A	0.0000	1.1250	1.1156	...	1.0844	1.0807	0.0037	1.0505	3B	1.0570	1.0658	1.0844	1.0893	0.0049	1.1250
1 1/8-18 or 1.125-18	UNEF	2A	0.0014	1.1236	1.1149	...	1.0875	1.0828	0.0047	1.0575	2B	1.065	1.078	1.0889	1.0951	0.0062	1.1250
		3A	0.0000	1.1250	1.1163	...	1.0889	1.0853	0.0036	1.0589	3B	1.0650	1.0730	1.0889	1.0935	0.0046	1.1250
1 1/8-20 or 1.125-20	UN	2A	0.0014	1.1236	1.1155	...	1.0911	1.0866	0.0045	1.0641	2B	1.071	1.082	1.0925	1.0984	0.0059	1.1250
		3A	0.0000	1.1250	1.1169	...	1.0925	1.0891	0.0034	1.0655	3B	1.0710	1.0787	1.0925	1.0969	0.0044	1.1250
1 1/8-28 or 1.125-28	UN	2A	0.0012	1.1238	1.1173	...	1.1006	1.0966	0.0040	1.0812	2B	1.086	1.095	1.1018	1.1070	0.0052	1.1250
		3A	0.0000	1.1250	1.1185	...	1.1018	1.0988	0.0030	1.0824	3B	1.0860	1.0926	1.1018	1.1057	0.0039	1.1250
1 3/16-8 or 1.1875-8	UN	2A	0.0021	1.1854	1.1704	...	1.1042	1.0972	0.0070	1.0366	2B	1.052	1.077	1.1063	1.1154	0.0091	1.1875
		3A	0.0000	1.1875	1.1725	...	1.1063	1.1011	0.0052	1.0387	3B	1.0520	1.0672	1.1063	1.1131	0.0068	1.1875
1 3/16-12 or 1.1875-12	UN	2A	0.0017	1.1858	1.1744	...	1.1317	1.1259	0.0058	1.0866	2B	1.097	1.115	1.1334	1.1409	0.0075	1.1875
		3A	0.0000	1.1875	1.1761	...	1.1334	1.1291	0.0043	1.0883	3B	1.0970	1.1073	1.1334	1.1390	0.0056	1.1875



TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

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Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1 1/16-16 or 1.1875-16	UN	2A	0.0015	1.1860	1.1766	...	1.1454	1.1403	0.0051	1.1115	2B	1.120	1.134	1.1469	1.1535	0.0066	1.1875
		3A	0.0000	1.1875	1.1781	...	1.1469	1.1431	0.0038	1.1130	3B	1.1200	1.1283	1.1469	1.1519	0.0050	1.1875
1 3/16-18 or 1.1875-18	UNEF	2A	0.0015	1.1860	1.1773	...	1.1499	1.1450	0.0049	1.1199	2B	1.127	1.140	1.1514	1.1577	0.0063	1.1875
		3A	0.0000	1.1875	1.1788	...	1.1514	1.1478	0.0036	1.1214	3B	1.1270	1.1355	1.1514	1.1561	0.0047	1.1875
1 1/8-20 or 1.1875-20	UN	2A	0.0014	1.1861	1.1780	...	1.1536	1.1489	0.0047	1.1266	2B	1.133	1.145	1.1550	1.1611	0.0061	1.1875
		3A	0.0000	1.1875	1.1794	...	1.1550	1.1515	0.0035	1.1280	3B	1.1330	1.1412	1.1550	1.1595	0.0045	1.1875
1 3/16-28 or 1.1875-28	UN	2A	0.0012	1.1863	1.1798	...	1.1631	1.1590	0.0041	1.1437	2B	1.149	1.157	1.1643	1.1696	0.0053	1.1875
		3A	0.0000	1.1875	1.1810	...	1.1643	1.1612	0.0031	1.1449	3B	1.1490	1.1551	1.1643	1.1683	0.0040	1.1875
1 1/4-7 or 1.250-7	UNC	1A	0.0022	1.2478	1.2232	...	1.1550	1.1439	0.0111	1.0777	1B	1.095	1.123	1.1572	1.1716	0.0144	1.2500
		2A	0.0022	1.2478	1.2314	1.2232	1.1550	1.1476	0.0074	1.0777	2B	1.095	1.123	1.1572	1.1668	0.0096	1.2500
		3A	0.0000	1.2500	1.2336	...	1.1572	1.1517	0.0055	1.0799	3B	1.0950	1.1125	1.1572	1.1644	0.0072	1.2500
1 1/4-8 or 1.250-8	UN	2A	0.0021	1.2479	1.2329	1.2254	1.1667	1.1597	0.0070	1.0991	2B	1.115	1.140	1.1688	1.1780	0.0092	1.2500
		3A	0.0000	1.2500	1.2350	...	1.1688	1.1635	0.0053	1.1012	3B	1.1150	1.1297	1.1688	1.1757	0.0069	1.2500
1 1/4-12 or 1.250-12	UNF	1A	0.0018	1.2482	1.2310	...	1.1941	1.1849	0.0092	1.1490	1B	1.160	1.178	1.1959	1.2079	0.0120	1.2500
		2A	0.0018	1.2482	1.2368	...	1.1941	1.1879	0.0062	1.1490	2B	1.160	1.178	1.1959	1.2039	0.0080	1.2500
		3A	0.0000	1.2500	1.2386	...	1.1959	1.1913	0.0046	1.1508	3B	1.1600	1.1698	1.1959	1.2019	0.0060	1.2500
1 1/4-16 or 1.250-16	UN	2A	0.0015	1.2485	1.2391	...	1.2079	1.2028	0.0051	1.1740	2B	1.182	1.196	1.2094	1.2160	0.0066	1.2500
		3A	0.0000	1.2500	1.2406	...	1.2094	1.2056	0.0038	1.1755	3B	1.1820	1.1908	1.2094	1.2144	0.0050	1.2500
1 1/4-18 or 1.250-18	UNEF	2A	0.0015	1.2485	1.2398	...	1.2124	1.2075	0.0049	1.1824	2B	1.190	1.203	1.2139	1.2202	0.0063	1.2500
		3A	0.0000	1.2500	1.2413	...	1.2139	1.2103	0.0036	1.1839	3B	1.1900	1.1980	1.2139	1.2186	0.0047	1.2500
1 1/4-20 or 1.250-20	UN	2A	0.0014	1.2486	1.2405	...	1.2161	1.2114	0.0047	1.1891	2B	1.196	1.207	1.2175	1.2236	0.0061	1.2500
		3A	0.0000	1.2500	1.2419	...	1.2175	1.2140	0.0035	1.1905	3B	1.1960	1.2037	1.2175	1.2220	0.0045	1.2500
1 1/4-28 or 1.250-28	UN	2A	0.0012	1.2488	1.2423	...	1.2256	1.2215	0.0041	1.2062	2B	1.211	1.220	1.2268	1.2321	0.0053	1.2500
		3A	0.0000	1.2500	1.2435	...	1.2268	1.2237	0.0031	1.2074	3B	1.2110	1.2176	1.2268	1.2308	0.0040	1.2500
1 3/16-8 or 1.3125-8	UN	2A	0.0021	1.3104	1.2954	...	1.2292	1.2221	0.0071	1.1616	2B	1.177	1.202	1.2313	1.2405	0.0092	1.3125
		3A	0.0000	1.3125	1.2975	...	1.2313	1.2260	0.0053	1.1637	3B	1.1770	1.1922	1.2313	1.2382	0.0069	1.3125
1 3/16-12 or 1.3125-12	UN	2A	0.0017	1.3108	1.2994	...	1.2567	1.2509	0.0058	1.2116	2B	1.222	1.240	1.2584	1.2659	0.0075	1.3125
		3A	0.0000	1.3125	1.3011	...	1.2584	1.2541	0.0043	1.2133	3B	1.2220	1.2323	1.2584	1.2640	0.0056	1.3125
1 3/16-16 or 1.3125-16	UN	2A	0.0015	1.3110	1.3016	...	1.2704	1.2653	0.0051	1.2365	2B	1.245	1.259	1.2719	1.2785	0.0066	1.3125
		3A	0.0000	1.3125	1.3031	...	1.2719	1.2681	0.0038	1.2380	3B	1.2450	1.2533	1.2719	1.2769	0.0050	1.3125

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)							
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.	
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance		
1 $\frac{1}{16}$ -18 or 1.3125-18	UNEF	2A	0.0015	1.3110	1.3023	...	1.2749	1.2700	0.0049	1.2449	2B	1.252	1.265	1.2764	1.2827	0.0063	1.3125	
		3A	0.0000	1.3125	1.3038	...	1.2764	1.2728	0.0036	1.2464		3B	1.2520	1.2605	1.2764	1.2811	0.0047	1.3125
1 $\frac{1}{16}$ -20 or 1.3125-20	UN	2A	0.0014	1.3111	1.3030	...	1.2786	1.2739	0.0047	1.2516	2B	1.258	1.270	1.2800	1.2861	0.0061	1.3125	
		3A	0.0000	1.3125	1.3044	...	1.2800	1.2765	0.0035	1.2530		3B	1.2580	1.2662	1.2800	1.2845	0.0045	1.3125
1 $\frac{1}{16}$ -28 or 1.3125-28	UN	2A	0.0012	1.3113	1.3048	...	1.2881	1.2840	0.0041	1.2687	2B	1.274	1.282	1.2893	1.2946	0.0053	1.3125	
		3A	0.0000	1.3125	1.3060	...	1.2893	1.2862	0.0031	1.2699		3B	1.2740	1.2801	1.2893	1.2933	0.0040	1.3125
1 $\frac{3}{16}$ -6 or 1.375-6	UNC	1A	0.0024	1.3726	1.3453	...	1.2643	1.2523	0.0120	1.1742	1B	1.195	1.225	1.2667	1.2822	0.0155	1.3750	
		2A	0.0024	1.3726	1.3544	1.3453	1.2643	1.2563	0.0080	1.1742		2B	1.195	1.225	1.2667	1.2771	0.0104	1.3750
		3A	0.0000	1.3750	1.3568	...	1.2667	1.2607	0.0060	1.1766		3B	1.1950	1.2146	1.2667	1.2745	0.0078	1.3750
1 $\frac{3}{16}$ -8 or 1.375-8	UN	2A	0.0022	1.3728	1.3578	1.3503	1.2916	1.2844	0.0072	1.2240	2B	1.240	1.265	1.2938	1.3031	0.0093	1.3750	
		3A	0.0000	1.3750	1.3600	...	1.2938	1.2884	0.0054	1.2262		3B	1.2400	1.2547	1.2938	1.3008	0.0070	1.3750
1 $\frac{3}{16}$ -12 or 1.375-12	UNF	1A	0.0019	1.3731	1.3559	...	1.3190	1.3096	0.0094	1.2739	1B	1.285	1.303	1.3209	1.3332	0.0123	1.3750	
		2A	0.0019	1.3731	1.3617	...	1.3190	1.3127	0.0063	1.2739		2B	1.285	1.303	1.3209	1.3291	0.0082	1.3750
		3A	0.0000	1.3750	1.3636	...	1.3209	1.3162	0.0047	1.2758		3B	1.2850	1.2948	1.3209	1.3270	0.0061	1.3750
1 $\frac{3}{16}$ -16 or 1.375-16	UN	2A	0.0015	1.3735	1.3641	...	1.3329	1.3278	0.0051	1.2990	2B	1.307	1.321	1.3344	1.3410	0.0066	1.3750	
		3A	0.0000	1.3750	1.3656	...	1.3344	1.3306	0.0038	1.3005		3B	1.3070	1.3158	1.3344	1.3394	0.0050	1.3750
1 $\frac{3}{16}$ -18 or 1.375-18	UNEF	2A	0.0015	1.3735	1.3648	...	1.3374	1.3325	0.0049	1.3074	2B	1.315	1.328	1.3389	1.3452	0.0063	1.3750	
		3A	0.0000	1.3750	1.3663	...	1.3389	1.3353	0.0036	1.3089		3B	1.3150	1.3230	1.3389	1.3436	0.0047	1.3750
1 $\frac{3}{16}$ -20 or 1.375-20	UN	2A	0.0014	1.3736	1.3655	...	1.3411	1.3364	0.0047	1.3141	2B	1.321	1.332	1.3425	1.3486	0.0061	1.3750	
		3A	0.0000	1.3750	1.3669	...	1.3425	1.3390	0.0035	1.3155		3B	1.3210	1.3287	1.3425	1.3470	0.0045	1.3750
1 $\frac{3}{16}$ -28 or 1.375-28	UN	2A	0.0012	1.3738	1.3673	...	1.3506	1.3465	0.0041	1.3312	2B	1.336	1.345	1.3518	1.3571	0.0053	1.3750	
		3A	0.0000	1.3750	1.3685	...	1.3518	1.3487	0.0031	1.3324		3B	1.3360	1.3426	1.3518	1.3558	0.0040	1.3750
1 $\frac{7}{16}$ -6 or 1.4375-6	UN	2A	0.0024	1.4351	1.4169	...	1.3268	1.3188	0.0080	1.2367	2B	1.257	1.288	1.3292	1.3396	0.0104	1.4375	
		3A	0.0000	1.4375	1.4193	...	1.3292	1.3232	0.0060	1.2391		3B	1.2570	1.2771	1.3292	1.3370	0.0078	1.4375
1 $\frac{7}{16}$ -8 or 1.4375-8	UN	2A	0.0022	1.4353	1.4203	...	1.3541	1.3469	0.0072	1.2865	2B	1.302	1.327	1.3563	1.3657	0.0094	1.4375	
		3A	0.0000	1.4375	1.4225	...	1.3563	1.3509	0.0054	1.2887		3B	1.3020	1.3172	1.3563	1.3634	0.0071	1.4375
1 $\frac{7}{16}$ -12 or 1.4375-12	UN	2A	0.0018	1.4357	1.4243	...	1.3816	1.3757	0.0059	1.3365	2B	1.347	1.365	1.3834	1.3910	0.0076	1.4375	
		3A	0.0000	1.4375	1.4261	...	1.3834	1.3790	0.0044	1.3383		3B	1.3470	1.3573	1.3834	1.3891	0.0057	1.4375
1 $\frac{7}{16}$ -16 or 1.4375-16	UN	2A	0.0016	1.4359	1.4265	...	1.3953	1.3901	0.0052	1.3614	2B	1.370	1.384	1.3969	1.4037	0.0068	1.4375	
		3A	0.0000	1.4375	1.4281	...	1.3969	1.3930	0.0039	1.3630		3B	1.3700	1.3783	1.3969	1.4020	0.0051	1.4375

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1/16-18 or 1.4375-18	UNEF	2A	0.0015	1.4360	1.4273	...	1.3999	1.3949	0.0050	1.3699	2B	1.377	1.390	1.4014	1.4079	0.0065	1.4375
		3A	0.0000	1.4375	1.4288	...	1.4014	1.3977	0.0037	1.3714	3B	1.3770	1.3855	1.4014	1.4062	0.0048	1.4375
1/16-20 or 1.4375-20	UN	2A	0.0014	1.4361	1.4280	...	1.4036	1.3988	0.0048	1.3766	2B	1.383	1.395	1.4050	1.4112	0.0062	1.4375
		3A	0.0000	1.4375	1.4294	...	1.4050	1.4014	0.0036	1.3780	3B	1.3830	1.3912	1.4050	1.4096	0.0046	1.4375
1/16-28 or 1.4375-28	UN	2A	0.0013	1.4362	1.4297	...	1.4130	1.4088	0.0042	1.3936	2B	1.399	1.407	1.4143	1.4198	0.0055	1.4375
		3A	0.0000	1.4375	1.4310	...	1.4143	1.4112	0.0031	1.3949	3B	1.3990	1.4051	1.4143	1.4184	0.0041	1.4375
1/2-6 or 1.500-6	UNC	1A	0.0024	1.4976	1.4703	...	1.3893	1.3772	0.0121	1.2992	1B	1.320	1.350	1.3917	1.4075	0.0158	1.5000
		2A	0.0024	1.4976	1.4794	1.4703	1.3893	1.3812	0.0081	1.2992	2B	1.320	1.350	1.3917	1.4022	0.0105	1.5000
		3A	0.0000	1.5000	1.4818	...	1.3917	1.3856	0.0061	1.3016	3B	1.3200	1.3396	1.3917	1.3996	0.0079	1.5000
1/2-8 or 1.500-8	UN	2A	0.0022	1.4978	1.4828	1.4753	1.4166	1.4093	0.0073	1.3490	2B	1.365	1.390	1.4188	1.4283	0.0095	1.5000
		3A	0.0000	1.5000	1.4850	...	1.4188	1.4133	0.0055	1.3512	3B	1.3650	1.3797	1.4188	1.4259	0.0071	1.5000
1/2-12 or 1.500-12	UNF	1A	0.0019	1.4981	1.4809	...	1.4440	1.4344	0.0096	1.3989	1B	1.410	1.428	1.4459	1.4584	0.0125	1.5000
		2A	0.0019	1.4981	1.4867	...	1.4440	1.4376	0.0064	1.3989	2B	1.410	1.428	1.4459	1.4542	0.0083	1.5000
		3A	0.0000	1.5000	1.4886	...	1.4459	1.4411	0.0048	1.4008	3B	1.4100	1.4198	1.4459	1.4522	0.0063	1.5000
1/2-16 or 1.500-16	UN	2A	0.0016	1.4984	1.4890	...	1.4578	1.4526	0.0052	1.4239	2B	1.432	1.446	1.4594	1.4662	0.0068	1.5000
		3A	0.0000	1.5000	1.4906	...	1.4594	1.4555	0.0039	1.4255	3B	1.4320	1.4408	1.4594	1.4645	0.0051	1.5000
1/2-18 or 1.500-18	UNEF	2A	0.0015	1.4985	1.4898	...	1.4624	1.4574	0.0050	1.4324	2B	1.440	1.452	1.4639	1.4704	0.0065	1.5000
		3A	0.0000	1.5000	1.4913	...	1.4639	1.4602	0.0037	1.4339	3B	1.4400	1.4480	1.4639	1.4687	0.0048	1.5000
1/2-20 or 1.500-20	UN	2A	0.0014	1.4986	1.4905	...	1.4661	1.4613	0.0048	1.4391	2B	1.446	1.457	1.4675	1.4737	0.0062	1.5000
		3A	0.0000	1.5000	1.4919	...	1.4675	1.4639	0.0036	1.4405	3B	1.4460	1.4537	1.4675	1.4721	0.0046	1.5000
1/2-28 or 1.500-28	UN	2A	0.0013	1.4987	1.4922	...	1.4755	1.4713	0.0042	1.4561	2B	1.461	1.470	1.4768	1.4823	0.0055	1.5000
		3A	0.0000	1.5000	1.4935	...	1.4768	1.4737	0.0031	1.4574	3B	1.4610	1.4676	1.4768	1.4809	0.0041	1.5000
3/16-6 or 1.5625-6	UN	2A	0.0024	1.5601	1.5419	...	1.4518	1.4436	0.0082	1.3617	2B	1.382	1.413	1.4542	1.4648	0.0106	1.5625
		3A	0.0000	1.5625	1.5443	...	1.4542	1.4481	0.0061	1.3641	3B	1.3820	1.4021	1.4542	1.4622	0.0080	1.5625
3/16-8 or 1.5625-8	UN	2A	0.0022	1.5603	1.5453	...	1.4791	1.4717	0.0074	1.4115	2B	1.427	1.452	1.4813	1.4909	0.0096	1.5625
		3A	0.0000	1.5625	1.5475	...	1.4813	1.4758	0.0055	1.4137	3B	1.4270	1.4422	1.4813	1.4885	0.0072	1.5625
3/16-12 or 1.5625-12	UN	2A	0.0018	1.5607	1.5493	...	1.5066	1.5007	0.0059	1.4615	2B	1.472	1.490	1.5084	1.5160	0.0076	1.5625
		3A	0.0000	1.5625	1.5511	...	1.5084	1.5040	0.0044	1.4633	3B	1.4720	1.4823	1.5084	1.5141	0.0057	1.5625
3/16-16 or 1.5625-16	UN	2A	0.0016	1.5609	1.5515	...	1.5203	1.5151	0.0052	1.4864	2B	1.495	1.509	1.5219	1.5287	0.0068	1.5625
		3A	0.0000	1.5625	1.5531	...	1.5219	1.5180	0.0039	1.4880	3B	1.4950	1.5033	1.5219	1.5270	0.0051	1.5625

(Notes follow at end of table)

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TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1 1/16-18 or 1.5625-18	UNEF	2A	0.0015	1.5610	1.5523	...	1.5249	1.5199	0.0050	1.4949	2B	1.502	1.515	1.5264	1.5329	0.0065	1.5625
		3A	0.0000	1.5625	1.5538	...	1.5264	1.5227	0.0037	1.4964	3B	1.5020	1.5105	1.5264	1.5312	0.0048	1.5625
1 1/16-20 or 1.5625-20	UN	2A	0.0014	1.5611	1.5530	...	1.5286	1.5238	0.0048	1.5016	2B	1.508	1.520	1.5300	1.5362	0.0062	1.5625
		3A	0.0000	1.5625	1.5544	...	1.5300	1.5264	0.0036	1.5030	3B	1.5080	1.5162	1.5300	1.5346	0.0046	1.5625
1 1/8-6 or 1.625-6	UN	2A	0.0025	1.6225	1.6043	...	1.5142	1.5060	0.0082	1.4246	2B	1.445	1.475	1.5167	1.5274	0.0107	1.6250
		3A	0.0000	1.6250	1.6068	...	1.5167	1.5105	0.0062	1.4271	3B	1.4450	1.4646	1.5167	1.5247	0.0080	1.6250
1 1/8-8 or 1.625-8	UN	2A	0.0022	1.6228	1.6078	1.6003	1.5416	1.5342	0.0074	1.4784	2B	1.490	1.515	1.5438	1.5535	0.0097	1.6250
		3A	0.0000	1.6250	1.6100	...	1.5438	1.5382	0.0056	1.4806	3B	1.4900	1.5047	1.5438	1.5510	0.0072	1.6250
1 1/8-12 or 1.625-12	UN	2A	0.0018	1.6232	1.6118	...	1.5691	1.5632	0.0059	1.5240	2B	1.535	1.553	1.5709	1.5785	0.0076	1.6250
		3A	0.0000	1.6250	1.6136	...	1.5709	1.5665	0.0044	1.5258	3B	1.5350	1.5448	1.5709	1.5766	0.0057	1.6250
1 1/8-16 or 1.625-16	UN	2A	0.0016	1.6234	1.6140	...	1.5828	1.5776	0.0052	1.5489	2B	1.557	1.571	1.5844	1.5912	0.0068	1.6250
		3A	0.0000	1.6250	1.6156	...	1.5844	1.5805	0.0039	1.5505	3B	1.5570	1.5658	1.5844	1.5895	0.0051	1.6250
1 1/8-18 or 1.625-18	UNEF	2A	0.0015	1.6235	1.6148	...	1.5874	1.5824	0.0050	1.5574	2B	1.565	1.578	1.5889	1.5954	0.0065	1.6250
		3A	0.0000	1.6250	1.6163	...	1.5889	1.5852	0.0037	1.5589	3B	1.5650	1.5730	1.5889	1.5937	0.0048	1.6250
1 1/8-20 or 1.625-20	UN	2A	0.0014	1.6236	1.6155	...	1.5911	1.5863	0.0048	1.5641	2B	1.571	1.582	1.5925	1.5987	0.0062	1.6250
		3A	0.0000	1.6250	1.6169	...	1.5925	1.5889	0.0036	1.5655	3B	1.5710	1.5787	1.5925	1.5971	0.0046	1.6250
1 1/16-6 or 1.6875-6	UN	2A	0.0025	1.6850	1.6668	...	1.5767	1.5684	0.0083	1.4866	2B	1.507	1.538	1.5792	1.5900	0.0108	1.6875
		3A	0.0000	1.6875	1.6693	...	1.5792	1.5730	0.0062	1.4891	3B	1.5070	1.5271	1.5792	1.5873	0.0081	1.6875
1 1/16-8 or 1.6875-8	UN	2A	0.0022	1.6853	1.6703	...	1.6041	1.5966	0.0075	1.5365	2B	1.552	1.577	1.6063	1.6160	0.0097	1.6875
		3A	0.0000	1.6875	1.6725	...	1.6063	1.6007	0.0056	1.5387	3B	1.5520	1.5672	1.6063	1.6136	0.0073	1.6875
1 1/16-12 or 1.6875-12	UN	2A	0.0018	1.6857	1.6743	...	1.6316	1.6256	0.0060	1.5865	2B	1.597	1.615	1.6334	1.6412	0.0078	1.6875
		3A	0.0000	1.6875	1.6761	...	1.6334	1.6289	0.0045	1.5883	3B	1.5970	1.6073	1.6334	1.6392	0.0058	1.6875
1 1/16-16 or 1.6875-16	UN	2A	0.0016	1.6859	1.6765	...	1.6453	1.6400	0.0053	1.6114	2B	1.620	1.634	1.6469	1.6538	0.0069	1.6875
		3A	0.0000	1.6875	1.6781	...	1.6469	1.6429	0.0040	1.6130	3B	1.6200	1.6283	1.6469	1.6521	0.0052	1.6875
1 1/16-18 or 1.6875-18	UNEF	2A	0.0015	1.6860	1.6773	...	1.6499	1.6448	0.0051	1.6199	2B	1.627	1.640	1.6514	1.6580	0.0066	1.6875
		3A	0.0000	1.6875	1.6788	...	1.6514	1.6476	0.0038	1.6214	3B	1.6270	1.6355	1.6514	1.6563	0.0049	1.6875
1 1/16-20 or 1.6875-20	UN	2A	0.0015	1.6860	1.6779	...	1.6535	1.6487	0.0048	1.6265	2B	1.633	1.645	1.6550	1.6613	0.0063	1.6875
		3A	0.0000	1.6875	1.6794	...	1.6550	1.6514	0.0036	1.6280	3B	1.6330	1.6412	1.6550	1.6597	0.0047	1.6875

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TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1 3/4-5 or 1.750-5	UNC	1A	0.0027	1.7473	1.7165	...	1.6174	1.6040	0.0134	1.5092	1B	1.534	1.568	1.6201	1.6375	0.0174	1.7500
		2A	0.0027	1.7473	1.7268	1.7165	1.6174	1.6085	0.0089	1.5092	2B	1.534	1.568	1.6201	1.6317	0.0116	1.7500
		3A	0.0000	1.7500	1.7295	...	1.6201	1.6134	0.0067	1.5119	3B	1.5340	1.5575	1.6201	1.6288	0.0087	1.7500
1 3/4-6 or 1.750-6	UN	2A	0.0025	1.7475	1.7293	...	1.6392	1.6309	0.0083	1.5491	2B	1.570	1.600	1.6417	1.6525	0.0108	1.7500
		3A	0.0000	1.7500	1.7318	...	1.6417	1.6354	0.0063	1.5516	3B	1.5700	1.5896	1.6417	1.6498	0.0081	1.7500
1 3/4-8 or 1.750-8	UN	2A	0.0023	1.7477	1.7327	1.7252	1.6665	1.6590	0.0075	1.5989	2B	1.615	1.640	1.6688	1.6786	0.0098	1.7500
		3A	0.0000	1.7500	1.7350	...	1.6688	1.6632	0.0056	1.6012	3B	1.6150	1.6297	1.6688	1.6762	0.0074	1.7500
1 3/4-12 or 1.750-12	UN	2A	0.0018	1.7482	1.7368	...	1.6941	1.6881	0.0060	1.6490	2B	1.660	1.678	1.6959	1.7037	0.0078	1.7500
		3A	0.0000	1.7500	1.7386	...	1.6959	1.6914	0.0045	1.6508	3B	1.6600	1.6698	1.6959	1.7017	0.0058	1.7500
1 3/4-16 or 1.750-16	UN	2A	0.0016	1.7484	1.7390	...	1.7078	1.7025	0.0053	1.6739	2B	1.682	1.696	1.7094	1.7163	0.0069	1.7500
		3A	0.0000	1.7500	1.7406	...	1.7094	1.7054	0.0040	1.6755	3B	1.6820	1.6908	1.7094	1.7146	0.0052	1.7500
1 3/4-20 or 1.750-20	UN	2A	0.0015	1.7485	1.7404	...	1.7160	1.7112	0.0048	1.6890	2B	1.696	1.707	1.7175	1.7238	0.0063	1.7500
		3A	0.0000	1.7500	1.7419	...	1.7175	1.7139	0.0036	1.6905	3B	1.6960	1.7037	1.7175	1.7222	0.0047	1.7500
1 3/16-6 or 1.8125-6	UN	2A	0.0025	1.8100	1.7918	...	1.7017	1.6933	0.0084	1.6116	2B	1.632	1.663	1.7042	1.7151	0.0109	1.8125
		3A	0.0000	1.8125	1.7943	...	1.7042	1.6979	0.0063	1.6141	3B	1.6320	1.6521	1.7042	1.7124	0.0082	1.8125
1 3/16-8 or 1.8125-8	UN	2A	0.0023	1.8102	1.7952	...	1.7290	1.7214	0.0076	1.6614	2B	1.677	1.702	1.7313	1.7412	0.0099	1.8125
		3A	0.0000	1.8125	1.7975	...	1.7313	1.7256	0.0057	1.6637	3B	1.6770	1.6922	1.7313	1.7387	0.0074	1.8125
1 3/16-12 or 1.8125-12	UN	2A	0.0018	1.8107	1.7993	...	1.7566	1.7506	0.0060	1.7115	2B	1.722	1.740	1.7584	1.7662	0.0078	1.8125
		3A	0.0000	1.8125	1.8011	...	1.7584	1.7539	0.0045	1.7133	3B	1.7220	1.7323	1.7584	1.7642	0.0058	1.8125
1 3/16-16 or 1.8125-16	UN	2A	0.0016	1.8109	1.8015	...	1.7703	1.7650	0.0053	1.7364	2B	1.745	1.759	1.7719	1.7788	0.0069	1.8125
		3A	0.0000	1.8125	1.8031	...	1.7719	1.7679	0.0040	1.7380	3B	1.7450	1.7533	1.7719	1.7771	0.0052	1.8125
1 3/16-20 or 1.8125-20	UN	2A	0.0015	1.8110	1.8029	...	1.7785	1.7737	0.0048	1.7515	2B	1.758	1.770	1.7800	1.7863	0.0063	1.8125
		3A	0.0000	1.8125	1.8044	...	1.7800	1.7764	0.0036	1.7530	3B	1.7580	1.7662	1.7800	1.7847	0.0047	1.8125
1 7/8-6 or 1.875-6	UN	2A	0.0025	1.8725	1.8543	...	1.7642	1.7558	0.0084	1.6741	2B	1.695	1.725	1.7667	1.7777	0.0110	1.8750
		3A	0.0000	1.8750	1.8568	...	1.7667	1.7604	0.0063	1.6766	3B	1.6950	1.7146	1.7667	1.7749	0.0082	1.8750
1 7/8-8 or 1.875-8	UN	2A	0.0023	1.8727	1.8577	1.8502	1.7915	1.7838	0.0077	1.7239	2B	1.740	1.765	1.7938	1.8038	0.0100	1.8750
		3A	0.0000	1.8750	1.8600	...	1.7938	1.7881	0.0057	1.7262	3B	1.7400	1.7547	1.7938	1.8013	0.0075	1.8750
1 7/8-12 or 1.875-12	UN	2A	0.0018	1.8732	1.8618	...	1.8191	1.8131	0.0060	1.7740	2B	1.785	1.803	1.8209	1.8287	0.0078	1.8750
		3A	0.0000	1.8750	1.8636	...	1.8209	1.8164	0.0045	1.7758	3B	1.7850	1.7948	1.8209	1.8267	0.0058	1.8750

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

ASME B1.1-1989

UNIFIED INCH SCREW THREADS

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)							
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.	
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance		
1 7/8-16 or 1.875-16	UN	2A	0.0016	1.8734	1.8640	...	1.8328	1.8275	0.0053	1.7989	2B	1.807	1.821	1.8344	1.8413	0.0069	1.8750	
		3A	0.0000	1.8750	1.8656	...	1.8344	1.8304	0.0040	1.8005		3B	1.8070	1.8158	1.8344	1.8396	0.0052	1.8750
1 7/8-20 or 1.875-20	UN	2A	0.0015	1.8735	1.8654	...	1.8410	1.8362	0.0048	1.8140	2B	1.821	1.832	1.8425	1.8488	0.0063	1.8750	
		3A	0.0000	1.8750	1.8669	...	1.8425	1.8389	0.0036	1.8155		3B	1.8210	1.8287	1.8425	1.8472	0.0047	1.8750
1 15/16-6 or 1.9375-6	UN	2A	0.0026	1.9349	1.9167	...	1.8266	1.8181	0.0085	1.7365	2B	1.757	1.788	1.8292	1.8403	0.0111	1.9375	
		3A	0.0000	1.9375	1.9193	...	1.8292	1.8228	0.0064	1.7391		3B	1.7570	1.7771	1.8292	1.8375	0.0083	1.9375
1 15/16-8 or 1.9375-8	UN	2A	0.0023	1.9352	1.9202	...	1.8540	1.8463	0.0077	1.7864	2B	1.802	1.827	1.8563	1.8663	0.0100	1.9375	
		3A	0.0000	1.9375	1.9225	...	1.8563	1.8505	0.0058	1.7887		3B	1.8020	1.8172	1.8563	1.8638	0.0075	1.9375
1 15/16-12 or 1.9375-12	UN	2A	0.0018	1.9357	1.9243	...	1.8816	1.8755	0.0061	1.8365	2B	1.847	1.865	1.8834	1.8913	0.0079	1.9375	
		3A	0.0000	1.9375	1.9261	...	1.8834	1.8789	0.0045	1.8383		3B	1.8470	1.8573	1.8834	1.8893	0.0059	1.9375
1 15/16-16 or 1.9375-16	UN	2A	0.0016	1.9359	1.9265	...	1.8953	1.8899	0.0054	1.8614	2B	1.870	1.884	1.8969	1.9039	0.0070	1.9375	
		3A	0.0000	1.9375	1.9281	...	1.8969	1.8929	0.0040	1.8630		3B	1.8700	1.8783	1.8969	1.9021	0.0052	1.9375
1 15/16-20 or 1.9375-20	UN	2A	0.0015	1.9360	1.9279	...	1.9035	1.8986	0.0049	1.8765	2B	1.883	1.895	1.9050	1.9114	0.0064	1.9375	
		3A	0.0000	1.9375	1.9294	...	1.9050	1.9013	0.0037	1.8780		3B	1.8830	1.8912	1.9050	1.9098	0.0048	1.9375
2-4 1/2 or 2.000-4.5	UNC	1A	0.0029	1.9971	1.9641	...	1.8528	1.8385	0.0143	1.7324	1B	1.759	1.795	1.8557	1.8743	0.0186	2.0000	
		2A	0.0029	1.9971	1.9751	1.9641	1.8528	1.8433	0.0095	1.7324		2B	1.759	1.795	1.8557	1.8681	0.0124	2.0000
		3A	0.0000	2.0000	1.9780	...	1.8557	1.8486	0.0071	1.7353		3B	1.7590	1.7861	1.8557	1.8650	0.0093	2.0000
2-6 or 2.000-6	UN	2A	0.0026	1.9974	1.9792	...	1.8891	1.8805	0.0086	1.7990	2B	1.820	1.850	1.8917	1.9028	0.0111	2.0000	
		3A	0.0000	2.0000	1.9818	...	1.8917	1.8853	0.0064	1.8016		3B	1.8200	1.8396	1.8917	1.9000	0.0083	2.0000
2-8 or 2.000-8	UN	2A	0.0023	1.9977	1.9827	1.9752	1.9165	1.9087	0.0078	1.8489	2B	1.865	1.890	1.9188	1.9289	0.0101	2.0000	
		3A	0.0000	2.0000	1.9850	...	1.9188	1.9130	0.0058	1.8512		3B	1.8650	1.8797	1.9188	1.9264	0.0076	2.0000
2-12 or 2.000-12	UN	2A	0.0018	1.9982	1.9868	...	1.9441	1.9380	0.0061	1.8990	2B	1.910	1.928	1.9459	1.9538	0.0079	2.0000	
		3A	0.0000	2.0000	1.9886	...	1.9459	1.9414	0.0045	1.9008		3B	1.9100	1.9198	1.9459	1.9518	0.0059	2.0000
2-16 or 2.000-16	UN	2A	0.0016	1.9984	1.9890	...	1.9578	1.9524	0.0054	1.9239	2B	1.932	1.946	1.9594	1.9664	0.0070	2.0000	
		3A	0.0000	2.0000	1.9906	...	1.9594	1.9554	0.0040	1.9255		3B	1.9320	1.9408	1.9594	1.9646	0.0052	2.0000
2-20 or 2.000-20	UN	2A	0.0015	1.9985	1.9904	...	1.9660	1.9611	0.0049	1.9390	2B	1.946	1.957	1.9675	1.9739	0.0064	2.0000	
		3A	0.0000	2.0000	1.9919	...	1.9675	1.9638	0.0037	1.9405		3B	1.9460	1.9537	1.9675	1.9723	0.0048	2.0000
2 1/8-6 or 2.125-6	UN	2A	0.0026	2.1224	2.1042	...	2.0141	2.0054	0.0087	1.9240	2B	1.945	1.975	2.0167	2.0280	0.0113	2.1250	
		3A	0.0000	2.1250	2.1068	...	2.0167	2.0102	0.0065	1.9266		3B	1.9450	1.9646	2.0167	2.0251	0.0084	2.1250

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TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)							
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.	
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance		
2 1/8-8 or 2.125-8	UN	2A	0.0024	2.1226	2.1076	2.1001	2.0414	2.0335	0.0079	1.9738	2B	1.990	2.015	2.0438	2.0540	0.0102	2.1250	
		3A	0.0000	2.1250	2.1100	...	2.0438	2.0379	0.0059	1.9762		3B	1.9900	2.0047	2.0438	2.0515	0.0077	2.1250
2 1/8-12 or 2.125-12	UN	2A	0.0018	2.1232	2.1118	...	2.0691	2.0630	0.0061	2.0240	2B	2.035	2.053	2.0709	2.0788	0.0079	2.1250	
		3A	0.0000	2.1250	2.1136	...	2.0709	2.0664	0.0045	2.0258		3B	2.0350	2.0448	2.0709	2.0768	0.0059	2.1250
2 1/8-16 or 2.125-16	UN	2A	0.0016	2.1234	2.1140	...	2.0828	2.0774	0.0054	2.0489	2B	2.057	2.071	2.0844	2.0914	0.0070	2.1250	
		3A	0.0000	2.1250	2.1156	...	2.0844	2.0803	0.0041	2.0505		3B	2.0570	2.0658	2.0844	2.0896	0.0052	2.1250
2 1/8-20 or 2.125-20	UN	2A	0.0015	2.1235	2.1154	...	2.0910	2.0861	0.0049	2.0640	2B	2.071	2.082	2.0925	2.0989	0.0064	2.1250	
		3A	0.0000	2.1250	2.1169	...	2.0925	2.0888	0.0037	2.0655		3B	2.0710	2.0787	2.0925	2.0973	0.0048	2.1250
2 1/4-4 1/2 or 2.250-4.5	UNC	1A	0.0029	2.2471	2.2141	...	2.1028	2.0882	0.0146	1.9824	1B	2.009	2.045	2.1057	2.1247	0.0190	2.2500	
		2A	0.0029	2.2471	2.2251	2.2141	2.1028	2.0931	0.0097	1.9824		2B	2.009	2.045	2.1057	2.1183	0.0126	2.2500
		3A	0.0000	2.2500	2.2280	...	2.1057	2.0984	0.0073	1.9853		3B	2.0090	2.0361	2.1057	2.1152	0.0095	2.2500
2 1/4-6 or 2.250-6	UN	2A	0.0026	2.2474	2.2292	...	2.1391	2.1303	0.0088	2.0490	2B	2.070	2.100	2.1417	2.1531	0.0114	2.2500	
		3A	0.0000	2.2500	2.2318	...	2.1417	2.1351	0.0066	2.0516		3B	2.0700	2.0896	2.1417	2.1502	0.0085	2.2500
2 1/4-8 or 2.250-8	UN	2A	0.0024	2.2476	2.2326	2.2251	2.1664	2.1584	0.0080	2.0988	2B	2.115	2.140	2.1688	2.1792	0.0104	2.2500	
		3A	0.0000	2.2500	2.2350	...	2.1688	2.1628	0.0060	2.1012		3B	2.1150	2.1297	2.1688	2.1766	0.0078	2.2500
2 1/4-12 or 2.250-12	UN	2A	0.0018	2.2482	2.2368	...	2.1941	2.1880	0.0061	2.1490	2B	2.160	2.178	2.1959	2.2038	0.0079	2.2500	
		3A	0.0000	2.2500	2.2386	...	2.1959	2.1914	0.0045	2.1508		3B	2.1600	2.1698	2.1959	2.2018	0.0059	2.2500
2 1/4-16 or 2.250-16	UN	2A	0.0016	2.2484	2.2390	...	2.2078	2.2024	0.0054	2.1739	2B	2.182	2.196	2.2094	2.2164	0.0070	2.2500	
		3A	0.0000	2.2500	2.2406	...	2.2094	2.2053	0.0041	2.1755		3B	2.1820	2.1908	2.2094	2.2146	0.0052	2.2500
2 1/4-20 or 2.250-20	UN	2A	0.0015	2.2485	2.2404	...	2.2160	2.2111	0.0049	2.1890	2B	2.196	2.207	2.2175	2.2239	0.0064	2.2500	
		3A	0.0000	2.2500	2.2419	...	2.2175	2.2137	0.0038	2.1905		3B	2.1960	2.2037	2.2175	2.2223	0.0048	2.2500
2 3/8-6 or 2.375-6	UN	2A	0.0027	2.3723	2.3541	...	2.2640	2.2551	0.0089	2.1739	2B	2.195	2.226	2.2667	2.2782	0.0115	2.3750	
		3A	0.0000	2.3750	2.3568	...	2.2667	2.2601	0.0066	2.1766		3B	2.1950	2.2146	2.2667	2.2753	0.0086	2.3750
2 3/8-8 or 2.375-8	UN	2A	0.0024	2.3726	2.3576	...	2.2914	2.2833	0.0081	2.2238	2B	2.240	2.265	2.2938	2.3043	0.0105	2.3750	
		3A	0.0000	2.3750	2.3600	...	2.2938	2.2878	0.0060	2.2262		3B	2.2400	2.2547	2.2938	2.3017	0.0079	2.3750
2 3/8-12 or 2.375-12	UN	2A	0.0019	2.3731	2.3617	...	2.3190	2.3128	0.0062	2.2739	2B	2.285	2.303	2.3209	2.3290	0.0081	2.3750	
		3A	0.0000	2.3750	2.3636	...	2.3209	2.3163	0.0046	2.2758		3B	2.2850	2.2948	2.3209	2.3269	0.0060	2.3750
2 3/8-16 or 2.375-16	UN	2A	0.0017	2.3733	2.3639	...	2.3327	2.3272	0.0055	2.2988	2B	2.307	2.321	2.3344	2.3416	0.0072	2.3750	
		3A	0.0000	2.3750	2.3656	...	2.3344	2.3303	0.0041	2.3005		3B	2.3070	2.3158	2.3344	2.3398	0.0054	2.3750

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

ASME B1.1-1989

UNIFIED INCH SCREW THREADS

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
2 3/8-20 or 2.375-20	UN	2A	0.0015	2.3735	2.3654	...	2.3410	2.3359	0.0051	2.3140	2B	2.321	2.332	2.3425	2.3491	0.0066	2.3750
		3A	0.0000	2.3750	2.3669	...	2.3425	2.3387	0.0038	2.3155	3B	2.3210	2.3287	2.3425	2.3475	0.0050	2.3750
2 1/2-4 or 2.500-4	UNC	1A	0.0031	2.4969	2.4612	...	2.3345	2.3190	0.0155	2.1992	1B	2.229	2.267	2.3376	2.3578	0.0202	2.5000
		2A	0.0031	2.4969	2.4731	2.4612	2.3345	2.3241	0.0104	2.1992	2B	2.229	2.267	2.3376	2.3511	0.0135	2.5000
		3A	0.0000	2.5000	2.4762	...	2.3376	2.3298	0.0078	2.2023	3B	2.2290	2.2594	2.3376	2.3477	0.0101	2.5000
2 1/2-6 or 2.500-6	UN	2A	0.0027	2.4973	2.4791	...	2.3890	2.3800	0.0090	2.2989	2B	2.320	2.350	2.3917	2.4033	0.0116	2.5000
		3A	0.0000	2.5000	2.4818	...	2.3917	2.3850	0.0067	2.3016	3B	2.3200	2.3396	2.3917	2.4004	0.0087	2.5000
2 1/2-8 or 2.500-8	UN	2A	0.0024	2.4976	2.4826	2.4751	2.4164	2.4082	0.0082	2.3488	2B	2.365	2.390	2.4188	2.4294	0.0106	2.5000
		3A	0.0000	2.5000	2.4850	...	2.4188	2.4127	0.0061	2.3512	3B	2.3650	2.3797	2.4188	2.4268	0.0080	2.5000
2 1/2-12 or 2.500-12	UN	2A	0.0019	2.4981	2.4867	...	2.4440	2.4378	0.0062	2.3989	2B	2.410	2.428	2.4459	2.4540	0.0081	2.5000
		3A	0.0000	2.5000	2.4886	...	2.4459	2.4413	0.0046	2.4008	3B	2.4100	2.4198	2.4459	2.4519	0.0060	2.5000
2 1/2-16 or 2.500-16	UN	2A	0.0017	2.4983	2.4889	...	2.4577	2.4522	0.0055	2.4238	2B	2.432	2.446	2.4594	2.4666	0.0072	2.5000
		3A	0.0000	2.5000	2.4906	...	2.4594	2.4553	0.0041	2.4255	3B	2.4320	2.4408	2.4594	2.4648	0.0054	2.5000
2 1/2-20 or 2.500-20	UN	2A	0.0015	2.4985	2.4904	...	2.4660	2.4609	0.0051	2.4390	2B	2.446	2.457	2.4675	2.4741	0.0066	2.5000
		3A	0.0000	2.5000	2.4919	...	2.4675	2.4637	0.0038	2.4405	3B	2.4460	2.4537	2.4675	2.4725	0.0050	2.5000
2 5/8-6 or 2.625-6	UN	2A	0.0027	2.6223	2.6041	...	2.5140	2.5050	0.0090	2.4239	2B	2.445	2.475	2.5167	2.5285	0.0118	2.6250
		3A	0.0000	2.6250	2.6068	...	2.5167	2.5099	0.0068	2.4266	3B	2.4450	2.4646	2.5167	2.5255	0.0088	2.6250
2 5/8-8 or 2.625-8	UN	2A	0.0025	2.6225	2.6075	...	2.5413	2.5331	0.0082	2.4737	2B	2.490	2.515	2.5438	2.5545	0.0107	2.6250
		3A	0.0000	2.6250	2.6100	...	2.5438	2.5376	0.0062	2.4762	3B	2.4900	2.5047	2.5438	2.5518	0.0080	2.6250
2 5/8-12 or 2.625-12	UN	2A	0.0019	2.6231	2.6117	...	2.5690	2.5628	0.0062	2.5239	2B	2.535	2.553	2.5709	2.5790	0.0081	2.6250
		3A	0.0000	2.6250	2.6136	...	2.5709	2.5663	0.0046	2.5258	3B	2.5350	2.5448	2.5709	2.5769	0.0060	2.6250
2 5/8-16 or 2.625-16	UN	2A	0.0017	2.6233	2.6139	...	2.5827	2.5772	0.0055	2.5488	2B	2.557	2.571	2.5844	2.5916	0.0072	2.6250
		3A	0.0000	2.6250	2.6156	...	2.5844	2.5803	0.0041	2.5505	3B	2.5570	2.5658	2.5844	2.5898	0.0054	2.6250
2 5/8-20 or 2.625-20	UN	2A	0.0015	2.6235	2.6154	...	2.5910	2.5859	0.0051	2.5640	2B	2.571	2.582	2.5925	2.5991	0.0066	2.6250
		3A	0.0000	2.6250	2.6169	...	2.5925	2.5887	0.0038	2.5655	3B	2.5710	2.5787	2.5925	2.5975	0.0050	2.6250
2 3/4-4 or 2.750-4	UNC	1A	0.0032	2.7468	2.7111	...	2.5844	2.5686	0.0158	2.4491	1B	2.479	2.517	2.5876	2.6082	0.0206	2.7500
		2A	0.0032	2.7468	2.7230	2.7111	2.5844	2.5739	0.0105	2.4491	2B	2.479	2.517	2.5876	2.6013	0.0137	2.7500
		3A	0.0000	2.7500	2.7262	...	2.5876	2.5797	0.0079	2.4523	3B	2.4790	2.5094	2.5876	2.5979	0.0103	2.7500
2 3/4-6 or 2.750-6	UN	2A	0.0027	2.7473	2.7291	...	2.6390	2.6299	0.0091	2.5489	2B	2.570	2.600	2.6417	2.6536	0.0119	2.7500
		3A	0.0000	2.7500	2.7318	...	2.6417	2.6349	0.0068	2.5516	3B	2.5700	2.5896	2.6417	2.6506	0.0089	2.7500

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TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

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Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
2 3/4-8 or 2.750-8	UN	2A	0.0025	2.7475	2.7325	2.7250	2.6663	2.6580	0.0083	2.5987	2B	2.615	2.640	2.6688	2.6796	0.0108	2.7500
		3A	0.0000	2.7500	2.7350	...	2.6688	2.6625	0.0063	2.6012	3B	2.6150	2.6297	2.6688	2.6769	0.0081	2.7500
2 3/4-12 or 2.750-12	UN	2A	0.0019	2.7481	2.7367	...	2.6940	2.6878	0.0062	2.6489	2B	2.660	2.678	2.6959	2.7040	0.0081	2.7500
		3A	0.0000	2.7500	2.7386	...	2.6959	2.6913	0.0046	2.6508	3B	2.6600	2.6698	2.6959	2.7019	0.0060	2.7500
2 3/4-16 or 2.750-16	UN	2A	0.0017	2.7483	2.7389	...	2.7077	2.7022	0.0055	2.6738	2B	2.682	2.696	2.7094	2.7166	0.0072	2.7500
		3A	0.0000	2.7500	2.7406	...	2.7094	2.7053	0.0041	2.6755	3B	2.6820	2.6908	2.7094	2.7148	0.0054	2.7500
2 3/4-20 or 2.750-20	UN	2A	0.0015	2.7485	2.7404	...	2.7160	2.7109	0.0051	2.6890	2B	2.696	2.707	2.7175	2.7241	0.0066	2.7500
		3A	0.0000	2.7500	2.7419	...	2.7175	2.7137	0.0038	2.6905	3B	2.6960	2.7037	2.7175	2.7225	0.0050	2.7500
2 7/8-6 or 2.875-6	UN	2A	0.0028	2.8722	2.8540	...	2.7639	2.7547	0.0092	2.6738	2B	2.695	2.725	2.7667	2.7787	0.0120	2.8750
		3A	0.0000	2.8750	2.8568	...	2.7667	2.7598	0.0069	2.6766	3B	2.6950	2.7146	2.7667	2.7757	0.0090	2.8750
2 7/8-8 or 2.875-8	UN	2A	0.0025	2.8725	2.8575	...	2.7913	2.7829	0.0084	2.7237	2B	2.740	2.765	2.7938	2.8048	0.0110	2.8750
		3A	0.0000	2.8750	2.8600	...	2.7938	2.7875	0.0063	2.7262	3B	2.7400	2.7547	2.7938	2.8020	0.0082	2.8750
2 7/8-12 or 2.875-12	UN	2A	0.0019	2.8731	2.8617	...	2.8190	2.8127	0.0063	2.7739	2B	2.785	2.803	2.8209	2.8291	0.0082	2.8750
		3A	0.0000	2.8750	2.8636	...	2.8209	2.8162	0.0047	2.7758	3B	2.7850	2.7948	2.8209	2.8271	0.0062	2.8750
2 7/8-16 or 2.875-16	UN	2A	0.0017	2.8733	2.8639	...	2.8327	2.8271	0.0056	2.7988	2B	2.807	2.821	2.8344	2.8417	0.0073	2.8750
		3A	0.0000	2.8750	2.8656	...	2.8344	2.8302	0.0042	2.8005	3B	2.8070	2.8158	2.8344	2.8399	0.0055	2.8750
2 7/8-20 or 2.875-20	UN	2A	0.0016	2.8734	2.8653	...	2.8409	2.8357	0.0052	2.8139	2B	2.821	2.832	2.8425	2.8493	0.0068	2.8750
		3A	0.0000	2.8750	2.8669	...	2.8425	2.8386	0.0039	2.8155	3B	2.8210	2.8287	2.8425	2.8476	0.0051	2.8750
3-4 or 3.000-4	UNC	1A	0.0032	2.9968	2.9611	...	2.8344	2.8183	0.0161	2.6991	1B	2.729	2.767	2.8376	2.8585	0.0209	3.0000
		2A	0.0032	2.9968	2.9730	2.9611	2.8344	2.8237	0.0107	2.6991	2B	2.729	2.767	2.8376	2.8515	0.0139	3.0000
		3A	0.0000	3.0000	2.9762	...	2.8376	2.8296	0.0080	2.7023	3B	2.7290	2.7594	2.8376	2.8480	0.0104	3.0000
3-6 or 3.000-6	UN	2A	0.0028	2.9972	2.9790	...	2.8889	2.8796	0.0093	2.7988	2B	2.820	2.850	2.8917	2.9038	0.0121	3.0000
		3A	0.0000	3.0000	2.9818	...	2.8917	2.8847	0.0070	2.8016	3B	2.8200	2.8396	2.8917	2.9008	0.0091	3.0000
3-8 or 3.000-8	UN	2A	0.0026	2.9974	2.9824	2.9749	2.9162	2.9077	0.0085	2.8486	2B	2.865	2.890	2.9188	2.9299	0.0111	3.0000
		3A	0.0000	3.0000	2.9850	...	2.9188	2.9124	0.0064	2.8512	3B	2.8650	2.8797	2.9188	2.9271	0.0083	3.0000
3-12 or 3.000-12	UN	2A	0.0019	2.9981	2.9867	...	2.9440	2.9377	0.0063	2.8989	2B	2.910	2.928	2.9459	2.9541	0.0082	3.0000
		3A	0.0000	3.0000	2.9886	...	2.9459	2.9412	0.0047	2.9008	3B	2.9100	2.9198	2.9459	2.9521	0.0062	3.0000
3-16 or 3.000-16	UN	2A	0.0017	2.9983	2.9889	...	2.9577	2.9521	0.0056	2.9238	2B	2.932	2.946	2.9594	2.9667	0.0073	3.0000
		3A	0.0000	3.0000	2.9906	...	2.9594	2.9552	0.0042	2.9255	3B	2.9320	2.9408	2.9594	2.9649	0.0055	3.0000

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
3-20 or 3.000-20	UN	2A	0.0016	2.9984	2.9903	...	2.9659	2.9607	0.0052	2.9389	2B	2.946	2.957	2.9675	2.9743	0.0068	3.0000
		3A	0.0000	3.0000	2.9919	...	2.9675	2.9636	0.0039	2.9405	3B	2.9460	2.9537	2.9675	2.9726	0.0051	3.0000
3 1/8-6 or 3.125-6	UN	2A	0.0028	3.1222	3.1040	...	3.0139	3.0045	0.0094	2.9238	2B	2.945	2.975	3.0167	3.0289	0.0122	3.1250
		3A	0.0000	3.1250	3.1068	...	3.0167	3.0097	0.0070	2.9266	3B	2.9450	2.9646	3.0167	3.0259	0.0092	3.1250
3 1/8-8 or 3.125-8	UN	2A	0.0026	3.1224	3.1074	...	3.0412	3.0326	0.0086	2.9736	2B	2.990	3.015	3.0438	3.0550	0.0112	3.1250
		3A	0.0000	3.1250	3.1100	...	3.0438	3.0374	0.0064	2.9762	3B	2.9900	3.0047	3.0438	3.0522	0.0084	3.1250
3 1/8-12 or 3.125-12	UN	2A	0.0019	3.1231	3.1117	...	3.0690	3.0627	0.0063	3.0239	2B	3.035	3.053	3.0709	3.0791	0.0082	3.1250
		3A	0.0000	3.1250	3.1136	...	3.0709	3.0662	0.0047	3.0258	3B	3.0350	3.0448	3.0709	3.0771	0.0062	3.1250
3 1/8-16 or 3.125-16	UN	2A	0.0017	3.1233	3.1139	...	3.0827	3.0771	0.0056	3.0488	2B	3.057	3.071	3.0844	3.0917	0.0073	3.1250
		3A	0.0000	3.1250	3.1156	...	3.0844	3.0802	0.0042	3.0505	3B	3.0570	3.0658	3.0844	3.0899	0.0055	3.1250
3 1/4-4 or 3.250-4	UNC	1A	0.0033	3.2467	3.2110	...	3.0843	3.0680	0.0163	2.9490	1B	2.979	3.017	3.0876	3.1088	0.0212	3.2500
		2A	0.0033	3.2467	3.2229	3.2110	3.0843	3.0734	0.0109	2.9490	2B	2.979	3.017	3.0876	3.1017	0.0141	3.2500
		3A	0.0000	3.2500	3.2262	...	3.0876	3.0794	0.0082	2.9523	3B	2.9790	3.0094	3.0876	3.0982	0.0106	3.2500
3 1/4-6 or 3.250-6	UN	2A	0.0028	3.2472	3.2290	...	3.1389	3.1294	0.0095	3.0488	2B	3.070	3.100	3.1417	3.1540	0.0123	3.2500
		3A	0.0000	3.2500	3.2318	...	3.1417	3.1346	0.0071	3.0516	3B	3.0700	3.0896	3.1417	3.1509	0.0092	3.2500
3 1/4-8 or 3.250-8	UN	2A	0.0026	3.2474	3.2324	3.2249	3.1662	3.1575	0.0087	3.0986	2B	3.115	3.140	3.1688	3.1801	0.0113	3.2500
		3A	0.0000	3.2500	3.2350	...	3.1688	3.1623	0.0065	3.1012	3B	3.1150	3.1297	3.1688	3.1773	0.0085	3.2500
3 1/4-12 or 3.250-12	UN	2A	0.0019	3.2481	3.2367	...	3.1940	3.1877	0.0063	3.1489	2B	3.160	3.178	3.1959	3.2041	0.0082	3.2500
		3A	0.0000	3.2500	3.2386	...	3.1959	3.1912	0.0047	3.1508	3B	3.1600	3.1698	3.1959	3.2021	0.0062	3.2500
3 1/4-16 or 3.250-16	UN	2A	0.0017	3.2483	3.2389	...	3.2077	3.2021	0.0056	3.1738	2B	3.182	3.196	3.2094	3.2167	0.0073	3.2500
		3A	0.0000	3.2500	3.2406	...	3.2094	3.2052	0.0042	3.1755	3B	3.1820	3.1908	3.2094	3.2149	0.0055	3.2500
3 3/8-6 or 3.375-6	UN	2A	0.0029	3.3721	3.3539	...	3.2638	3.2543	0.0095	3.1737	2B	3.195	3.225	3.2667	3.2791	0.0124	3.3750
		3A	0.0000	3.3750	3.3568	...	3.2667	3.2595	0.0072	3.1766	3B	3.1950	3.2146	3.2667	3.2760	0.0093	3.3750
3 3/8-8 or 3.375-8	UN	2A	0.0026	3.3724	3.3574	...	3.2912	3.2824	0.0088	3.2236	2B	3.240	3.265	3.2938	3.3052	0.0114	3.3750
		3A	0.0000	3.3750	3.3600	...	3.2938	3.2872	0.0066	3.2262	3B	3.2400	3.2547	3.2938	3.3023	0.0085	3.3750
3 3/8-12 or 3.375-12	UN	2A	0.0019	3.3731	3.3617	...	3.3190	3.3126	0.0064	3.2739	2B	3.285	3.303	3.3209	3.3293	0.0084	3.3750
		3A	0.0000	3.3750	3.3636	...	3.3209	3.3161	0.0048	3.2758	3B	3.2850	3.2948	3.3209	3.3272	0.0063	3.3750
3 3/8-16 or 3.375-16	UN	2A	0.0017	3.3733	3.3639	...	3.3327	3.3269	0.0058	3.2988	2B	3.307	3.321	3.3344	3.3419	0.0075	3.3750
		3A	0.0000	3.3750	3.3656	...	3.3344	3.3301	0.0043	3.3005	3B	3.3070	3.3158	3.3344	3.3400	0.0056	3.3750

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	Min.
3/2-4 or 3.500-4	UNC	1A	0.0033	3.4967	3.4610	...	3.3343	3.3177	0.0166	3.1990	1B	3.229	3.267	3.3376	3.3591	0.0215	3.5000
		2A	0.0033	3.4967	3.4729	3.4610	3.3343	3.3233	0.0110	3.1990	2B	3.229	3.267	3.3376	3.3519	0.0143	3.5000
		3A	0.0000	3.5000	3.4762	...	3.3376	3.3293	0.0083	3.2023	3B	3.2290	3.2594	3.3376	3.3484	0.0108	3.5000
3/2-6 or 3.500-6	UN	2A	0.0029	3.4971	3.4789	...	3.3888	3.3792	0.0096	3.2987	2B	3.320	3.350	3.3917	3.4042	0.0125	3.5000
		3A	0.0000	3.5000	3.4818	...	3.3917	3.3845	0.0072	3.3016	3B	3.3200	3.3396	3.3917	3.4011	0.0094	3.5000
3/2-8 or 3.500-8	UN	2A	0.0026	3.4974	3.4824	3.4749	3.4162	3.4074	0.0088	3.3486	2B	3.365	3.390	3.4188	3.4303	0.0115	3.5000
		3A	0.0000	3.5000	3.4850	...	3.4188	3.4122	0.0066	3.3512	3B	3.3650	3.3797	3.4188	3.4274	0.0086	3.5000
3/2-12 or 3.500-12	UN	2A	0.0019	3.4981	3.4867	...	3.4440	3.4376	0.0064	3.3989	2B	3.410	3.428	3.4459	3.4543	0.0084	3.5000
		3A	0.0000	3.5000	3.4886	...	3.4459	3.4411	0.0048	3.4008	3B	3.4100	3.4198	3.4459	3.4522	0.0063	3.5000
3/2-16 or 3.500-16	UN	2A	0.0017	3.4983	3.4889	...	3.4577	3.4519	0.0058	3.4238	2B	3.432	3.446	3.4594	3.4669	0.0075	3.5000
		3A	0.0000	3.5000	3.4906	...	3.4594	3.4551	0.0043	3.4255	3B	3.4320	3.4408	3.4594	3.4650	0.0056	3.5000
3/8-6 or 3.625-6	UN	2A	0.0029	3.6221	3.6039	...	3.5138	3.5041	0.0097	3.4237	2B	3.445	3.475	3.5167	3.5293	0.0126	3.6250
		3A	0.0000	3.6250	3.6068	...	3.5167	3.5094	0.0073	3.4266	3B	3.4450	3.4646	3.5167	3.5262	0.0095	3.6250
3/8-8 or 3.625-8	UN	2A	0.0027	3.6223	3.6073	...	3.5411	3.5322	0.0089	3.4735	2B	3.490	3.515	3.5438	3.5554	0.0116	3.6250
		3A	0.0000	3.6250	3.6100	...	3.5438	3.5371	0.0067	3.4762	3B	3.4900	3.5047	3.5438	3.5525	0.0087	3.6250
3/8-12 or 3.625-12	UN	2A	0.0019	3.6231	3.6117	...	3.5690	3.5626	0.0064	3.5239	2B	3.535	3.553	3.5709	3.5793	0.0084	3.6250
		3A	0.0000	3.6250	3.6136	...	3.5709	3.5661	0.0048	3.5258	3B	3.5350	3.5448	3.5709	3.5772	0.0063	3.6250
3/8-16 or 3.625-16	UN	2A	0.0017	3.6233	3.6139	...	3.5827	3.5769	0.0058	3.5488	2B	3.557	3.571	3.5844	3.5919	0.0075	3.6250
		3A	0.0000	3.6250	3.6156	...	3.5844	3.5801	0.0043	3.5505	3B	3.5570	3.5658	3.5844	3.5900	0.0056	3.6250
3/4-4 or 3.750-4	UNC	1A	0.0034	3.7466	3.7109	...	3.5842	3.5674	0.0168	3.4489	1B	3.479	3.517	3.5876	3.6094	0.0218	3.7500
		2A	0.0034	3.7466	3.7228	3.7109	3.5842	3.5730	0.0112	3.4489	2B	3.479	3.517	3.5876	3.6021	0.0145	3.7500
		3A	0.0000	3.7500	3.7262	...	3.5876	3.5792	0.0084	3.4523	3B	3.4790	3.5094	3.5876	3.5985	0.0109	3.7500
3/4-6 or 3.750-6	UN	2A	0.0029	3.7471	3.7289	...	3.6388	3.6290	0.0098	3.5487	2B	3.570	3.600	3.6417	3.6544	0.0127	3.7500
		3A	0.0000	3.7500	3.7318	...	3.6417	3.6344	0.0073	3.5516	3B	3.5700	3.5896	3.6417	3.6512	0.0095	3.7500
3/4-8 or 3.750-8	UN	2A	0.0027	3.7473	3.7323	3.7248	3.6661	3.6571	0.0090	3.5985	2B	3.615	3.640	3.6688	3.6805	0.0117	3.7500
		3A	0.0000	3.7500	3.7350	...	3.6688	3.6621	0.0067	3.6012	3B	3.6150	3.6297	3.6688	3.6776	0.0088	3.7500
3/4-12 or 3.750-12	UN	2A	0.0019	3.7481	3.7367	...	3.6940	3.6876	0.0064	3.6489	2B	3.660	3.678	3.6959	3.7043	0.0084	3.7500
		3A	0.0000	3.7500	3.7386	...	3.6959	3.6911	0.0048	3.6508	3B	3.6600	3.6698	3.6959	3.7022	0.0063	3.7500
3/4-16 or 3.750-16	UN	2A	0.0017	3.7483	3.7389	...	3.7077	3.7019	0.0058	3.6738	2B	3.682	3.696	3.7094	3.7169	0.0075	3.7500
		3A	0.0000	3.7500	3.7406	...	3.7094	3.7051	0.0043	3.6755	3B	3.6820	3.6908	3.7094	3.7150	0.0056	3.7500

(Notes follow at end of table)

**TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)**

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allow- ance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Toler- ance			Min.	Max.	Min.	Max.	Toler- ance	
3/8-6 or 3.875-6	UN	2A	0.0030	3.8720	3.8538	...	3.7637	3.7538	0.0099	3.6736	2B	3.695	3.725	3.7667	3.7795	0.0128	3.8750
		3A	0.0000	3.8750	3.8568	...	3.7667	3.7593	0.0074	3.6766	3B	3.6950	3.7146	3.7667	3.7763	0.0096	3.8750
3/8-8 or 3.875-8	UN	2A	0.0027	3.8723	3.8573	...	3.7911	3.7820	0.0091	3.7235	2B	3.740	3.765	3.7938	3.8056	0.0118	3.8750
		3A	0.0000	3.8750	3.8600	...	3.7938	3.7870	0.0068	3.7262	3B	3.7400	3.7547	3.7938	3.8026	0.0088	3.8750
3/8-12 or 3.875-12	UN	2A	0.0020	3.8730	3.8616	...	3.8189	3.8124	0.0065	3.7738	2B	3.785	3.803	3.8209	3.8294	0.0085	3.8750
		3A	0.0000	3.8750	3.8636	...	3.8209	3.8160	0.0049	3.7758	3B	3.7850	3.7948	3.8209	3.8273	0.0064	3.8750
3/8-16 or 3.875-16	UN	2A	0.0018	3.8732	3.8638	...	3.8326	3.8267	0.0059	3.7987	2B	3.807	3.821	3.8344	3.8420	0.0076	3.8750
		3A	0.0000	3.8750	3.8656	...	3.8344	3.8300	0.0044	3.8005	3B	3.8070	3.8158	3.8344	3.8401	0.0057	3.8750
4-4 or 4.000-4	UNC	1A	0.0034	3.9966	3.9609	...	3.8342	3.8172	0.0170	3.6989	1B	3.729	3.767	3.8376	3.8597	0.0221	4.0000
		2A	0.0034	3.9966	3.9728	3.9609	3.8342	3.8229	0.0113	3.6989	2B	3.729	3.767	3.8376	3.8523	0.0147	4.0000
		3A	0.0000	4.0000	3.9762	...	3.8376	3.8291	0.0085	3.7023	3B	3.7290	3.7594	3.8376	3.8487	0.0111	4.0000
4-6 or 4.000-6	UN	2A	0.0030	3.9970	3.9788	...	3.8887	3.8788	0.0099	3.7986	2B	3.820	3.850	3.8917	3.9046	0.0129	4.0000
		3A	0.0000	4.0000	3.9818	...	3.8917	3.8843	0.0074	3.8016	3B	3.8200	3.8396	3.8917	3.9014	0.0097	4.0000
4-8 or 4.000-8	UN	2A	0.0027	3.9973	3.9823	3.9748	3.9161	3.9070	0.0091	3.8485	2B	3.865	3.890	3.9188	3.9307	0.0119	4.0000
		3A	0.0000	4.0000	3.9850	...	3.9188	3.9120	0.0068	3.8512	3B	3.8650	3.8797	3.9188	3.9277	0.0089	4.0000
4-12 or 4.000-12	UN	2A	0.0020	3.9980	3.9866	...	3.9439	3.9374	0.0065	3.8988	2B	3.910	3.928	3.9459	3.9544	0.0085	4.0000
		3A	0.0000	4.0000	3.9886	...	3.9459	3.9410	0.0049	3.9008	3B	3.9100	3.9198	3.9459	3.9523	0.0064	4.0000
4-16 or 4.000-16	UN	2A	0.0018	3.9982	3.9888	...	3.9576	3.9517	0.0059	3.9237	2B	3.932	3.946	3.9594	3.9670	0.0076	4.0000
		3A	0.0000	4.0000	3.9906	...	3.9594	3.9550	0.0044	3.9255	3B	3.9320	3.9408	3.9594	3.9651	0.0057	4.0000
4 1/8-6 or 4.125-6	UN	2A	0.0030	4.1220	4.1038	...	4.0137	4.0037	0.0100	3.9236	2B	3.945	3.975	4.0167	4.0297	0.0130	4.1250
		3A	0.0000	4.1250	4.1068	...	4.0167	4.0092	0.0075	3.9266	3B	3.9450	3.9646	4.0167	4.0264	0.0097	4.1250
4 1/8-8 or 4.125-8	UN	2A	0.0028	4.1222	4.1072	...	4.0410	4.0318	0.0092	3.9734	2B	3.990	4.015	4.0438	4.0558	0.0120	4.1250
		3A	0.0000	4.1250	4.1100	...	4.0438	4.0369	0.0069	3.9762	3B	3.9900	4.0047	4.0438	4.0528	0.0090	4.1250
4 1/8-12 or 4.125-12	UN	2A	0.0020	4.1230	4.1116	...	4.0689	4.0624	0.0065	4.0238	2B	4.035	4.053	4.0709	4.0794	0.0085	4.1250
		3A	0.0000	4.1250	4.1136	...	4.0709	4.0660	0.0049	4.0258	3B	4.0350	4.0448	4.0709	4.0773	0.0064	4.1250
4 1/8-16 or 4.125-16	UN	2A	0.0018	4.1232	4.1138	...	4.0826	4.0767	0.0059	4.0487	2B	4.057	4.071	4.0844	4.0920	0.0076	4.1250
		3A	0.0000	4.1250	4.1156	...	4.0844	4.0800	0.0044	4.0505	3B	4.0570	4.0658	4.0844	4.0901	0.0057	4.1250
4 1/4-4 or 4.250-4	UN	2A	0.0034	4.2466	4.2228	...	4.0842	4.0727	0.0115	3.9489	2B	3.979	4.017	4.0876	4.1025	0.0149	4.2500
		3A	0.0000	4.2500	4.2262	...	4.0876	4.0790	0.0086	3.9523	3B	3.9790	4.0094	4.0876	4.0988	0.0112	4.2500

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
4¼-6 or 4.250-6	UN	2A	0.0030	4.2470	4.2288	...	4.1387	4.1286	0.0101	4.0486	2B	4.070	4.100	4.1417	4.1548	0.0131	4.2500
		3A	0.0000	4.2500	4.2318	...	4.1417	4.1342	0.0075	4.0516		3B	4.0700	4.0896	4.1417	4.1515	0.0098
4¼-8 or 4.250-8	UN	2A	0.0028	4.2472	4.2322	...	4.1660	4.1567	0.0093	4.0984	2B	4.115	4.140	4.1688	4.1808	0.0120	4.2500
		3A	0.0000	4.2500	4.2350	...	4.1688	4.1618	0.0070	4.1012		3B	4.1150	4.1297	4.1688	4.1779	0.0091
4¼-12 or 4.250-12	UN	2A	0.0020	4.2480	4.2366	...	4.1939	4.1874	0.0065	4.1488	2B	4.160	4.178	4.1959	4.2044	0.0085	4.2500
		3A	0.0000	4.2500	4.2386	...	4.1959	4.1910	0.0049	4.1508		3B	4.1600	4.1698	4.1959	4.2023	0.0064
4¼-16 or 4.250-16	UN	2A	0.0018	4.2482	4.2388	...	4.2076	4.2017	0.0059	4.1737	2B	4.182	4.196	4.2094	4.2170	0.0076	4.2500
		3A	0.0000	4.2500	4.2406	...	4.2094	4.2050	0.0044	4.1755		3B	4.1820	4.1908	4.2094	4.2151	0.0057
4¾-6 or 4.375-6	UN	2A	0.0030	4.3720	4.3538	...	4.2637	4.2536	0.0101	4.1736	2B	4.195	4.225	4.2667	4.2799	0.0132	4.3750
		3A	0.0000	4.3750	4.3568	...	4.2667	4.2591	0.0076	4.1766		3B	4.1950	4.2146	4.2667	4.2766	0.0099
4¾-8 or 4.375-8	UN	2A	0.0028	4.3722	4.3572	...	4.2910	4.2817	0.0093	4.2234	2B	4.240	4.265	4.2938	4.3058	0.0120	4.3750
		3A	0.0000	4.3750	4.3600	...	4.2938	4.2868	0.0070	4.2262		3B	4.2400	4.2547	4.2938	4.3029	0.0091
4¾-12 or 4.375-12	UN	2A	0.0020	4.3730	4.3616	...	4.3189	4.3124	0.0065	4.2738	2B	4.285	4.303	4.3209	4.3294	0.0085	4.3750
		3A	0.0000	4.3750	4.3636	...	4.3209	4.3160	0.0049	4.2758		3B	4.2850	4.2948	4.3209	4.3273	0.0064
4¾-16 or 4.375-16	UN	2A	0.0018	4.3732	4.3638	...	4.3326	4.3267	0.0059	4.2987	2B	4.307	4.321	4.3344	4.3420	0.0076	4.3750
		3A	0.0000	4.3750	4.3656	...	4.3344	4.3300	0.0044	4.3005		3B	4.3070	4.3158	4.3344	4.3401	0.0057
4½-4 or 4.500-4	UN	2A	0.0035	4.4965	4.4727	...	4.3341	4.3225	0.0116	4.1988	2B	4.229	4.267	4.3376	4.3527	0.0151	4.5000
		3A	0.0000	4.5000	4.4762	...	4.3376	4.3289	0.0087	4.2023		3B	4.2290	4.2594	4.3376	4.3489	0.0113
4½-6 or 4.500-6	UN	2A	0.0031	4.4969	4.4787	...	4.3886	4.3784	0.0102	4.2985	2B	4.320	4.350	4.3917	4.4050	0.0133	4.5000
		3A	0.0000	4.5000	4.4818	...	4.3917	4.3840	0.0077	4.3016		3B	4.3200	4.3396	4.3917	4.4016	0.0099
4½-8 or 4.500-8	UN	2A	0.0028	4.4972	4.4822	...	4.4160	4.4066	0.0094	4.3484	2B	4.365	4.390	4.4188	4.4310	0.0122	4.5000
		3A	0.0000	4.5000	4.4850	...	4.4188	4.4117	0.0071	4.3512		3B	4.3650	4.3797	4.4188	4.4280	0.0092
4½-12 or 4.500-12	UN	2A	0.0020	4.4980	4.4866	...	4.4439	4.4374	0.0065	4.3988	2B	4.410	4.428	4.4459	4.4544	0.0085	4.5000
		3A	0.0000	4.5000	4.4886	...	4.4459	4.4410	0.0049	4.4008		3B	4.4100	4.4198	4.4459	4.4523	0.0064
4½-16 or 4.500-16	UN	2A	0.0018	4.4982	4.4888	...	4.4576	4.4517	0.0059	4.4237	2B	4.432	4.446	4.4594	4.4670	0.0076	4.5000
		3A	0.0000	4.5000	4.4906	...	4.4594	4.4550	0.0044	4.4255		3B	4.4320	4.4408	4.4594	4.4651	0.0057
4⅝-6 or 4.625-6	UN	2A	0.0031	4.6219	4.6037	...	4.5136	4.5033	0.0103	4.4235	2B	4.445	4.475	4.5167	4.5300	0.0133	4.6250
		3A	0.0000	4.6250	4.6068	...	4.5167	4.5090	0.0077	4.4266		3B	4.4450	4.4646	4.5167	4.5267	0.0100
4⅝-8 or 4.625-8	UN	2A	0.0029	4.6221	4.6071	...	4.5409	4.5314	0.0095	4.4733	2B	4.490	4.515	4.5438	4.5562	0.0124	4.6250
		3A	0.0000	4.6250	4.6100	...	4.5438	4.5367	0.0071	4.4762		3B	4.4900	4.5047	4.5438	4.5531	0.0093

(Notes follow at end of table)

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
5½-6 or 5.500-6	UN	2A	0.0032	5.4968	5.4786	...	5.3885	5.3778	0.0107	5.2984	2B	5.320	5.350	5.3917	5.4056	0.0139	5.5000
		3A	0.0000	5.5000	5.4818	...	5.3917	5.3837	0.0080	5.3016	3B	5.3200	5.3396	5.3917	5.4021	0.0104	5.5000
5½-8 or 5.500-8	UN	2A	0.0030	5.4970	5.4820	...	5.4158	5.4059	0.0099	5.3482	2B	5.365	5.390	5.4188	5.4317	0.0129	5.5000
		3A	0.0000	5.5000	5.4850	...	5.4188	5.4114	0.0074	5.3512	3B	5.3650	5.3797	5.4188	5.4285	0.0097	5.5000
5½-12 or 5.500-12	UN	2A	0.0020	5.4980	5.4866	...	5.4439	5.4372	0.0067	5.3988	2B	5.410	5.428	5.4459	5.4546	0.0087	5.5000
		3A	0.0000	5.5000	5.4886	...	5.4459	5.4409	0.0050	5.4008	3B	5.4100	5.4198	5.4459	5.4525	0.0066	5.5000
5½-16 or 5.500-16	UN	2A	0.0018	5.4982	5.4888	...	5.4576	5.4515	0.0061	5.4237	2B	5.432	5.446	5.4594	5.4673	0.0079	5.5000
		3A	0.0000	5.5000	5.4906	...	5.4594	5.4549	0.0045	5.4255	3B	5.4320	5.4408	5.4594	5.4653	0.0059	5.5000
5¾-6 or 5.625-6	UN	2A	0.0032	5.6218	5.6036	...	5.5135	5.5027	0.0108	5.4234	2B	5.445	5.475	5.5167	5.5307	0.0140	5.6250
		3A	0.0000	5.6250	5.6068	...	5.5167	5.5086	0.0081	5.4266	3B	5.4450	5.4646	5.5167	5.5272	0.0105	5.6250
5¾-8 or 5.625-8	UN	2A	0.0030	5.6220	5.6070	...	5.5408	5.5308	0.0100	5.4732	2B	5.490	5.515	5.5438	5.5568	0.0130	5.6250
		3A	0.0000	5.6250	5.6100	...	5.5438	5.5363	0.0075	5.4762	3B	5.4900	5.5047	5.5438	5.5536	0.0098	5.6250
5¾-12 or 5.625-12	UN	2A	0.0021	5.6229	5.6115	...	5.5688	5.5619	0.0069	5.5237	2B	5.535	5.553	5.5709	5.5799	0.0090	5.6250
		3A	0.0000	5.6250	5.6136	...	5.5709	5.5657	0.0052	5.5258	3B	5.5350	5.5448	5.5709	5.5776	0.0067	5.6250
5¾-16 or 5.625-16	UN	2A	0.0019	5.6231	5.6137	...	5.5825	5.5763	0.0062	5.5486	2B	5.557	5.571	5.5844	5.5925	0.0081	5.6250
		3A	0.0000	5.6250	5.6156	...	5.5844	5.5797	0.0047	5.5505	3B	5.5570	5.5658	5.5844	5.5905	0.0061	5.6250
5¾-4 or 5.750-4	UN	2A	0.0037	5.7463	5.7225	...	5.5839	5.5717	0.0122	5.4486	2B	5.479	5.517	5.5876	5.6035	0.0159	5.7500
		3A	0.0000	5.7500	5.7262	...	5.5876	5.5784	0.0092	5.4523	3B	5.4790	5.5094	5.5876	5.5995	0.0119	5.7500
5¾-6 or 5.750-6	UN	2A	0.0032	5.7468	5.7286	...	5.6385	5.6277	0.0108	5.5484	2B	5.570	5.600	5.6417	5.6558	0.0141	5.7500
		3A	0.0000	5.7500	5.7318	...	5.6417	5.6336	0.0081	5.5516	3B	5.5700	5.5896	5.6417	5.6523	0.0106	5.7500
5¾-8 or 5.750-8	UN	2A	0.0030	5.7470	5.7250	...	5.6658	5.6558	0.0100	5.5982	2B	5.615	5.640	5.6688	5.6818	0.0130	5.7500
		3A	0.0000	5.7500	5.7350	...	5.6688	5.6613	0.0075	5.6012	3B	5.6150	5.6297	5.6688	5.6786	0.0098	5.7500
5¾-12 or 5.750-12	UN	2A	0.0021	5.7479	5.7365	...	5.6938	5.6869	0.0069	5.6487	2B	5.660	5.678	5.6959	5.7049	0.0090	5.7500
		3A	0.0000	5.7500	5.7386	...	5.6959	5.6907	0.0052	5.6508	3B	5.6600	5.6698	5.6959	5.7026	0.0067	5.7500
5¾-16 or 5.750-16	UN	2A	0.0019	5.7481	5.7387	...	5.7075	5.7013	0.0062	5.6736	2B	5.682	5.696	5.7094	5.7175	0.0081	5.7500
		3A	0.0000	5.7500	5.7406	...	5.7094	5.7047	0.0047	5.6755	3B	5.6820	5.6908	5.7094	5.7155	0.0061	5.7500
5¾-6 or 5.875-6	UN	2A	0.0033	5.8717	5.8535	...	5.7634	5.7525	0.0109	5.6733	2B	5.695	5.725	5.7667	5.7809	0.0142	5.8750
		3A	0.0000	5.8750	5.8568	...	5.7667	5.7585	0.0082	5.6766	3B	5.6950	5.7146	5.7667	5.7773	0.0106	5.8750
5¾-8 or 5.875-8	UN	2A	0.0031	5.8719	5.8569	...	5.7907	5.7806	0.0101	5.7231	2B	5.740	5.765	5.7938	5.8069	0.0131	5.8750
		3A	0.0000	5.8750	5.8600	...	5.7938	5.7862	0.0076	5.7262	3B	5.7400	5.7547	5.7938	5.8036	0.0098	5.8750

TABLE 3A LIMITS OF SIZE FOR STANDARD SERIES THREADS (UN/UNR) (CONT'D)

Nominal Size and Threads/in.	Series Designation	External (1)									Internal (1)						
		Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
				Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
5/8-12 or 5.875-12	UN	2A	0.0021	5.8729	5.8615	...	5.8188	5.8119	0.0069	5.7737	2B	5.785	5.803	5.8209	5.8299	0.0090	5.8750
		3A	0.0000	5.8750	5.8636	...	5.8209	5.8157	0.0052	5.7758	3B	5.7850	5.7948	5.8209	5.8276	0.0067	5.8750
5/8-16 or 5.875-16	UN	2A	0.0019	5.8731	5.8637	...	5.8325	5.8263	0.0062	5.7986	2B	5.807	5.821	5.8344	5.8425	0.0081	5.8750
		3A	0.0000	5.8750	5.8656	...	5.8344	5.8297	0.0047	5.8005	3B	5.8070	5.8158	5.8344	5.8405	0.0061	5.8750
6-4 or 6.000-4	UN	2A	0.0037	5.9963	5.9725	...	5.8339	5.8215	0.0124	5.6986	2B	5.729	5.767	5.8376	5.8537	0.0161	6.0000
		3A	0.0000	6.0000	5.9762	...	5.8376	5.8283	0.0093	5.7023	3B	5.7290	5.7594	5.8376	5.8496	0.0120	6.0000
6-6 or 6.000-6	UN	2A	0.0033	5.9967	5.9785	...	5.8884	5.8775	0.0109	5.7983	2B	5.820	5.850	5.8917	5.9059	0.0142	6.0000
		3A	0.0000	6.0000	5.9818	...	5.8917	5.8835	0.0082	5.8016	3B	5.8200	5.8396	5.8917	5.9024	0.0107	6.0000
6-8 or 6.000-8	UN	2A	0.0031	5.9969	5.9819	...	5.9157	5.9055	0.0102	5.8481	2B	5.865	5.890	5.9188	5.9321	0.0133	6.0000
		3A	0.0000	6.0000	5.9850	...	5.9188	5.9111	0.0077	5.8512	3B	5.8650	5.8797	5.9188	5.9287	0.0099	6.0000
6-12 or 6.000-12	UN	2A	0.0021	5.9979	5.9865	...	5.9438	5.9369	0.0069	5.8987	2B	5.910	5.928	5.9459	5.9549	0.0090	6.0000
		3A	0.0000	6.0000	5.9886	...	5.9459	5.9407	0.0052	5.9008	3B	5.9100	5.9198	5.9459	5.9526	0.0067	6.0000
6-16 or 6.000-16	UN	2A	0.0019	5.9981	5.9887	...	5.9575	5.9513	0.0062	5.9236	2B	5.932	5.946	5.9594	5.9675	0.0081	6.0000
		3A	0.0000	6.0000	5.9906	...	5.9594	5.9547	0.0047	5.9255	3B	5.9320	5.9408	5.9594	5.9655	0.0061	6.0000

## GENERAL NOTES:

- (a) Series designation shown indicates the UN thread form; however, the UNR thread form may be specified by substituting UNR in place of UN in all designations for external use only.
- (b) The minimum material pitch diameters in a number of cases do not agree with the pitch diameter increment total as given in Table 19. Tabulated pitch diameters shown have been in effect since ANSI B1.1-1949 edition. ASME B1 Committee agrees that no changes should be made.

## NOTES:

- (1) Thread classes may be combined. See para. 4.2.
- (2) For Class 2A threads having an additive finish, the maximum major and pitch diameters, after coating, may equal the basic sizes, whose values are the same as the maximum values shown for Class 3A in these columns. See paras. 4.1.1 and 4.1.3.
- (3) For unfinished hot material, not including standard fasteners with rolled threads.
- (4) UN series external thread maximum minor diameter is basic ( $D_1$  in Section 11) for Class 3A and basic minus allowance for Classes 1A and 2A.
- (5) Formerly NF. Not a recommended standard size. Tolerances and allowances are based on one diameter length of engagement.

**TABLE 3B LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS**

Nominal Size and Threads/in.	Series Designation	External (1)								Internal (1)						
		Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diam. Min.
				Max. (2)	Min.	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
10-28 or 0.190-28	UNS	2A	0.0010	0.1890	0.1825	0.1658	0.1625	0.0033	0.1464	2B	0.151	0.160	0.1668	0.1711	0.0043	0.1900
10-36 or 0.190-36	UNS	2A	0.0009	0.1891	0.1836	0.1711	0.1681	0.0030	0.1560	2B	0.160	0.166	0.1720	0.1759	0.0039	0.1900
10-40 or 0.190-40	UNS	2A	0.0009	0.1891	0.1840	0.1729	0.1700	0.0029	0.1592	2B	0.163	0.169	0.1738	0.1775	0.0037	0.1900
10-48 or 0.190-48	UNS	2A	0.0008	0.1892	0.1847	0.1757	0.1731	0.0026	0.1644	2B	0.167	0.172	0.1765	0.1799	0.0034	0.1900
10-56 or 0.190-56	UNS	2A	0.0007	0.1893	0.1852	0.1777	0.1752	0.0025	0.1681	2B	0.171	0.175	0.1784	0.1816	0.0032	0.1900
12-36 or 0.216-36	UNS	2A	0.0009	0.2151	0.2096	0.1971	0.1941	0.0030	0.1821	2B	0.186	0.192	0.1980	0.2019	0.0039	0.2160
12-40 or 0.216-40	UNS	2A	0.0009	0.2151	0.2100	0.1989	0.1960	0.0029	0.1835	2B	0.189	0.195	0.1998	0.2035	0.0037	0.2160
12-48 or 0.216-48	UNS	2A	0.0008	0.2152	0.2107	0.2017	0.1991	0.0026	0.1904	2B	0.193	0.198	0.2025	0.2059	0.0034	0.2160
12-56 or 0.216-56	UNS	2A	0.0007	0.2153	0.2112	0.2037	0.2012	0.0025	0.1941	2B	0.197	0.201	0.2044	0.2076	0.0032	0.2160
1/4-24 or 0.250-24	UNS	2A	0.0011	0.2489	0.2417	0.2218	0.2181	0.0037	0.1993	2B	0.205	0.215	0.2229	0.2277	0.0048	0.2500
1/4-27 or 0.250-27	UNS	2A	0.0010	0.2490	0.2423	0.2249	0.2214	0.0035	0.2049	2B	0.210	0.219	0.2259	0.2304	0.0045	0.2500
1/4-36 or 0.250-36	UNS	2A	0.0009	0.2491	0.2436	0.2311	0.2280	0.0031	0.2161	2B	0.220	0.226	0.2320	0.2360	0.0040	0.2500
1/4-40 or 0.250-40	UNS	2A	0.0009	0.2491	0.2440	0.2329	0.2300	0.0029	0.2193	2B	0.223	0.229	0.2338	0.2376	0.0038	0.2500
1/4-48 or 0.250-48	UNS	2A	0.0008	0.2492	0.2447	0.2357	0.2330	0.0027	0.2243	2B	0.227	0.232	0.2365	0.2401	0.0036	0.2500
1/4-56 or 0.250-56	UNS	2A	0.0008	0.2492	0.2451	0.2376	0.2350	0.0026	0.2280	2B	0.231	0.235	0.2384	0.2417	0.0033	0.2500
5/16-27 or 0.3125-27	UNS	2A	0.0010	0.3115	0.3048	0.2874	0.2839	0.0035	0.2674	2B	0.272	0.281	0.2884	0.2929	0.0045	0.3125
5/16-36 or 0.3125-36	UNS	2A	0.0009	0.3116	0.3061	0.2936	0.2905	0.0031	0.2785	2B	0.282	0.289	0.2945	0.2985	0.0040	0.3125
5/16-40 or 0.3125-40	UNS	2A	0.0009	0.3116	0.3065	0.2954	0.2925	0.0029	0.2818	2B	0.285	0.291	0.2963	0.3001	0.0038	0.3125
5/16-48 or 0.3125-48	UNS	2A	0.0008	0.3117	0.3072	0.2982	0.2955	0.0027	0.2869	2B	0.290	0.295	0.2990	0.3026	0.0036	0.3125
3/8-18 or 0.375-18	UNS	2A	0.0013	0.3737	0.3650	0.3376	0.3333	0.0043	0.3076	2B	0.315	0.328	0.3389	0.3445	0.0056	0.3750
3/8-27 or 0.375-27	UNS	2A	0.0011	0.3739	0.3672	0.3498	0.3462	0.0036	0.3298	2B	0.335	0.344	0.3509	0.3556	0.0047	0.3750
3/8-36 or 0.375-36	UNS	2A	0.0010	0.3740	0.3685	0.3560	0.3528	0.0032	0.3409	2B	0.345	0.352	0.3570	0.3612	0.0042	0.3750
3/8-40 or 0.375-40	UNS	2A	0.0009	0.3741	0.3690	0.3579	0.3548	0.0031	0.3443	2B	0.348	0.354	0.3588	0.3628	0.0040	0.3750
0.390-27	UNS	2A	0.0011	0.3889	0.3822	0.3648	0.3612	0.0036	0.3448	2B	0.350	0.359	0.3659	0.3706	0.0047	0.3900
7/16-18 or 0.4375-18	UNS	2A	0.0013	0.4362	0.4275	0.4001	0.3958	0.0043	0.3701	2B	0.377	0.390	0.4014	0.4070	0.0056	0.4375
7/16-24 or 0.4375-24	UNS	2A	0.0011	0.4364	0.4292	0.4093	0.4055	0.0038	0.3868	2B	0.392	0.402	0.4104	0.4153	0.0049	0.4375
7/16-27 or 0.4375-27	UNS	2A	0.0011	0.4364	0.4297	0.4123	0.4087	0.0036	0.3923	2B	0.397	0.406	0.4134	0.4181	0.0047	0.4375

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**TABLE 3B LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS (CONT'D)**

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)								Internal (1)						
		Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diam. Min.
				Max. (2)	Min.	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1/2-12 or 0.500-12	UNS	2A	0.0016	0.4984	0.4870	0.4443	0.4389	0.0054	0.3992	2B	0.410	0.428	0.4459	0.4529	0.0070	0.5000
	UNS	3A	0.0000	0.5000	0.4886	0.4459	0.4419	0.0040	0.4008	3B	0.4100	0.4223	0.4459	0.4511	0.0052	0.5000
1/2-14 or 0.500-14	UNS	2A	0.0015	0.4985	0.4882	0.4521	0.4471	0.0050	0.4135	2B	0.423	0.438	0.4536	0.4601	0.0065	0.5000
1/2-18 or 0.500-18	UNS	2A	0.0013	0.4987	0.4900	0.4626	0.4582	0.0044	0.4326	2B	0.440	0.453	0.4639	0.4697	0.0058	0.5000
1/2-24 or 0.500-24	UNS	2A	0.0012	0.4988	0.4916	0.4717	0.4678	0.0039	0.4492	2B	0.455	0.465	0.4729	0.4780	0.0051	0.5000
1/2-27 or 0.500-27	UNS	2A	0.0011	0.4989	0.4922	0.4748	0.4711	0.0037	0.4548	2B	0.460	0.469	0.4759	0.4807	0.0048	0.5000
5/16-14 or 0.5625-14	UNS	2A	0.0015	0.5610	0.5507	0.5146	0.5096	0.0050	0.4760	2B	0.485	0.501	0.5161	0.5226	0.0065	0.5625
5/16-27 or 0.5625-27	UNS	2A	0.0011	0.5614	0.5547	0.5373	0.5336	0.0037	0.5173	2B	0.522	0.531	0.5384	0.5432	0.0048	0.5625
3/8-14 or 0.625-14	UNS	2A	0.0015	0.6235	0.6132	0.5771	0.5720	0.0051	0.5385	2B	0.548	0.564	0.5786	0.5852	0.0066	0.6250
3/8-27 or 0.625-27	UNS	2A	0.0011	0.6239	0.6172	0.5998	0.5960	0.0038	0.5798	2B	0.585	0.594	0.6009	0.6059	0.0050	0.6250
3/4-14 or 0.750-14	UNS	2A	0.0015	0.7485	0.7382	0.7021	0.6970	0.0051	0.6635	2B	0.673	0.688	0.7036	0.7103	0.0067	0.7500
3/4-18 or 0.750-18	UNS	2A	0.0014	0.7486	0.7399	0.7125	0.7079	0.0046	0.6825	2B	0.690	0.703	0.7139	0.7199	0.0060	0.7500
3/4-24 or 0.750-24	UNS	2A	0.0012	0.7488	0.7416	0.7217	0.7176	0.0041	0.6992	2B	0.705	0.715	0.7229	0.7282	0.0053	0.7500
3/4-27 or 0.750-27	UNS	2A	0.0012	0.7488	0.7421	0.7247	0.7208	0.0039	0.7047	2B	0.710	0.719	0.7259	0.7310	0.0051	0.7500
7/8-10 or 0.875-10	UNS	2A	0.0018	0.8732	0.8603	0.8082	0.8022	0.0060	0.7542	2B	0.767	0.788	0.8100	0.8178	0.0078	0.8750
7/8-18 or 0.875-18	UNS	2A	0.0014	0.8736	0.8649	0.8375	0.8329	0.0046	0.8075	2B	0.815	0.828	0.8389	0.8449	0.0060	0.8750
7/8-24 or 0.875-24	UNS	2A	0.0012	0.8738	0.8666	0.8467	0.8426	0.0041	0.8242	2B	0.830	0.840	0.8479	0.8532	0.0053	0.8750
7/8-27 or 0.875-27	UNS	2A	0.0012	0.8738	0.8671	0.8497	0.8458	0.0039	0.8297	2B	0.835	0.844	0.8509	0.8560	0.0051	0.8750
1-10 or 1.000-10	UNS	2A	0.0018	0.9982	0.9853	0.9332	0.9270	0.0062	0.8792	2B	0.892	0.913	0.9350	0.9430	0.0080	1.0000
1-18 or 1.000-18	UNS	2A	0.0014	0.9986	0.9899	0.9625	0.9578	0.0047	0.9325	2B	0.940	0.953	0.9639	0.9701	0.0062	1.0000
1-24 or 1.000-24	UNS	2A	0.0013	0.9987	0.9915	0.9716	0.9674	0.0042	0.9491	2B	0.955	0.965	0.9729	0.9784	0.0055	1.0000
1-27 or 1.000-27	UNS	2A	0.0012	0.9988	0.9921	0.9747	0.9707	0.0040	0.9547	2B	0.960	0.969	0.9759	0.9811	0.0052	1.0000
1 1/8-10 or 1.125-10	UNS	2A	0.0018	1.1232	1.1103	1.0582	1.0520	0.0062	1.0042	2B	1.017	1.038	1.0600	1.0680	0.0080	1.1250
1 1/8-14 or 1.125-14	UNS	2A	0.0016	1.1234	1.1131	1.0770	1.0717	0.0053	1.0384	2B	1.048	1.064	1.0786	1.0855	0.0069	1.1250
1 1/8-24 or 1.125-24	UNS	2A	0.0013	1.1237	1.1165	1.0966	1.0924	0.0042	1.0742	2B	1.080	1.090	1.0979	1.1034	0.0055	1.1250
1 1/4-10 or 1.250-10	UNS	2A	0.0019	1.2481	1.2352	1.1831	1.1768	0.0063	1.1291	2B	1.142	1.163	1.1850	1.1932	0.0082	1.2500
1 1/4-14 or 1.250-14	UNS	2A	0.0016	1.2484	1.2381	1.2020	1.1966	0.0054	1.1634	2B	1.173	1.188	1.2036	1.2106	0.0070	1.2500
1 1/4-24 or 1.250-24	UNS	2A	0.0013	1.2487	1.2415	1.2216	1.2173	0.0043	1.1991	2B	1.205	1.215	1.2229	1.2285	0.0056	1.2500

(Notes follow at end of table)

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TABLE 3B LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS (CONT'D)

Nominal Size and Threads/in.	Series Designation	External (1)								Internal (1)						
		Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diam. Min.
				Max. (2)	Min.	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1 3/8-10 or 1.375-10	UNS	2A	0.0019	1.3731	1.3602	1.3081	1.3018	0.0063	1.2541	2B	1.267	1.288	1.3100	1.3182	0.0082	1.3750
1 3/8-14 or 1.375-14	UNS	2A	0.0016	1.3734	1.3631	1.3270	1.3216	0.0054	1.2884	2B	1.298	1.314	1.3286	1.3356	0.0070	1.3750
1 3/8-24 or 1.375-24	UNS	2A	0.0013	1.3737	1.3665	1.3466	1.3423	0.0043	1.3241	2B	1.330	1.340	1.3479	1.3535	0.0056	1.3750
1 1/2-10 or 1.500-10	UNS	2A	0.0019	1.4981	1.4852	1.4331	1.4267	0.0064	1.3791	2B	1.392	1.413	1.4350	1.4433	0.0083	1.5000
1 1/2-14 or 1.500-14	UNS	2A	0.0017	1.4983	1.4880	1.4519	1.4464	0.0055	1.4133	2B	1.423	1.438	1.4536	1.4608	0.0072	1.5000
1 1/2-24 or 1.500-24	UNS	2A	0.0013	1.4987	1.4915	1.4716	1.4672	0.0044	1.4491	2B	1.455	1.465	1.4729	1.4787	0.0058	1.5000
1 5/8-10 or 1.625-10	UNS	2A	0.0019	1.6231	1.6102	1.5581	1.5517	0.0064	1.5041	2B	1.517	1.538	1.5600	1.5683	0.0083	1.6250
1 5/8-14 or 1.625-14	UNS	2A	0.0017	1.6233	1.6130	1.5769	1.5714	0.0055	1.5383	2B	1.548	1.564	1.5786	1.5858	0.0072	1.6250
1 5/8-24 or 1.625-24	UNS	2A	0.0013	1.6237	1.6165	1.5966	1.5922	0.0044	1.5741	2B	1.580	1.590	1.5979	1.6037	0.0058	1.6250
1 3/4-10 or 1.750-10	UNS	2A	0.0019	1.7481	1.7352	1.6831	1.6766	0.0065	1.6291	2B	1.642	1.663	1.6850	1.6934	0.0084	1.7500
1 3/4-14 or 1.750-14	UNS	2A	0.0017	1.7483	1.7380	1.7019	1.6963	0.0056	1.6632	2B	1.673	1.688	1.7036	1.7109	0.0073	1.7500
1 3/4-18 or 1.750-18	UNS	2A	0.0015	1.7485	1.7398	1.7124	1.7073	0.0051	1.6824	2B	1.690	1.703	1.7139	1.7205	0.0066	1.7500
1 7/8-10 or 1.875-10	UNS	2A	0.0019	1.8731	1.8602	1.8081	1.8016	0.0065	1.7541	2B	1.767	1.788	1.8100	1.8184	0.0084	1.8750
1 7/8-14 or 1.875-14	UNS	2A	0.0017	1.8733	1.8630	1.8269	1.8213	0.0056	1.7883	2B	1.798	1.814	1.8286	1.8359	0.0073	1.8750
1 7/8-18 or 1.875-18	UNS	2A	0.0015	1.8735	1.8648	1.8374	1.8323	0.0051	1.8074	2B	1.815	1.828	1.8389	1.8455	0.0066	1.8750
2-10 or 2.000-10	UNS	2A	0.0020	1.9980	1.9851	1.9330	1.9265	0.0065	1.8790	2B	1.892	1.913	1.9350	1.9435	0.0085	2.0000
2-14 or 2.000-14	UNS	2A	0.0017	1.9983	1.9880	1.9519	1.9462	0.0057	1.9133	2B	1.923	1.938	1.9536	1.9610	0.0074	2.0000
2-18 or 2.000-18	UNS	2A	0.0015	1.9985	1.9898	1.9624	1.9573	0.0051	1.9324	2B	1.940	1.953	1.9639	1.9706	0.0067	2.0000
2 1/16-16 or 2.0625-16	UNS	2A	0.0016	2.0609	2.0515	2.0203	2.0149	0.0054	1.9864	2B	1.995	2.009	2.0219	2.0289	0.0070	2.0625
	UNS	3A	0.0000	2.0625	2.0531	2.0219	2.0179	0.0040	1.9880	3B	1.9950	2.0033	2.0219	2.0271	0.0052	2.0625
2 3/16-16 or 2.1875-16	UNS	2A	0.0016	2.1859	2.1765	2.1453	2.1399	0.0054	2.1114	2B	2.120	2.134	2.1469	2.1539	0.0070	2.1875
	UNS	3A	0.0000	2.1875	2.1781	2.1469	2.1428	0.0041	2.1130	3B	2.1200	2.1283	2.1469	2.1521	0.0052	2.1875
2 1/4-10 or 2.250-10	UNS	2A	0.0020	2.2480	2.2351	2.1830	2.1765	0.0065	2.1290	2B	2.142	2.163	2.1850	2.1935	0.0085	2.2500
2 1/4-14 or 2.250-14	UNS	2A	0.0017	2.2483	2.2380	2.2019	2.1962	0.0057	2.1633	2B	2.173	2.188	2.2036	2.2110	0.0074	2.2500
2 1/4-18 or 2.250-18	UNS	2A	0.0015	2.2485	2.2398	2.2124	2.2073	0.0051	2.1824	2B	2.190	2.203	2.2139	2.2206	0.0067	2.2500
2 5/16-16 or 2.3125-16	UNS	2A	0.0017	2.3108	2.3014	2.2702	2.2647	0.0055	2.2363	2B	2.245	2.259	2.2719	2.2791	0.0072	2.3125
	UNS	3A	0.0000	2.3125	2.3031	2.2719	2.2678	0.0041	2.2380	3B	2.2450	2.2533	2.2719	2.2773	0.0054	2.3125
2 7/16-16 or 2.4375-16	UNS	2A	0.0017	2.4358	2.4264	2.3952	2.3897	0.0055	2.3613	2B	2.370	2.384	2.3969	2.4041	0.0072	2.4375
	UNS	3A	0.0000	2.4375	2.4281	2.3969	2.3928	0.0041	2.3630	3B	2.3700	2.3783	2.3969	2.4023	0.0054	2.4375

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**TABLE 3B LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS (CONT'D)**

UNIFIED INCH SCREW THREADS

ASME B1.1-1989

Nominal Size and Threads/in.	Series Designation	External (1)								Internal (1)						
		Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diam.
				Max. (2)	Min.	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	Min.
2½-10 or 2.500-10	UNS	2A	0.0020	2.4980	2.4851	2.4330	2.4263	0.0067	2.3790	2B	2.392	2.413	2.4350	2.4437	0.0087	2.5000
2½-14 or 2.500-14	UNS	2A	0.0017	2.4983	2.4880	2.4519	2.4461	0.0058	2.4133	2B	2.423	2.438	2.4536	2.4612	0.0076	2.5000
2½-18 or 2.500-18	UNS	2A	0.0016	2.4984	2.4897	2.4623	2.4570	0.0053	2.4323	2B	2.440	2.453	2.4639	2.4708	0.0069	2.5000
2¾-10 or 2.750-10	UNS	2A	0.0020	2.7480	2.7351	2.6830	2.6763	0.0067	2.6290	2B	2.642	2.663	2.6850	2.6937	0.0087	2.7500
2¾-14 or 2.750-14	UNS	2A	0.0017	2.7483	2.7380	2.7019	2.6961	0.0058	2.6633	2B	2.673	2.688	2.7036	2.7112	0.0076	2.7500
2¾-18 or 2.750-18	UNS	2A	0.0016	2.7484	2.7397	2.7123	2.7070	0.0053	2.6823	2B	2.690	2.703	2.7139	2.7208	0.0069	2.7500
3-10 or 3.000-10	UNS	2A	0.0020	2.9980	2.9851	2.9330	2.9262	0.0068	2.8790	2B	2.892	2.913	2.9350	2.9439	0.0089	3.0000
3-14 or 3.000-14	UNS	2A	0.0018	2.9982	2.9879	2.9518	2.9459	0.0059	2.9132	2B	2.923	2.938	2.9536	2.9613	0.0077	3.0000
3-18 or 3.000-18	UNS	2A	0.0016	2.9984	2.9897	2.9623	2.9569	0.0054	2.9323	2B	2.940	2.953	2.9639	2.9709	0.0070	3.0000
3¼-10 or 3.250-10	UNS	2A	0.0020	3.2480	3.2351	3.1830	3.1762	0.0068	3.1290	2B	3.142	3.163	3.1850	3.1939	0.0089	3.2500
3¼-14 or 3.250-14	UNS	2A	0.0018	3.2482	3.2379	3.2018	3.1959	0.0059	3.1632	2B	3.173	3.188	3.2036	3.2113	0.0077	3.2500
3¼-18 or 3.250-18	UNS	2A	0.0016	3.2484	3.2397	3.2123	3.2069	0.0054	3.1823	2B	3.190	3.203	3.2139	3.2209	0.0070	3.2500
3½-10 or 3.500-10	UNS	2A	0.0021	3.4979	3.4850	3.4329	3.4260	0.0069	3.3789	2B	3.392	3.413	3.4350	3.4440	0.0090	3.5000
3½-14 or 3.500-14	UNS	2A	0.0018	3.4982	3.4879	3.4518	3.4457	0.0061	3.4132	2B	3.423	3.438	3.4536	3.4615	0.0079	3.5000
3½-18 or 3.500-18	UNS	2A	0.0017	3.4983	3.4896	3.4622	3.4567	0.0055	3.4322	2B	3.440	3.453	3.4639	3.4711	0.0072	3.5000
3¾-10 or 3.750-10	UNS	2A	0.0021	3.7479	3.7350	3.6829	3.6760	0.0069	3.6289	2B	3.642	3.663	3.6850	3.6940	0.0090	3.7500
3¾-14 or 3.750-14	UNS	2A	0.0018	3.7482	3.7379	3.7018	3.6957	0.0061	3.6632	2B	3.673	3.688	3.7036	3.7115	0.0079	3.7500
3¾-18 or 3.750-18	UNS	2A	0.0017	3.7483	3.7396	3.7122	3.7067	0.0055	3.6822	2B	3.690	3.703	3.7139	3.7211	0.0072	3.7500
4-10 or 4.000-10	UNS	2A	0.0021	3.9979	3.9850	3.9329	3.9259	0.0070	3.8768	2B	3.892	3.913	3.9350	3.9441	0.0091	4.0000
4-14 or 4.000-14	UNS	2A	0.0018	3.9982	3.9879	3.9518	3.9456	0.0062	3.9132	2B	3.923	3.938	3.9536	3.9616	0.0080	4.0000
4¼-10 or 4.250-10	UNS	2A	0.0021	4.2479	4.2350	4.1829	4.1759	0.0070	4.1289	2B	4.142	4.163	4.1850	4.1941	0.0091	4.2500
4¼-14 or 4.250-14	UNS	2A	0.0018	4.2482	4.2379	4.2018	4.1956	0.0062	4.1632	2B	4.173	4.188	4.2036	4.2116	0.0080	4.2500
4½-10 or 4.500-10	UNS	2A	0.0021	4.4979	4.4850	4.4329	4.4259	0.0070	4.3789	2B	4.392	4.413	4.4350	4.4441	0.0091	4.5000
4½-14 or 4.500-14	UNS	2A	0.0018	4.4982	4.4879	4.4518	4.4456	0.0062	4.4132	2B	4.423	4.438	4.4536	4.4616	0.0080	4.5000
4¾-10 or 4.750-10	UNS	2A	0.0022	4.7478	4.7349	4.6828	4.6756	0.0072	4.6288	2B	4.642	4.663	4.6850	4.6944	0.0094	4.7500
4¾-14 or 4.750-14	UNS	2A	0.0019	4.7481	4.7378	4.7017	4.6953	0.0064	4.6631	2B	4.673	4.688	4.7036	4.7119	0.0083	4.7500
5-10 or 5.000-10	UNS	2A	0.0022	4.9978	4.9849	4.9328	4.9256	0.0072	4.8788	2B	4.892	4.913	4.9350	4.9444	0.0094	5.0000
5-14 or 5.000-14	UNS	2A	0.0019	4.9981	4.9878	4.9517	4.9453	0.0064	4.9131	2B	4.923	4.938	4.9536	4.9619	0.0083	5.0000

(Notes follow at end of table)

TABLE 3B LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS (CONT'D)

Nominal Size and Threads/in.	Series Designation	External (1)								Internal (1)						
		Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter		Major Diam.	
				Max. (2)	Min.	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	Min.
5/4-10 or 5.250-10	UNS	2A	0.0022	5.2478	5.2349	5.1828	5.1756	0.0072	5.1288	2B	5.142	5.163	5.1850	5.1944	0.0094	5.2500
5/4-14 or 5.250-14	UNS	2A	0.0019	5.2481	5.2378	5.2017	5.1953	0.0064	5.1631	2B	5.173	5.188	5.2036	5.2119	0.0083	5.2500
5/2-10 or 5.500-10	UNS	2A	0.0022	5.4978	5.4849	5.4328	5.4256	0.0072	5.3788	2B	5.392	5.413	5.4350	5.4444	0.0094	5.5000
5/2-14 or 5.500-14	UNS	2A	0.0019	5.4981	5.4878	5.4517	5.4453	0.0064	5.4131	2B	5.423	5.438	5.4536	5.4619	0.0083	5.5000
5/4-10 or 5.750-10	UNS	2A	0.0022	5.7478	5.7349	5.6828	5.6754	0.0074	5.6288	2B	5.642	5.663	5.6850	5.6946	0.0096	5.7500
5/4-14 or 5.750-14	UNS	2A	0.0020	5.7480	5.7377	5.7016	5.6951	0.0065	5.6630	2B	5.673	5.688	5.7036	5.7121	0.0085	5.7500
6-10 or 6.000-10	UNS	2A	0.0022	5.9978	5.9849	5.9328	5.9254	0.0074	5.8788	2B	5.892	5.913	5.9350	5.9446	0.0096	6.0000
6-14 or 6.000-14	UNS	2A	0.0020	5.9980	5.9877	5.9516	5.9451	0.0065	5.9130	2B	5.923	5.938	5.9536	5.9621	0.0085	6.0000

## GENERAL NOTE:

Series designation shown indicates the UN thread form; however, the UNR thread form may be specified by substituting UNR in place of UN in all designations for external use only.

## NOTES:

- (1) Thread classes may be combined. See para. 4.2.
- (2) For Class 2A threads having an additive finish, the maximum major and pitch diameters, after coating, may equal the basic sizes, whose values are the same as the maximum values shown for Class 3A in these columns. See paras. 4.1.1 and 4.1.3.
- (3) UN series external thread maximum minor diameter is basic ( $D_1$  in Section 11) for Class 3A and basic minus allowance for Classes 1A and 2A.

### 8.3.1 External Thread

#### (a) Maximum Major Diameter (External Threads)

(1) For Classes 1A and 2A,  $d$  = basic major diameter  $D$  bsc, minus allowance.

(2) For Class 3A,  $d$  = basic major diameter  $D$  bsc.

(b) *Minimum Major Diameter (External Threads)*. For all classes, equals maximum major diameter, minus major diameter tolerance for respective class of thread.

#### (c) Maximum Pitch Diameter (External Threads)

(1) For Classes 1A and 2A,  $d_2$  = basic pitch diameter  $D_2$  bsc, minus allowance.

(2) For Class 3A,  $d_2$  = basic pitch diameter  $D_2$  bsc.

(d) *Minimum Pitch Diameter (External Threads)*. For all classes, equals maximum pitch diameter, minus pitch diameter tolerance for respective class of thread.

(e) *Maximum Minor Diameter (External Threads)*. In dimensioning UN series external threads, the minor diameter is not specified. In practice, the minor diameter is satisfactory when accepted by a standard GO thread gage in accordance with ANSI/ASME B1.2. When it is desirable to obtain minor diameter values for reference purposes and for UNR threads, they can be calculated as follows.

(1) For UN series threads, the formulas are:

(a) for Classes 1A and 2A,  $d_1$  = basic minor diameter  $D_1$  bsc, minus allowance;

(b) for Class 3A,  $d_1$  = basic minor diameter  $D_1$  bsc.

(2) For UNR series threads, the formulas are:

(a) for Classes 1A and 2A,  $d_3$  = basic minor diameter  $D_1$  bsc, minus allowance, minus  $H/8$ ;

(b) for Class 3A,  $d_3$  = basic minor diameter  $D_1$  bsc, minus  $H/8$ .

(f) *Minimum Minor Diameter (External Threads)*. When it is desirable for design purposes to calculate the minimum diameter, it can be obtained for all classes by the formula: minimum pitch diameter minus  $0.649519P$ .

### 8.3.2 Internal Thread

#### (a) Maximum Major Diameter (Internal Threads)

In dimensioning internal threads, the maximum major diameter is not specified, being established by the crest of an unworn tool. In practice, the major diameter of an internal thread is satisfactory when accepted by a gage or gaging method that represents the maximum-material condition of an external thread that has no allowance.

(b) *Minimum Major Diameter (Internal Threads) ( $D$  bsc)*. For all classes, equals basic diameter  $D$  bsc.

(c) *Minimum Pitch Diameter*. For all classes,  $D_2$  bsc equals basic pitch diameter  $D_2$  bsc.

(d) *Maximum Pitch Diameter (Internal Threads)*. For all classes, equals minimum pitch diameter  $D_2$  bsc, plus pitch diameter tolerance for respective class of thread.

(e) *Minimum Minor Diameter (Internal Threads)*. For all classes,  $D_1$  bsc equals minimum pitch diameter  $D_2$  bsc, minus  $H/2$ , then rounded off to the nearest 0.001 in. for sizes 0.138 in. and larger. For Class 3B, a cipher is added to yield four decimal places.

(f) *Maximum Minor Diameter (Internal Threads)*. For all classes,  $D_1$  bsc equals minimum minor diameter before rounding off, plus minor diameter tolerance, then rounded off, for Classes 1B and 2B, to the nearest 0.001 in. for sizes 0.138 in. and larger. Class 3B values are not thus rounded off.

## 9 LEAD AND ANGLE TOLERANCES

### 9.1 Lead and Flank Angle Acceptance

Acceptance of lead and flank angles of product screw threads shall be in accordance with the following. Also, these are factors contributing to visual identification of gross defects in thread profile.

**9.1.1** When Thread Gaging System 21 of ANSI/ASME B1.3M is specified, product thread lead (including helix) and flank angle variations are not considered as separate elements.

**9.1.2** When Thread Gaging System 22 of ANSI/ASME B1.3M is specified, with the pitch diameter or thread-groove diameter inspection required, the product thread lead (including helix) and flank angles shall be considered acceptable when the minimum-material characteristic (pitch diameter or thread-groove diameter in Tables 1 and 2, columns C and D of ANSI/ASME B1.3M) and the maximum-material characteristic (GO in Tables 1 and 2, column A of ANSI/ASME B1.3M) are accepted by the gages specified for System 22, over the standard GO thread gage length.

When Thread Gaging System 22 is specified with NOT GO functional diameter combined with control of lead and flank option, agreements must be reached between the purchaser and the supplier on lead and flank angle limits and method of evaluation.

**9.1.3** When Thread Gaging System 23 of ANSI/ASME B1.3M is specified, product thread lead and flank angles shall be acceptable if within the allowable variations specified in Tables 4 and 5, respectively. Also, the minimum-material characteristic (pitch diameter or thread-groove diameter in Tables 1 and 2, columns C and D of ANSI/ASME B1.3M) and the maximum-material characteristic (GO in Tables 1 and 2, column A of ANSI/ASME B1.3M) must be accepted by the gages specified for System 23, over the standard GO thread gage length.

Allowable variations in lead and flank angles are maximum values. Maximum variation in these and pitch diameter tolerance cannot be taken simultaneously (see paras. 9.1.5 and 9.1.6 below).

**9.1.4** When individual inspections of lead (including helix) and flank angle variations are required in addition to thread gaging System 21 or 22 of ANSI/ASME B1.3M, the allowable variations for these

characteristics shall be as specified in Tables 4 and 5.

**9.1.5** For sizes not included in Tables 4 and 5, the allowable lead variation is equal to 0.57735 times one-half the pitch diameter tolerance. This is the lead variation that causes a change in functional diameter equal to one-half the pitch diameter tolerance. The allowable flank half-angle variation in minutes of arc is equal to 30 plus 1.875 times the number of threads per inch, rounded to the nearest 5 min.

**9.1.6** For the requirements of paras. 9.1.4 and 9.1.5, lead variation values tabulated or calculated are the maximum variations from specified lead between any two points not farther apart than the length of the standard GO thread gage. Flank angle variation values are maximum variations from the basic 30 deg. angle between thread flanks and perpendiculars to the thread axis.

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
0-80 or 0.060-80	UNF	2A	0.00052	0.00090	2B	0.00066	0.00115
		3A	0.00038	0.00065	3B	0.00048	0.00085
1-64 or 0.073-64	UNC	2A	0.00058	0.00100	2B	0.00075	0.00130
		3A	0.00043	0.00075	3B	0.00055	0.00095
1-72 or 0.073-72	UNF	2A	0.00055	0.00095	2B	0.00072	0.00125
		3A	0.00040	0.00070	3B	0.00055	0.00095
2-56 or 0.086-56	UNC	2A	0.00061	0.00105	2B	0.00081	0.00140
		3A	0.00046	0.00080	3B	0.00061	0.00105
2-64 or 0.086-64	UNF	2A	0.00058	0.00100	2B	0.00078	0.00135
		3A	0.00043	0.00075	3B	0.00058	0.00100
3-48 or 0.099-48	UNC	2A	0.00066	0.00115	2B	0.00087	0.00150
		3A	0.00049	0.00085	3B	0.00064	0.00110
3-56 or 0.099-56	UNF	2A	0.00064	0.00110	2B	0.00081	0.00140
		3A	0.00046	0.00080	3B	0.00061	0.00105
4-40 or 0.112-40	UNC	2A	0.00072	0.00125	2B	0.00095	0.00165
		3A	0.00055	0.00095	3B	0.00069	0.00120
4-48 or 0.112-48	UNF	2A	0.00069	0.00120	2B	0.00089	0.00155
		3A	0.00052	0.00090	3B	0.00066	0.00115
5-40 or 0.125-40	UNC	2A	0.00075	0.00130	2B	0.00095	0.00165
		3A	0.00055	0.00095	3B	0.00072	0.00125
5-44 or 0.125-44	UNF	2A	0.00072	0.00125	2B	0.00092	0.00160
		3A	0.00055	0.00095	3B	0.00069	0.00120
6-32 or 0.138-32	UNC	2A	0.00081	0.00140	2B	0.00107	0.00185
		3A	0.00061	0.00105	3B	0.00078	0.00135
6-40 or 0.138-40	UNF	2A	0.00075	0.00130	2B	0.00098	0.00170
		3A	0.00058	0.00100	3B	0.00072	0.00125
8-32 or 0.164-32	UNC	2A	0.00084	0.00145	2B	0.00110	0.00190
		3A	0.00064	0.00110	3B	0.00081	0.00140
8-36 or 0.164-36	UNF	2A	0.00081	0.00140	2B	0.00104	0.00180
		3A	0.00061	0.00105	3B	0.00078	0.00135
10-24 or 0.190-24	UNC	2A	0.00095	0.00165	2B	0.00124	0.00215
		3A	0.00072	0.00125	3B	0.00092	0.00160
10-32 or 0.190-32	UNF	2A	0.00087	0.00150	2B	0.00113	0.00195
		3A	0.00066	0.00115	3B	0.00084	0.00145

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**

(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
12-24 or 0.216-24	UNC	2A	0.00098	0.00170	2B	0.00127	0.00220
		3A	0.00075	0.00130	3B	0.00095	0.00165
12-28 or 0.216-28	UNF	2A	0.00092	0.00160	2B	0.00121	0.00210
		3A	0.00069	0.00120	3B	0.00089	0.00155
12-32 or 0.216-32	UNEF	2A	0.00089	0.00155	2B	0.00118	0.00205
		3A	0.00069	0.00120	3B	0.00089	0.00155
1/4-20 or 0.250-20	UNC	1A	0.00162	0.00280	1B	0.00211	0.00365
		2A	0.00107	0.00185	2B	0.00141	0.00245
		3A	0.00081	0.00140	3B	0.00104	0.00180
1/4-28 or 0.250-28	UNF	1A	0.00144	0.00250	1B	0.00188	0.00325
		2A	0.00095	0.00165	2B	0.00124	0.00215
		3A	0.00072	0.00125	3B	0.00092	0.00160
1/4-32 or 0.250-32	UNEF	2A	0.00092	0.00160	2B	0.00121	0.00210
		3A	0.00069	0.00120	3B	0.00089	0.00155
5/16-18 or 0.3125-18	UNC	1A	0.00176	0.00305	1B	0.00223	0.00395
		2A	0.00115	0.00200	2B	0.00153	0.00265
		3A	0.00087	0.00150	3B	0.00113	0.00195
5/16-20 or 0.3125-20	UN	2A	0.00115	0.00200	2B	0.00150	0.00260
		3A	0.00087	0.00150	3B	0.00113	0.00195
5/16-24 or 0.3125-24	UNF	1A	0.00159	0.00275	1B	0.00205	0.00355
		2A	0.00107	0.00185	2B	0.00139	0.00240
		3A	0.00078	0.00135	3B	0.00104	0.00180
5/16-28 or 0.3125-28	UN	2A	0.00098	0.00170	2B	0.00127	0.00220
		3A	0.00075	0.00130	3B	0.00095	0.00165
5/16-32 or 0.3125-32	UNEF	2A	0.00092	0.00160	2B	0.00121	0.00210
		3A	0.00069	0.00120	3B	0.00089	0.00155
3/8-16 or 0.375-16	UNC	1A	0.00188	0.00325	1B	0.00245	0.00425
		2A	0.00127	0.00220	2B	0.00165	0.00285
		3A	0.00095	0.00165	3B	0.00124	0.00215
3/8-20 or 0.375-20	UN	2A	0.00118	0.00205	2B	0.00156	0.00270
		3A	0.00089	0.00155	3B	0.00115	0.00200
3/8-24 or 0.375-24	UNF	1A	0.00165	0.00285	1B	0.00214	0.00370
		2A	0.00110	0.00190	2B	0.00141	0.00245
		3A	0.00084	0.00145	3B	0.00107	0.00185
3/8-28 or 0.375-28	UN	2A	0.00104	0.00180	2B	0.00133	0.00230
		3A	0.00078	0.00135	3B	0.00101	0.00175



**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
3/8-32 or 0.375-32	UNEF	2A	0.00098	0.00170	2B	0.00127	0.00220
		3A	0.00072	0.00125	3B	0.00095	0.00165
7/16-14 or 0.4375-14	UNC	1A	0.00205	0.00355	1B	0.00266	0.00460
		2A	0.00136	0.00235	2B	0.00176	0.00305
		3A	0.00101	0.00175	3B	0.00133	0.00230
7/16-16 or 0.4375-16	UN	2A	0.00133	0.00230	2B	0.00170	0.00295
		3A	0.00098	0.00170	3B	0.00130	0.00225
7/16-20 or 0.4375-20	UNF	1A	0.00182	0.00315	1B	0.00234	0.00405
		2A	0.00121	0.00210	2B	0.00156	0.00270
		3A	0.00089	0.00155	3B	0.00118	0.00205
7/16-28 or 0.4375-28	UNEF	2A	0.00104	0.00180	2B	0.00133	0.00230
		3A	0.00078	0.00135	3B	0.00101	0.00175
7/16-32 or 0.4375-32	UN	2A	0.00098	0.00170	2B	0.00127	0.00220
		3A	0.00072	0.00125	3B	0.00095	0.00165
1/2-13 or 0.500-13	UNC	1A	0.00214	0.00370	1B	0.00280	0.00485
		2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00139	0.00240
1/2-16 or 0.500-16	UN	2A	0.00136	0.00235	2B	0.00176	0.00305
		3A	0.00101	0.00175	3B	0.00133	0.00230
1/2-20 or 0.500-20	UNF	1A	0.00185	0.00320	1B	0.00242	0.00420
		2A	0.00124	0.00215	2B	0.00162	0.00280
		3A	0.00092	0.00160	3B	0.00121	0.00210
1/2-28 or 0.500-28	UNEF	2A	0.00107	0.00185	2B	0.00139	0.00240
		3A	0.00081	0.00140	3B	0.00104	0.00180
1/2-32 or 0.500-32	UN	2A	0.00101	0.00175	2B	0.00130	0.00225
		3A	0.00075	0.00130	3B	0.00098	0.00170
5/16-12 or 0.5625-12	UNC	1A	0.00225	0.00390	1B	0.00294	0.00510
		2A	0.00150	0.00260	2B	0.00196	0.00340
		3A	0.00113	0.00195	3B	0.00147	0.00255
5/16-16 or 0.5625-16	UN	2A	0.00136	0.00235	2B	0.00176	0.00305
		3A	0.00101	0.00175	3B	0.00133	0.00230
5/16-18 or 0.5625-18	UNF	1A	0.00196	0.00340	1B	0.00257	0.00445
		2A	0.00130	0.00225	2B	0.00170	0.00295
		3A	0.00098	0.00170	3B	0.00127	0.00220
5/16-20 or 0.5625-20	UN	2A	0.00121	0.00210	2B	0.00159	0.00275
		3A	0.00092	0.00160	3B	0.00118	0.00205

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
1/16-24 or 0.5625-24	UNEF	2A	0.00113	0.00195	2B	0.00147	0.00255
		3A	0.00084	0.00145	3B	0.00110	0.00190
1/16-28 or 0.5625-28	UN	2A	0.00107	0.00185	2B	0.00139	0.00240
		3A	0.00081	0.00140	3B	0.00104	0.00180
1/16-32 or 0.5625-32	UN	2A	0.00101	0.00175	2B	0.00130	0.00225
		3A	0.00075	0.00130	3B	0.00098	0.00170
5/8-11 or 0.625-11	UNC	1A	0.00240	0.00415	1B	0.00309	0.00535
		2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00156	0.00270
5/8-12 or 0.625-12	UN	2A	0.00156	0.00270	2B	0.00205	0.00355
		3A	0.00118	0.00205	3B	0.00153	0.00265
5/8-16 or 0.625-16	UN	2A	0.00139	0.00240	2B	0.00179	0.00310
		3A	0.00104	0.00180	3B	0.00133	0.00230
5/8-18 or 0.625-18	UNF	1A	0.00202	0.00350	1B	0.00263	0.00455
		2A	0.00136	0.00235	2B	0.00173	0.00300
		3A	0.00101	0.00175	3B	0.00130	0.00255
5/8-20 or 0.625-20	UN	2A	0.00124	0.00215	2B	0.00162	0.00280
		3A	0.00092	0.00160	3B	0.00121	0.00210
5/8-24 or 0.625-24	UNEF	2A	0.00115	0.00200	2B	0.00150	0.00260
		3A	0.00087	0.00150	3B	0.00113	0.00195
5/8-28 or 0.625-28	UN	2A	0.00110	0.00190	2B	0.00141	0.00245
		3A	0.00081	0.00140	3B	0.00107	0.00185
5/8-32 or 0.625-32	UN	2A	0.00104	0.00180	2B	0.00133	0.00230
		3A	0.00078	0.00135	3B	0.00101	0.00175
1 1/16-12 or 0.6875-12	UN	2A	0.00156	0.00270	2B	0.00205	0.00355
		3A	0.00118	0.00205	3B	0.00153	0.00265
1 1/16-16 or 0.6875-16	UN	2A	0.00139	0.00240	2B	0.00179	0.00310
		3A	0.00104	0.00130	3B	0.00133	0.00230
1 1/16-20 or 0.6875-20	UN	2A	0.00124	0.00215	2B	0.00162	0.00280
		3A	0.00092	0.00160	3B	0.00121	0.00210
1 1/16-24 or 0.6875-24	UNEF	2A	0.00115	0.00200	2B	0.00150	0.00260
		3A	0.00087	0.00150	3B	0.00113	0.00195
1 1/16-28 or 0.6875-28	UN	2A	0.00110	0.00190	2B	0.00141	0.00245
		3A	0.00081	0.00140	3B	0.00107	0.00185
1 1/8-32 or 0.6875-32	UN	2A	0.00104	0.00180	2B	0.00133	0.00230
		3A	0.00078	0.00135	3B	0.00101	0.00175

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
3/4-10 or 0.750-10	UNC	1A	0.00254	0.00440	1B	0.00332	0.00575
		2A	0.00170	0.00295	2B	0.00222	0.00385
		3A	0.00127	0.00220	3B	0.00165	0.00285
3/4-12 or 0.750-12	UN	2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00156	0.00270
3/4-16 or 0.750-16	UNF	1A	0.00217	0.00375	1B	0.00283	0.00490
		2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00110	0.00190	3B	0.00141	0.00245
3/4-20 or 0.750-20	UNEF	2A	0.00127	0.00220	2B	0.00165	0.00285
		3A	0.00095	0.00165	3B	0.00124	0.00215
3/4-28 or 0.750-28	UN	2A	0.00110	0.00190	2B	0.00144	0.00250
		3A	0.00084	0.00145	3B	0.00107	0.00185
3/4-32 or 0.750-32	UN	2A	0.00104	0.00180	2B	0.00136	0.00235
		3A	0.00078	0.00135	3B	0.00104	0.00180
13/16-12 or 0.8125-12	UN	2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00156	0.00270
13/16-16 or 0.8125-16	UN	2A	0.00141	0.00245	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
13/16-20 or 0.8125-20	UNEF	2A	0.00127	0.00220	2B	0.00165	0.00285
		3A	0.00095	0.00165	3B	0.00124	0.00215
13/16-28 or 0.8125-28	UN	2A	0.00110	0.00190	2B	0.00144	0.00250
		3A	0.00084	0.00145	3B	0.00107	0.00185
13/16-32 or 0.8125-32	UN	2A	0.00104	0.00180	2B	0.00136	0.00235
		3A	0.00078	0.00135	3B	0.00104	0.00180
7/8-9 or 0.875-9	UNC	1A	0.00274	0.00475	1B	0.00355	0.00615
		2A	0.00182	0.00315	2B	0.00237	0.00410
		3A	0.00136	0.00235	3B	0.00176	0.00305
7/8-12 or 0.875-12	UN	2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00156	0.00270
7/8-14 or 0.875-14	UNF	1A	0.00234	0.00405	1B	0.00306	0.00530
		2A	0.00156	0.00270	2B	0.00202	0.00350
		3A	0.00118	0.00205	3B	0.00153	0.00265
7/8-16 or 0.875-16	UN	2A	0.00141	0.00245	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
7/8-20 or 0.875-20	UNEF	2A	0.00127	0.00220	2B	0.00165	0.00285
		3A	0.00095	0.00165	3B	0.00124	0.00215

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
7/8-28 or 0.875-28	UN	2A	0.00110	0.00190	2B	0.00144	0.00250
		3A	0.00084	0.00145	3B	0.00107	0.00185
7/8-32 or 0.875-32	UN	2A	0.00104	0.00180	2B	0.00136	0.00235
		3A	0.00078	0.00135	3B	0.00104	0.00180
15/16-12 or 0.9375-12	UN	2A	0.00165	0.00255	2B	0.00214	0.00370
		3A	0.00121	0.00210	3B	0.00159	0.00275
15/16-16 or 0.9375-16	UN	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00141	0.00245
15/16-20 or 0.9375-20	UNEF	2A	0.00130	0.00225	2B	0.00170	0.00295
		3A	0.00098	0.00170	3B	0.00127	0.00220
15/16-28 or 0.9375-28	UN	2A	0.00115	0.00200	2B	0.00150	0.00260
		3A	0.00087	0.00150	3B	0.00113	0.00195
15/16-32 or 0.9375-32	UN	2A	0.00110	0.00190	2B	0.00141	0.00245
		3A	0.00081	0.00140	3B	0.00107	0.00185
1-8 or 1.000-8	UNC	1A	0.00292	0.00505	1B	0.00381	0.00660
		2A	0.00196	0.00340	2B	0.00254	0.00440
		3A	0.00147	0.00255	3B	0.00191	0.00330
1-12 or 1.000-12	UNF	1A	0.00254	0.00440	1B	0.00329	0.00570
		2A	0.00170	0.00295	2B	0.00219	0.00380
		3A	0.00127	0.00220	3B	0.00165	0.00285
1-14 or 1.000-14	UNS	1A	0.00242	0.00420	1B	0.00315	0.00545
		2A	0.00162	0.00280	2B	0.00211	0.00365
		3A	0.00121	0.00210	3B	0.00156	0.00270
1-16 or 1.000-16	UN	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00141	0.00245
1-20 or 1.000-20	UNEF	2A	0.00130	0.00225	2B	0.00170	0.00295
		3A	0.00098	0.00170	3B	0.00127	0.00220
1-28 or 1.000-28	UN	2A	0.00115	0.00200	2B	0.00150	0.00260
		3A	0.00087	0.00150	3B	0.00113	0.00195
1-32 or 1.000-32	UN	2A	0.00110	0.00190	2B	0.00141	0.00245
		3A	0.00081	0.00140	3B	0.00107	0.00185
1 1/16-8 or 1.0625-8	UN	2A	0.00196	0.00340	2B	0.00257	0.00445
		3A	0.00147	0.00255	3B	0.00193	0.00335
1 1/16-12 or 1.0625-12	UN	2A	0.00165	0.00285	2B	0.00214	0.00370
		3A	0.00121	0.00210	3B	0.00159	0.00275

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
1/16-16 or 1.0625-16	UN	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00141	0.00245
1/16-18 or 1.0625-18	UNEF	2A	0.00136	0.00235	2B	0.00179	0.00310
		3A	0.00104	0.00180	3B	0.00133	0.00230
1/16-20 or 1.0625-20	UN	2A	0.00130	0.00225	2B	0.00170	0.00295
		3A	0.00098	0.00170	3B	0.00127	0.00220
1/16-28 or 1.0625-28	UN	2A	0.00115	0.00200	2B	0.00150	0.00260
		3A	0.00087	0.00150	3B	0.00113	0.00195
1/8-7 or 1.125-7	UNC	1A	0.00315	0.00545	1B	0.00407	0.00705
		2A	0.00208	0.00360	2B	0.00271	0.00470
		3A	0.00156	0.00270	3B	0.00205	0.00355
1/8-8 or 1.125-8	UN	2A	0.00199	0.00345	2B	0.00260	0.00450
		3A	0.00150	0.00260	3B	0.00193	0.00335
1/8-12 or 1.125-12	UNF	1A	0.00260	0.00450	1B	0.00338	0.00585
		2A	0.00173	0.00300	2B	0.00225	0.00390
		3A	0.00130	0.00225	3B	0.00170	0.00295
1/8-16 or 1.125-16	UN	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00141	0.00245
1/8-18 or 1.125-18	UNEF	2A	0.00136	0.00235	2B	0.00179	0.00310
		3A	0.00104	0.00180	3B	0.00133	0.00230
1/8-20 or 1.125-20	UN	2A	0.00130	0.00225	2B	0.00170	0.00295
		3A	0.00098	0.00170	3B	0.00127	0.00220
1/8-28 or 1.125-28	UN	2A	0.00115	0.00200	2B	0.00150	0.00260
		3A	0.00087	0.00150	3B	0.00113	0.00195
3/16-8 or 1.1875-8	UN	2A	0.00202	0.00350	2B	0.00263	0.00455
		3A	0.00150	0.00260	3B	0.00196	0.00340
3/16-12 or 1.1875-12	UN	2A	0.00167	0.00290	2B	0.00217	0.00375
		3A	0.00124	0.00215	3B	0.00162	0.00280
3/16-16 or 1.1875-16	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00144	0.00250
3/16-18 or 1.1875-18	UNEF	2A	0.00141	0.00245	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
3/16-20 or 1.1875-20	UN	2A	0.00136	0.00235	2B	0.00176	0.00305
		3A	0.00101	0.00175	3B	0.00130	0.00225

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
 (See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
1 <sup>3</sup> / <sub>16</sub> -28 or 1.1875-28	UN	2A	0.00118	0.00205	2B	0.00153	0.00265
		3A	0.00089	0.00155	3B	0.00115	0.00200
1 <sup>1</sup> / <sub>4</sub> -7 or 1.250-7	UNC	1A	0.00320	0.00555	1B	0.00416	0.00720
		2A	0.00214	0.00370	2B	0.00277	0.00480
		3A	0.00159	0.00275	3B	0.00208	0.00360
1 <sup>1</sup> / <sub>4</sub> -8 or 1.250-8	UN	2A	0.00202	0.00350	2B	0.00266	0.00460
		3A	0.00153	0.00265	3B	0.00199	0.00345
1 <sup>1</sup> / <sub>4</sub> -12 or 1.250-12	UNF	1A	0.00266	0.00460	1B	0.00346	0.00600
		2A	0.00179	0.00310	2B	0.00231	0.00400
		3A	0.00133	0.00230	3B	0.00173	0.00300
1 <sup>1</sup> / <sub>4</sub> -16 or 1.250-16	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00100	0.00190	3B	0.00144	0.00250
1 <sup>1</sup> / <sub>4</sub> -18 or 1.250-18	UNEF	2A	0.00141	0.00245	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
1 <sup>1</sup> / <sub>4</sub> -20 or 1.250-20	UN	2A	0.00136	0.00235	2B	0.00176	0.00305
		3A	0.00101	0.00175	3B	0.00130	0.00225
1 <sup>1</sup> / <sub>4</sub> -28 or 1.250-28	UN	2A	0.00118	0.00205	2B	0.00153	0.00265
		3A	0.00089	0.00155	3B	0.00115	0.00200
1 <sup>5</sup> / <sub>16</sub> -8 or 1.3125-8	UN	2A	0.00205	0.00355	2B	0.00266	0.00460
		3A	0.00153	0.00265	3B	0.00199	0.00345
1 <sup>5</sup> / <sub>16</sub> -12 or 1.3125-12	UN	2A	0.00167	0.00290	2B	0.00217	0.00375
		3A	0.00124	0.00215	3B	0.00162	0.00280
1 <sup>5</sup> / <sub>16</sub> -16 or 1.3125-16	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00144	0.00250
1 <sup>5</sup> / <sub>16</sub> -18 or 1.3125-18	UNEF	2A	0.00141	0.00245	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
1 <sup>5</sup> / <sub>16</sub> -20 or 1.3125-20	UN	2A	0.00136	0.00235	2B	0.00176	0.00305
		3A	0.00101	0.00175	3B	0.00130	0.00225
1 <sup>5</sup> / <sub>16</sub> -28 or 1.3125-28	UN	2A	0.00118	0.00205	2B	0.00153	0.00265
		3A	0.00089	0.00155	3B	0.00115	0.00200
1 <sup>3</sup> / <sub>8</sub> -6 or 1.375-6	UNC	1A	0.00346	0.00600	1B	0.00447	0.00775
		2A	0.00231	0.00400	2B	0.00300	0.00520
		3A	0.00173	0.00300	3B	0.00225	0.00390
1 <sup>3</sup> / <sub>8</sub> -8 or 1.375-8	UN	2A	0.00208	0.00360	2B	0.00268	0.00465
		3A	0.00156	0.00270	3B	0.00202	0.00350

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
 (See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
1 <sup>3</sup> / <sub>8</sub> -12 or 1.375-12	UNF	1A	0.00271	0.00470	1B	0.00355	0.00615
		2A	0.00182	0.00315	2B	0.00237	0.00410
		3A	0.00136	0.00235	3B	0.00176	0.00305
1 <sup>3</sup> / <sub>8</sub> -16 or 1.375-16	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00144	0.00250
1 <sup>3</sup> / <sub>8</sub> -18 or 1.375-18	UNEF	2A	0.00141	0.00245	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
1 <sup>3</sup> / <sub>8</sub> -20 or 1.375-20	UN	2A	0.00136	0.00235	2B	0.00176	0.00305
		3A	0.00101	0.00175	3B	0.00130	0.00225
1 <sup>3</sup> / <sub>8</sub> -28 or 1.375-28	UN	2A	0.00118	0.00205	2B	0.00153	0.00265
		3A	0.00089	0.00155	3B	0.00115	0.00200
1 <sup>7</sup> / <sub>16</sub> -6 or 1.4375-6	UN	2A	0.00231	0.00400	2B	0.00300	0.00520
		3A	0.00173	0.00300	3B	0.00225	0.00390
1 <sup>7</sup> / <sub>16</sub> -8 or 1.4375-8	UN	2A	0.00208	0.00360	2B	0.00271	0.00470
		3A	0.00156	0.00270	3B	0.00205	0.00355
1 <sup>7</sup> / <sub>16</sub> -12 or 1.4375-12	UN	2A	0.00170	0.00295	2B	0.00219	0.00380
		3A	0.00127	0.00220	3B	0.00165	0.00285
1 <sup>7</sup> / <sub>16</sub> -16 or 1.4375-16	UN	2A	0.00150	0.00260	2B	0.00196	0.00340
		3A	0.00113	0.00195	3B	0.00147	0.00255
1 <sup>7</sup> / <sub>16</sub> -18 or 1.4375-18	UNEF	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00139	0.00240
1 <sup>7</sup> / <sub>16</sub> -20 or 1.4375-20	UN	2A	0.00139	0.00240	2B	0.00179	0.00310
		3A	0.00104	0.00180	3B	0.00133	0.00230
1 <sup>7</sup> / <sub>16</sub> -28 or 1.4375-28	UN	2A	0.00121	0.00210	2B	0.00159	0.00275
		3A	0.00089	0.00155	3B	0.00118	0.00205
1 <sup>1</sup> / <sub>2</sub> -6 or 1.500-6	UNC	1A	0.00349	0.00605	1B	0.00456	0.00790
		2A	0.00234	0.00405	2B	0.00303	0.00525
		3A	0.00176	0.00305	3B	0.00228	0.00305
1 <sup>1</sup> / <sub>2</sub> -8 or 1.500-8	UN	2A	0.00211	0.00365	2B	0.00274	0.00475
		3A	0.00159	0.00275	3B	0.00205	0.00355
1 <sup>1</sup> / <sub>2</sub> -12 or 1.500-12	UNF	1A	0.00277	0.00480	1B	0.00361	0.00625
		2A	0.00185	0.00320	2B	0.00240	0.00415
		3A	0.00139	0.00240	3B	0.00182	0.00315
1 <sup>1</sup> / <sub>2</sub> -16 or 1.500-16	UN	2A	0.00150	0.00260	2B	0.00196	0.00340
		3A	0.00113	0.00195	3B	0.00147	0.00255

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
1½-18 or 1.500-18	UNEF	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00139	0.00240
1½-20 or 1.500-20	UN	2A	0.00139	0.00240	2B	0.00179	0.00310
		3A	0.00104	0.00180	3B	0.00133	0.00230
1½-28 or 1.500-28	UN	2A	0.00121	0.00210	2B	0.00159	0.00275
		3A	0.00089	0.00155	3B	0.00118	0.00205
1⅞-6 or 1.5625-6	UN	2A	0.00237	0.00410	2B	0.00306	0.00530
		3A	0.00176	0.00305	3B	0.00231	0.00400
1⅞-8 or 1.5625-8	UN	2A	0.00214	0.00370	2B	0.00277	0.00480
		3A	0.00159	0.00275	3B	0.00208	0.00360
1⅞-12 or 1.5625-12	UN	2A	0.00170	0.00295	2B	0.00219	0.00380
		3A	0.00127	0.00220	3B	0.00165	0.00285
1⅞-16 or 1.5625-16	UN	2A	0.00150	0.00260	2B	0.00196	0.00340
		3A	0.00113	0.00195	3B	0.00147	0.00255
1⅞-18 or 1.5625-18	UNEF	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00139	0.00240
1⅞-20 or 1.5625-20	UN	2A	0.00139	0.00240	2B	0.00179	0.00310
		3A	0.00104	0.00180	3B	0.00133	0.00230
1⅞-6 or 1.625-6	UN	2A	0.00237	0.00410	2B	0.00309	0.00535
		3A	0.00179	0.00310	3B	0.00231	0.00400
1⅞-8 or 1.625-8	UN	2A	0.00214	0.00370	2B	0.00280	0.00485
		3A	0.00162	0.00280	3B	0.00208	0.00360
1⅞-12 or 1.625-12	UN	2A	0.00170	0.00295	2B	0.00219	0.00380
		3A	0.00127	0.00220	3B	0.00165	0.00285
1⅞-16 or 1.625-16	UN	2A	0.00150	0.00260	2B	0.00196	0.00340
		3A	0.00113	0.00195	3B	0.00147	0.00255
1⅞-18 or 1.625-18	UNEF	2A	0.00144	0.00250	2B	0.00188	0.00325
		3A	0.00107	0.00185	3B	0.00130	0.00240
1⅞-20 or 1.625-20	UN	2A	0.00139	0.00240	2B	0.00179	0.00310
		3A	0.00104	0.00180	3B	0.00133	0.00230
1⅞-6 or 1.6875-6	UN	2A	0.00240	0.00415	2B	0.00312	0.00540
		3A	0.00179	0.00310	3B	0.00234	0.00405
1⅞-8 or 1.6875-8	UN	2A	0.00217	0.00375	2B	0.00280	0.00485
		3A	0.00162	0.00280	3B	0.00211	0.00365



**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**

(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
1 <sup>11</sup> / <sub>16</sub> -12 or 1.6875-12	UN	2A	0.00173	0.00300	2B	0.00225	0.00390
		3A	0.00130	0.00225	3B	0.00167	0.00290
1 <sup>11</sup> / <sub>16</sub> -16 or 1.6875-16	UN	2A	0.00153	0.00265	2B	0.00199	0.00345
		3A	0.00115	0.00200	3B	0.00150	0.00260
1 <sup>11</sup> / <sub>16</sub> -18 or 1.6875-18	UNEF	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00141	0.00245
1 <sup>11</sup> / <sub>16</sub> -20 or 1.6875-20	UN	2A	0.00139	0.00240	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
1 <sup>3</sup> / <sub>4</sub> -5 or 1.750-5	UNC	1A	0.00387	0.00670	1B	0.00502	0.00870
		2A	0.00257	0.00445	2B	0.00335	0.00580
		3A	0.00193	0.00335	3B	0.00251	0.00435
1 <sup>3</sup> / <sub>4</sub> -6 or 1.750-6	UN	2A	0.00240	0.00415	2B	0.00312	0.00540
		3A	0.00182	0.00315	3B	0.00234	0.00405
1 <sup>3</sup> / <sub>4</sub> -8 or 1.750-8	UN	2A	0.00217	0.00375	2B	0.00283	0.00490
		3A	0.00165	0.00285	3B	0.00214	0.00370
1 <sup>3</sup> / <sub>4</sub> -12 or 1.750-12	UN	2A	0.00173	0.00300	2B	0.00225	0.00390
		3A	0.00130	0.00225	3B	0.00167	0.00290
1 <sup>3</sup> / <sub>4</sub> -16 or 1.750-16	UN	2A	0.00153	0.00265	2B	0.00199	0.00345
		3A	0.00115	0.00200	3B	0.00150	0.00260
1 <sup>3</sup> / <sub>4</sub> -20 or 1.750-20	UN	2A	0.00139	0.00240	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
1 <sup>13</sup> / <sub>16</sub> -6 or 1.8125-6	UN	2A	0.00242	0.00420	2B	0.00315	0.00545
		3A	0.00182	0.00315	3B	0.00237	0.00410
1 <sup>13</sup> / <sub>16</sub> -8 or 1.8125-8	UN	2A	0.00219	0.00380	2B	0.00286	0.00495
		3A	0.00165	0.00285	3B	0.00214	0.00370
1 <sup>13</sup> / <sub>16</sub> -12 or 1.8125-12	UN	2A	0.00173	0.00300	2B	0.00225	0.00390
		3A	0.00130	0.00225	3B	0.00167	0.00290
1 <sup>13</sup> / <sub>16</sub> -16 or 1.8125-16	UN	2A	0.00153	0.00265	2B	0.00199	0.00345
		3A	0.00115	0.00200	3B	0.00150	0.00260
1 <sup>13</sup> / <sub>16</sub> -20 or 1.8125-20	UN	2A	0.00139	0.00240	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
1 <sup>7</sup> / <sub>8</sub> -6 or 1.875-6	UN	2A	0.00242	0.00420	2B	0.00318	0.00550
		3A	0.00182	0.00315	3B	0.00237	0.00410

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**

(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
1 <sup>7</sup> / <sub>8</sub> -8 or 1.875-8	UN	2A	0.00222	0.00385	2B	0.00289	0.00500
		3A	0.00165	0.00285	3B	0.00217	0.00375
1 <sup>7</sup> / <sub>8</sub> -12 or 1.875-12	UN	2A	0.00173	0.00300	2B	0.00225	0.00390
		3A	0.00130	0.00225	3B	0.00167	0.00290
1 <sup>7</sup> / <sub>8</sub> -16 or 1.875-16	UN	2A	0.00153	0.00265	2B	0.00199	0.00345
		3A	0.00115	0.00200	3B	0.00150	0.00260
1 <sup>7</sup> / <sub>8</sub> -20 or 1.875-20	UN	2A	0.00139	0.00240	2B	0.00182	0.00315
		3A	0.00104	0.00180	3B	0.00136	0.00235
1 <sup>15</sup> / <sub>16</sub> -6 or 1.9375-6	UN	2A	0.00245	0.00425	2B	0.00320	0.00555
		3A	0.00185	0.00320	3B	0.00240	0.00415
1 <sup>15</sup> / <sub>16</sub> -8 or 1.9375-8	UN	2A	0.00222	0.00385	2B	0.00289	0.00500
		3A	0.00167	0.00290	3B	0.00217	0.00375
1 <sup>15</sup> / <sub>16</sub> -12 or 1.9375-12	UN	2A	0.00176	0.00305	2B	0.00228	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
1 <sup>15</sup> / <sub>16</sub> -16 or 1.9375-16	UN	2A	0.00156	0.00270	2B	0.00202	0.00350
		3A	0.00115	0.00200	3B	0.00150	0.00260
1 <sup>15</sup> / <sub>16</sub> -20 or 1.9375-20	UN	2A	0.00141	0.00245	2B	0.00185	0.00320
		3A	0.00107	0.00185	3B	0.00139	0.00240
2-4 <sup>1</sup> / <sub>2</sub> or 2.000-4.5	UNC	1A	0.00413	0.00715	1B	0.00537	0.00930
		2A	0.00274	0.00475	2B	0.00358	0.00620
		3A	0.00205	0.00355	3B	0.00268	0.00465
2-6 or 2.000-6	UN	2A	0.00248	0.00430	2B	0.00320	0.00555
		3A	0.00185	0.00320	3B	0.00240	0.00415
2-8 or 2.000-8	UN	2A	0.00225	0.00390	2B	0.00292	0.00505
		3A	0.00167	0.00290	3B	0.00219	0.00380
2-12 or 2.000-12	UN	2A	0.00176	0.00305	2B	0.00223	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
2-16 or 2.000-16	UN	2A	0.00156	0.00270	2B	0.00202	0.00350
		3A	0.00115	0.00200	3B	0.00150	0.00260
2-20 or 2.000-20	UN	2A	0.00141	0.00245	2B	0.00185	0.00320
		3A	0.00107	0.00185	3B	0.00139	0.00240
2 <sup>1</sup> / <sub>8</sub> -6 or 2.125-6	UN	2A	0.00251	0.00435	2B	0.00326	0.00565
		3A	0.00188	0.00325	3B	0.00242	0.00420

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
2 1/8-8 or 2.125-8	UN	2A	0.00228	0.00395	2B	0.00294	0.00510
		3A	0.00170	0.00295	3B	0.00212	0.00385
2 1/8-12 or 2.125-12	UN	2A	0.00176	0.00305	2B	0.00228	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
2 1/8-16 or 2.125-16	UN	2A	0.00156	0.00270	2B	0.00202	0.00350
		3A	0.00115	0.00200	3B	0.00150	0.00260
2 1/8-20 or 2.125-20	UN	2A	0.00141	0.00245	2B	0.00185	0.00320
		3A	0.00107	0.00185	3B	0.00139	0.00240
2 1/4-4 1/2 or 2.250-4.5	UNC	1A	0.00421	0.00730	1B	0.00548	0.00950
		2A	0.00280	0.00485	2B	0.00364	0.00630
		3A	0.00211	0.00365	3B	0.00274	0.00475
2 1/4-6 or 2.250-6	UN	2A	0.00254	0.00440	2B	0.00329	0.00570
		3A	0.00191	0.00330	3B	0.00214	0.00425
2 1/4-8 or 2.250-8	UN	2A	0.00231	0.00400	2B	0.00300	0.00520
		3A	0.00173	0.00300	3B	0.00225	0.00390
2 1/4-12 or 2.250-12	UN	2A	0.00176	0.00305	2B	0.00228	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
2 1/4-16 or 2.250-16	UN	2A	0.00156	0.00270	2B	0.00202	0.00350
		3A	0.00115	0.00200	3B	0.00150	0.00260
2 1/4-20 or 2.250-20	UN	2A	0.00141	0.00245	2B	0.00185	0.00320
		3A	0.00107	0.00185	3B	0.00139	0.00240
2 3/8-6 or 2.375-6	UN	2A	0.00257	0.00445	2B	0.00332	0.00575
		3A	0.00191	0.00330	3B	0.00248	0.00430
2 3/8-8 or 2.375-8	UN	2A	0.00234	0.00405	2B	0.00303	0.00525
		3A	0.00173	0.00300	3B	0.00228	0.00395
2 3/8-12 or 2.375-12	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00133	0.00230	3B	0.00173	0.00300
2 3/8-16 or 2.375-16	UN	2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00155	0.00270
2 3/8-20 or 2.375-20	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00144	0.00250
2 1/2-4 or 2.500-4	UNC	1A	0.00447	0.00775	1B	0.00583	0.01010
		2A	0.00300	0.00520	2B	0.00390	0.00675
		3A	0.00225	0.00390	3B	0.00292	0.00505

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
2½-6 or 2.500-6	UN	2A	0.00260	0.00450	2B	0.00335	0.00580
		3A	0.00193	0.00335	3B	0.00251	0.00435
2½-8 or 2.500-8	UN	2A	0.00237	0.00410	2B	0.00306	0.00530
		3A	0.00176	0.00305	3B	0.00231	0.00400
2½-12 or 2.500-12	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00133	0.00230	3B	0.00173	0.00300
2½-16 or 2.500-16	UN	2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00156	0.00270
2½-20 or 2.500-20	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00144	0.00250
2⅝-6 or 2.625-6	UN	2A	0.00260	0.00450	2B	0.00341	0.00590
		3A	0.00196	0.00340	3B	0.00254	0.00440
2⅝-8 or 2.625-8	UN	2A	0.00237	0.00410	2B	0.00309	0.00535
		3A	0.00179	0.00310	3B	0.00231	0.00400
2⅝-12 or 2.625-12	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00133	0.00230	3B	0.00173	0.00300
2⅝-16 or 2.625-16	UN	2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00156	0.00270
2⅝-20 or 2.625-20	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00144	0.00250
2¾-4 or 2.750-4	UNC	1A	0.00456	0.00790	1B	0.00595	0.01030
		2A	0.00303	0.00525	2B	0.00395	0.00685
		3A	0.00228	0.00395	3B	0.00297	0.00515
2¾-6 or 2.750-6	UN	2A	0.00263	0.00455	2B	0.00344	0.00595
		3A	0.00196	0.00340	3B	0.00257	0.00445
2¾-8 or 2.750-8	UN	2A	0.00240	0.00415	2B	0.00312	0.00540
		3A	0.00182	0.00315	3B	0.00234	0.00405
2¾-12 or 2.750-12	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00133	0.00230	3B	0.00173	0.00300
2¾-16 or 2.750-16	UN	2A	0.00159	0.00275	2B	0.00208	0.00360
		3A	0.00118	0.00205	3B	0.00156	0.00270
2¾-20 or 2.750-20	UN	2A	0.00147	0.00255	2B	0.00191	0.00330
		3A	0.00110	0.00190	3B	0.00144	0.00250

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
2 $\frac{7}{8}$ -6 or 2.875-6	UN	2A	0.00266	0.00460	2B	0.00346	0.00600
		3A	0.00199	0.00345	3B	0.00280	0.00450
2 $\frac{7}{8}$ -8 or 2.875-8	UN	2A	0.00242	0.00420	2B	0.00318	0.00550
		3A	0.00182	0.00315	3B	0.00237	0.00410
2 $\frac{7}{8}$ -12 or 2.875-12	UN	2A	0.00182	0.00315	2B	0.00237	0.00410
		3A	0.00136	0.00235	3B	0.00179	0.00310
2 $\frac{7}{8}$ -16 or 2.875-16	UN	2A	0.00162	0.00280	2B	0.00211	0.00365
		3A	0.00121	0.00210	3B	0.00159	0.00275
2 $\frac{7}{8}$ -20 or 2.875-20	UN	2A	0.00150	0.00260	2B	0.00196	0.00340
		3A	0.00113	0.00195	3B	0.00147	0.00255
3-4 or 3.000-4	UNC	1A	0.00465	0.00805	1B	0.00603	0.01045
		2A	0.00309	0.00535	2B	0.00401	0.00695
		3A	0.00231	0.00400	3B	0.00300	0.00520
3-6 or 3.000-6	UN	2A	0.00268	0.00465	2B	0.00349	0.00605
		3A	0.00202	0.00350	3B	0.00263	0.00455
3-8 or 3.000-8	UN	2A	0.00245	0.00425	2B	0.00320	0.00555
		3A	0.00185	0.00320	3B	0.00240	0.00415
3-12 or 3.000-12	UN	2A	0.00182	0.00315	2B	0.00237	0.00410
		3A	0.00136	0.00235	3B	0.00179	0.00310
3-16 or 3.000-16	UN	2A	0.00162	0.00280	2B	0.00211	0.00365
		3A	0.00121	0.00210	3B	0.00159	0.00275
3-20 or 3.000-20	UN	2A	0.00150	0.00260	2B	0.00196	0.00340
		3A	0.00113	0.00195	3B	0.00147	0.00255
3 $\frac{1}{8}$ -6 or 3.125-6	UN	2A	0.00271	0.00470	2B	0.00352	0.00610
		3A	0.00202	0.00350	3B	0.00266	0.00460
3 $\frac{1}{8}$ -8 or 3.125-8	UN	2A	0.00248	0.00430	2B	0.00323	0.00560
		3A	0.00185	0.00320	3B	0.00242	0.00420
3 $\frac{1}{8}$ -12 or 3.125-12	UN	2A	0.00182	0.00315	2B	0.00237	0.00410
		3A	0.00136	0.00235	3B	0.00179	0.00310
3 $\frac{1}{8}$ -16 or 3.125-16	UN	2A	0.00162	0.00280	2B	0.00211	0.00365
		3A	0.00121	0.00210	3B	0.00159	0.00275
3 $\frac{1}{4}$ -4 or 3.250-4	UNC	1A	0.00471	0.00815	1B	0.00612	0.01060
		2A	0.00315	0.00545	2B	0.00407	0.00705
		3A	0.00237	0.00410	3B	0.00306	0.00530

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
 (See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. ±	5, in. +	6	7, in. ±	8, in. -
3/4-6 or 3.250-6	UN	2A	0.00274	0.00475	2B	0.00355	0.00615
		3A	0.00205	0.00355	3B	0.00266	0.00460
3/4-8 or 3.250-8	UN	2A	0.00251	0.00435	2B	0.00326	0.00565
		3A	0.00188	0.00325	3B	0.00245	0.00425
3/4-12 or 3.250-12	UN	2A	0.00182	0.00315	2B	0.00237	0.00410
		3A	0.00136	0.00235	3B	0.00179	0.00310
3/4-16 or 3.250-16	UN	2A	0.00162	0.00280	2B	0.00211	0.00365
		3A	0.00121	0.00210	3B	0.00159	0.00275
3/8-6 or 3.375-6	UN	2A	0.00274	0.00475	2B	0.00358	0.00620
		3A	0.00208	0.00360	3B	0.00258	0.00465
3/8-8 or 3.375-8	UN	2A	0.00254	0.00440	2B	0.00329	0.00570
		3A	0.00191	0.00330	3B	0.00245	0.00425
3/8-12 or 3.375-12	UN	2A	0.00185	0.00320	2B	0.00242	0.00420
		3A	0.00139	0.00242	3B	0.00182	0.00315
3/8-16 or 3.375-16	UN	2A	0.00167	0.00290	2B	0.00217	0.00375
		3A	0.00124	0.00215	3B	0.00162	0.00280
3/2-4 or 3.500-4	UNC	1A	0.00479	0.00830	1B	0.00621	0.01075
		2A	0.00318	0.00550	2B	0.00413	0.00715
		3A	0.00240	0.00415	3B	0.00312	0.00540
3/2-6 or 3.500-6	UN	2A	0.00277	0.00480	2B	0.00361	0.00625
		3A	0.00208	0.00360	3B	0.00271	0.00470
3/2-8 or 3.500-8	UN	2A	0.00254	0.00440	2B	0.00332	0.00575
		3A	0.00191	0.00330	3B	0.00248	0.00430
3/2-12 or 3.500-12	UN	2A	0.00185	0.00320	2B	0.00242	0.00420
		3A	0.00139	0.00240	3B	0.00182	0.00315
3/2-16 or 3.500-16	UN	2A	0.00167	0.00290	2B	0.00217	0.00375
		3A	0.00124	0.00215	3B	0.00162	0.00280
3/8-6 or 3.625-6	UN	2A	0.00280	0.00485	2B	0.00364	0.00630
		3A	0.00211	0.00365	3B	0.00274	0.00475
3/8-8 or 3.625-8	UN	2A	0.00257	0.00445	2B	0.00335	0.00580
		3A	0.00193	0.00335	3B	0.00251	0.00435
3/8-12 or 3.625-12	UN	2A	0.00185	0.00320	2B	0.00242	0.00420
		3A	0.00139	0.00240	3B	0.00182	0.00315

**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
3/8-16 or 3.625-16	UN	2A	0.00167	0.00290	2B	0.00217	0.00375
		3A	0.00124	0.00215	3B	0.00162	0.00280
3/4-4 or 3.750-4	UNC	1A	0.00485	0.00840	1B	0.00629	0.01090
		2A	0.00323	0.00560	2B	0.00419	0.00725
		3A	0.00242	0.00420	3B	0.00315	0.00545
3/4-6 or 3.750-6	UN	2A	0.00283	0.00490	2B	0.00367	0.00635
		3A	0.00211	0.00365	3B	0.00274	0.00475
3/4-8 or 3.750-8	UN	2A	0.00260	0.00450	2B	0.00338	0.00585
		3A	0.00193	0.00335	3B	0.00254	0.00440
3/4-12 or 3.750-12	UN	2A	0.00185	0.00320	2B	0.00242	0.00420
		3A	0.00139	0.00240	3B	0.00182	0.00315
3/4-16 or 3.750-16	UN	2A	0.00167	0.00290	2B	0.00217	0.00375
		3A	0.00124	0.00215	3B	0.00162	0.00280
3/8-6 or 3.875-6	UN	2A	0.00286	0.00495	2B	0.00369	0.00640
		3A	0.00214	0.00370	3B	0.00277	0.00480
3/8-8 or 3.875-8	UN	2A	0.00263	0.00455	2B	0.00341	0.00590
		3A	0.00196	0.00340	3B	0.00254	0.00440
3/8-12 or 3.875-12	UN	2A	0.00188	0.00325	2B	0.00245	0.00425
		3A	0.00141	0.00245	3B	0.00185	0.00320
3/8-16 or 3.875-16	UN	2A	0.00170	0.00295	2B	0.00219	0.00380
		3A	0.00127	0.00220	3B	0.00165	0.00285
4-4 or 4.000-4	UNC	1A	0.00491	0.00850	1B	0.00638	0.01105
		2A	0.00326	0.00565	2B	0.00424	0.00735
		3A	0.00245	0.00425	3B	0.00320	0.00555
4-6 or 4.000-6	UN	2A	0.00286	0.00495	2B	0.00372	0.00645
		3A	0.00214	0.00370	3B	0.00280	0.00485
4-8 or 4.000-8	UN	2A	0.00263	0.00455	2B	0.00344	0.00595
		3A	0.00196	0.00340	3B	0.00257	0.00445
4-12 or 4.000-12	UN	2A	0.00188	0.00325	2B	0.00245	0.00425
		3A	0.00141	0.00245	3B	0.00185	0.00320
4-16 or 4.000-16	UN	2A	0.00170	0.00295	2B	0.00219	0.00380
		3A	0.00127	0.00220	3B	0.00165	0.00285
4 1/8-6 or 4.125-6	UN	2A	0.00289	0.00500	2B	0.00375	0.00650
		3A	0.00217	0.00375	3B	0.00280	0.00485

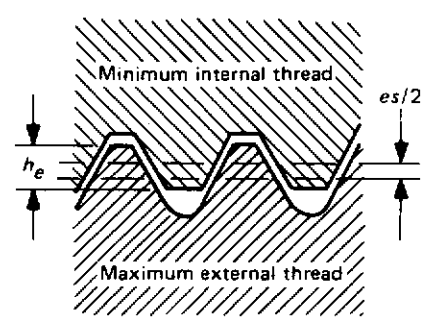
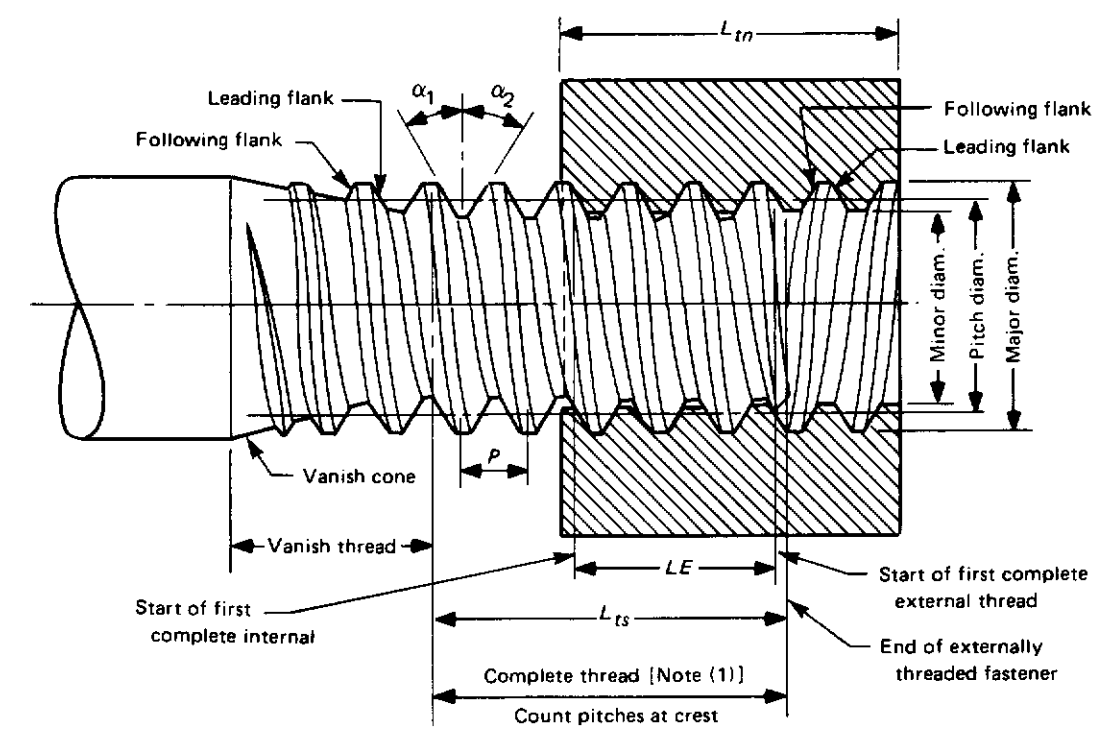
**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
5-16 or 5.000-16	UN	2A	0.00176	0.00305	2B	0.00228	0.00305
		3A	0.00130	0.00225	3B	0.00170	0.00295
5 $\frac{1}{8}$ -8 or 5.125-8	UN	2A	0.00280	0.00485	2B	0.00364	0.00630
		3A	0.00211	0.00365	3B	0.00274	0.00475
5 $\frac{1}{8}$ -12 or 5.125-12	UN	2A	0.00193	0.00335	2B	0.00251	0.00435
		3A	0.00144	0.00250	3B	0.00191	0.00330
5 $\frac{1}{8}$ -16 or 5.125-16	UN	2A	0.00176	0.00305	2B	0.00228	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
5 $\frac{1}{4}$ -4 or 5.250-4	UN	2A	0.00346	0.00600	2B	0.00450	0.00780
		3A	0.00260	0.00450	3B	0.00385	0.00585
5 $\frac{1}{4}$ -8 or 5.250-8	UN	2A	0.00283	0.00490	2B	0.00367	0.00635
		3A	0.00214	0.00370	3B	0.00277	0.00480
5 $\frac{1}{4}$ -12 or 5.250-12	UN	2A	0.00193	0.00335	2B	0.00251	0.00435
		3A	0.00144	0.00250	3B	0.00191	0.00330
5 $\frac{1}{4}$ -16 or 5.250-16	UN	2A	0.00176	0.00305	2B	0.00228	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
5 $\frac{3}{8}$ -8 or 5.375-8	UN	2A	0.00286	0.00495	2B	0.00372	0.00645
		3A	0.00214	0.00370	3B	0.00280	0.00485
5 $\frac{3}{8}$ -12 or 5.375-12	UN	2A	0.00193	0.00335	2B	0.00251	0.00435
		3A	0.00144	0.00250	3B	0.00191	0.00330
5 $\frac{3}{8}$ -16 or 5.375-16	UN	2A	0.00176	0.00305	2B	0.00231	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
5 $\frac{1}{2}$ -4 or 5.500-4	UN	2A	0.00349	0.00605	2B	0.00456	0.00790
		3A	0.00263	0.00455	3B	0.00341	0.00500
5 $\frac{1}{2}$ -8 or 5.500-8	UN	2A	0.00286	0.00495	2B	0.00372	0.00645
		3A	0.00214	0.00370	3B	0.00280	0.00485
5 $\frac{1}{2}$ -12 or 5.500-12	UN	2A	0.00193	0.00335	2B	0.00251	0.00435
		3A	0.00144	0.00250	3B	0.00191	0.00330
5 $\frac{1}{2}$ -16 or 5.500-16	UN	2A	0.00176	0.00305	2B	0.00228	0.00395
		3A	0.00130	0.00225	3B	0.00170	0.00295
5 $\frac{5}{8}$ -8 or 5.625-8	UN	2A	0.00289	0.00500	2B	0.00375	0.00650
		3A	0.00217	0.00375	3B	0.00283	0.00490
5 $\frac{5}{8}$ -12 or 5.625-12	UN	2A	0.00199	0.00345	2B	0.00260	0.00450
		3A	0.00150	0.00260	3B	0.00193	0.00335

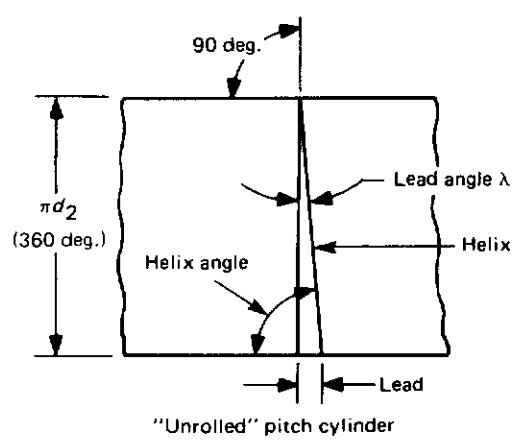


**TABLE 4 ALLOWABLE VARIATIONS IN LEAD AND EQUIVALENT CHANGE IN FUNCTIONAL DIAMETER (CONT'D)**  
(See Paragraphs 9.1.3 Through 9.1.6 for Applicability)

Nominal Size and Threads/in.	Series Designation	External			Internal		
		Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter	Class	Allowable Variation in Lead	Equivalent Change in Functional Diameter
1	2	3	4, in. $\pm$	5, in. +	6	7, in. $\pm$	8, in. -
5/8-16 or 5.625-16	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00136	0.00235	3B	0.00176	0.00305
5/4-4 or 5.750-4	UN	2A	0.00352	0.00610	2B	0.00459	0.00795
		3A	0.00266	0.00460	3B	0.00344	0.00595
5/4-8 or 5.750-8	UN	2A	0.00289	0.00500	2B	0.00375	0.00650
		3A	0.00217	0.00375	3B	0.00283	0.00490
5/4-12 or 5.750-12	UN	2A	0.00199	0.00345	2B	0.00260	0.00450
		3A	0.00150	0.00260	3B	0.00193	0.00335
5/4-16 or 5.750-16	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00136	0.00235	3B	0.00176	0.00305
5/8-8 or 5.875-8	UN	2A	0.00292	0.00505	2B	0.00378	0.00655
		3A	0.00219	0.00380	3B	0.00283	0.00490
5/8-12 or 5.875-12	UN	2A	0.00199	0.00345	2B	0.00260	0.00450
		3A	0.00150	0.00260	3B	0.00193	0.00335
5/8-16 or 5.875-16	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00136	0.00235	3B	0.00176	0.00305
6-4 or 6.000-4	UN	2A	0.00358	0.00620	2B	0.00455	0.00805
		3A	0.00268	0.00465	3B	0.00346	0.00600
6-8 or 6.000-8	UN	2A	0.00294	0.00510	2B	0.00384	0.00665
		3A	0.00222	0.00385	3B	0.00286	0.00495
6-12 or 6.000-12	UN	2A	0.00199	0.00315	2B	0.00260	0.00450
		3A	0.00150	0.00260	3B	0.00193	0.00335
6-16 or 6.000-16	UN	2A	0.00179	0.00310	2B	0.00234	0.00405
		3A	0.00136	0.00235	3B	0.00176	0.00305



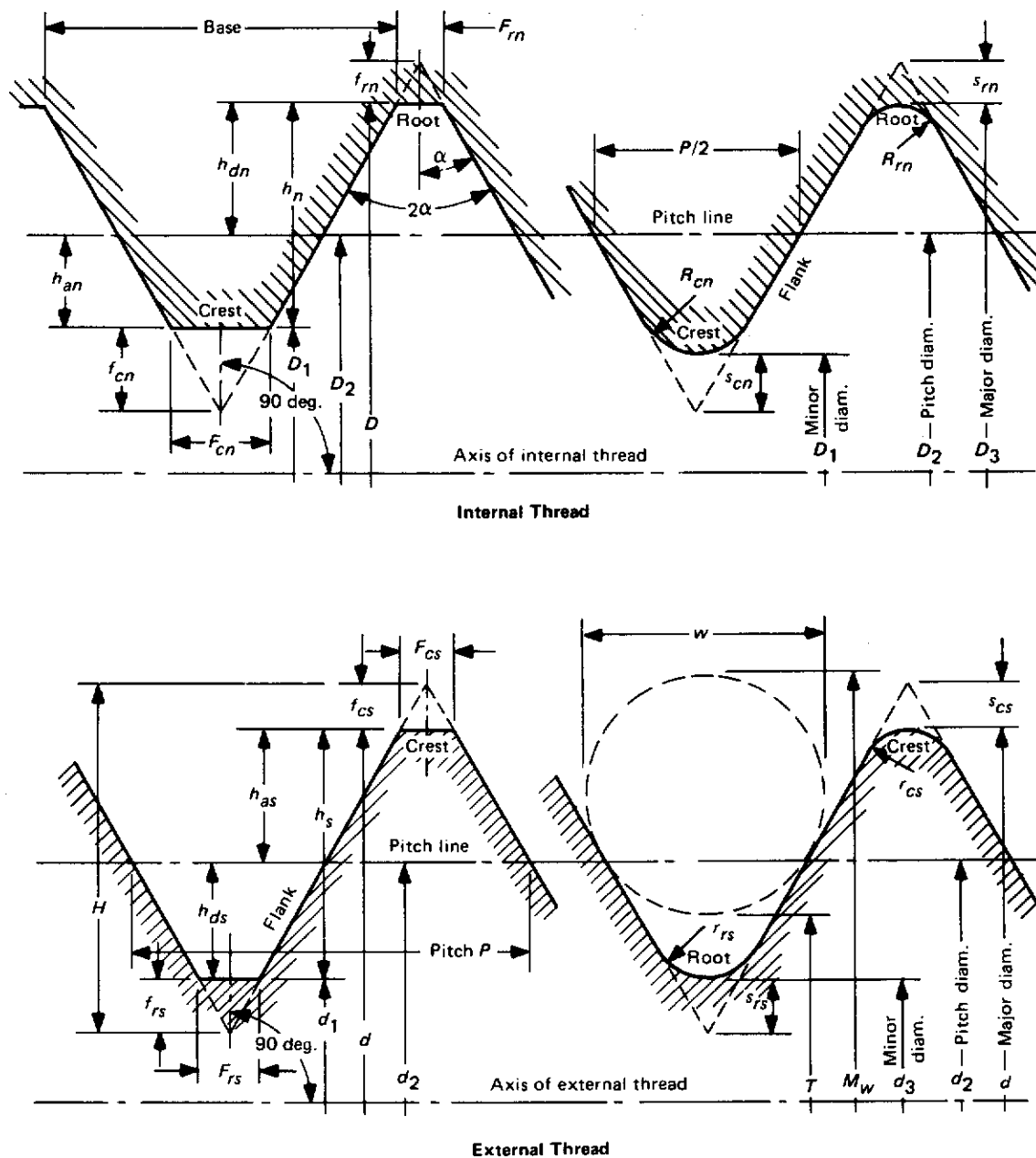
Thread With an Allowance



Lead and Helix Angles

NOTE:  
 (1) Portion of thread fully formed at crest and root.

FIG. 6 APPLICATION OF GENERAL THREAD SYMBOLS  
 (See Table 6)



GENERAL NOTE:  
 These diagrams are not intended to show standard thread forms, but only to illustrate the application of symbols.

FIG. 6 APPLICATION OF GENERAL THREAD SYMBOLS (CONT'D)  
 (See Table 6)

TABLE 6 THREAD FORM DATA

Threads/in.	Pitch $P$	Basic Flat at Internal Thread Crest, and External UN Thread Root, $F_{rs} = F_{cs} = P/4 = 0.25P$	Flat at Internal Thread Root and External Thread Crest, $F_{rn} = F_{cn} = P/8 = 0.125P$	Height of Sharp V-Thread, $H = 0.866025P$	Truncation of Internal Thread Root and External Thread Crest, $f_{rn} = f_{cs} = 0.125H = 0.10825P$ (1)	External Thread Root Radius Max., $r_{rs} = 0.166667H = 0.14434P$	Truncation of UNR Design Profile External Thread Root and Half Addendum of External Thread, $S_{rs} = 0.1875H = 0.16238P$	External Thread Root and Truncation of Internal Thread Crest, $f_{rs} = f_{cn} = 0.250H = 0.21651P$ (2)
1	2	3	4	5	6	7	8	9
80	0.012500	0.00312	0.00156	0.010825	0.00135	0.00180	0.00203	0.00271
72	0.013889	0.00347	0.00174	0.012028	0.00150	0.00200	0.00226	0.00301
64	0.015625	0.00391	0.00195	0.013532	0.00169	0.00226	0.00254	0.00338
56	0.017857	0.00446	0.00223	0.015465	0.00193	0.00258	0.00290	0.00387
48	0.020833	0.00521	0.00260	0.018042	0.00226	0.00301	0.00338	0.00451
44	0.022727	0.00568	0.00284	0.019682	0.00246	0.00328	0.00369	0.00492
40	0.025000	0.00625	0.00312	0.021651	0.00271	0.00361	0.00406	0.00541
36	0.027778	0.00694	0.00347	0.024056	0.00301	0.00401	0.00451	0.00601
32	0.031250	0.00781	0.00391	0.027063	0.00338	0.00451	0.00507	0.00677
28	0.035714	0.00893	0.00446	0.030929	0.00387	0.00515	0.00580	0.00773
27	0.037037	0.00926	0.00463	0.032075	0.00401	0.00535	0.00601	0.00802
24	0.041667	0.01042	0.00521	0.036084	0.00451	0.00601	0.00677	0.00902
20	0.050000	0.01250	0.00625	0.043301	0.00541	0.00722	0.00812	0.01083
18	0.055556	0.01389	0.00694	0.048113	0.00601	0.00802	0.00902	0.01203
16	0.062500	0.01562	0.00781	0.054127	0.00677	0.00902	0.01015	0.01353
14	0.071429	0.01786	0.00893	0.061859	0.00773	0.01031	0.01160	0.01546
13	0.076923	0.01923	0.00962	0.066617	0.00833	0.01110	0.01249	0.01665
12	0.083333	0.02083	0.01042	0.072169	0.00902	0.01203	0.01353	0.01804
11½	0.086957	0.02174	0.01087	0.075307	0.00941	0.01255	0.01412	0.01883
11	0.090909	0.02273	0.01136	0.078730	0.00984	0.01312	0.01476	0.01968
10	0.100000	0.02500	0.01250	0.086603	0.01083	0.01443	0.01624	0.02165
9	0.111111	0.02778	0.01389	0.096225	0.01203	0.01604	0.01804	0.02406
8	0.125000	0.03125	0.01562	0.108253	0.01353	0.01804	0.02030	0.02706
7	0.142857	0.03571	0.01786	0.123718	0.01546	0.02062	0.02320	0.03093
6	0.166667	0.04167	0.02083	0.144338	0.01804	0.02406	0.02706	0.03608
5	0.200000	0.05000	0.02500	0.173205	0.02165	0.02887	0.03248	0.04330
4½	0.222222	0.05556	0.02778	0.192450	0.02406	0.03208	0.03608	0.04811
4	0.250000	0.06250	0.03125	0.216506	0.02706	0.03608	0.04059	0.05413

TABLE 6 THREAD FORM DATA

Addendum of External Thread, $h_{as} =$ $0.375H =$ $0.32476P$ (3)	Height of Internal Thread, UN External Thread, and Depth of Thread Engagement, $h_s = h_n =$ $h_o =$ $0.625H =$ $0.54127P$	Height of UNR External Thread, $h_s =$ $0.6875H =$ $0.59539P$	Twice the External Thread Addendum, $h_o = 2h_{as} =$ $0.750H =$ $0.649519P$	Difference Between Max. Major and Pitch Diameters of Internal Thread, $0.916667H =$ $0.79386P$	Double Height of Internal Thread and External UN Thread, $2h_n =$ $1.250H =$ $1.08253P$	Double Height of External UNR Thread, $2h_s =$ $1.375H =$ $1.19078P$	$H/2 =$ $0.43301P$	Threads/in.
10	11	12	13	14	15	16	17	1
0.00406	0.00677	0.00744	0.008119	0.00992	0.01353	0.01488	0.00541	80
0.00451	0.00752	0.00827	0.009021	0.01103	0.01504	0.01654	0.00601	72
0.00507	0.00846	0.00930	0.010149	0.01240	0.01691	0.01861	0.00677	64
0.00580	0.00967	0.01063	0.011599	0.01418	0.01933	0.02126	0.00773	56
0.00677	0.01128	0.01240	0.013532	0.01654	0.02255	0.02481	0.00902	48
0.00738	0.01230	0.01353	0.014762	0.01804	0.02460	0.02706	0.00984	44
0.00812	0.01353	0.01488	0.016238	0.01985	0.02706	0.02977	0.01083	40
0.00902	0.01504	0.01654	0.018042	0.02205	0.03007	0.03308	0.01203	36
0.01015	0.01691	0.01861	0.020297	0.02481	0.03383	0.03721	0.01353	32
0.01160	0.01933	0.02126	0.023197	0.02835	0.03866	0.04253	0.01546	28
0.01203	0.02005	0.02205	0.024056	0.02940	0.04009	0.04410	0.01604	27
0.01353	0.02255	0.02481	0.027063	0.03308	0.04511	0.04962	0.01804	24
0.01624	0.02706	0.02977	0.032476	0.03969	0.05413	0.05954	0.02165	20
0.01804	0.03007	0.03308	0.036084	0.04410	0.06014	0.06615	0.02406	18
0.02030	0.03383	0.03721	0.040595	0.04962	0.06766	0.07442	0.02706	16
0.02320	0.03866	0.04253	0.046394	0.05670	0.07732	0.08506	0.03093	14
0.02498	0.04164	0.04580	0.049963	0.06107	0.08327	0.09160	0.03331	13
0.02706	0.04511	0.04962	0.054127	0.06615	0.09021	0.09923	0.03608	12
0.02824	0.04707	0.05177	0.056480	0.06903	0.09413	0.10355	0.03765	11½
0.02952	0.04921	0.05413	0.059047	0.07217	0.09841	0.10825	0.03936	11
0.03248	0.05413	0.05954	0.064952	0.07939	0.10825	0.11908	0.04330	10
0.03608	0.06014	0.06615	0.072169	0.08821	0.12028	0.13231	0.04811	9
0.04059	0.06766	0.07442	0.081190	0.09923	0.13532	0.14885	0.05413	8
0.04639	0.07732	0.08506	0.092788	0.11341	0.15465	0.17011	0.06186	7
0.05413	0.09021	0.09923	0.108253	0.13231	0.18042	0.19846	0.07217	6
0.06495	0.10825	0.11908	0.129904	0.15877	0.21651	0.23816	0.08660	5
0.07217	0.12028	0.13231	0.144338	0.17641	0.24056	0.26462	0.09623	4½
0.08119	0.13532	0.14885	0.162380	0.19846	0.27063	0.29770	0.10825	4

NOTES:

(1) The values tabulated in column 6 also pertain to the minimum root radius of UNR screw threads. See paras. 2.3.1 and 2.3.1(a).

(2)  $h_{an} = f_{cn} = 0.25H$ .

(3)  $h_{dn} = h_{as} = 0.375H$ .

**TABLE 7 GENERAL SYMBOLS**  
(See Fig. 6)

Symbol	Dimension	Remarks	Symbol	Dimension	Remarks
<i>d</i>	Major diameter, external thread			Distance from apex of fundamental triangle to:	
<i>D, D<sub>3</sub></i>	Major diameter, internal thread		<i>f<sub>cs</sub></i>	flat at crest of external thread	
<i>d<sub>2</sub></i>	Pitch diameter, external thread		<i>f<sub>rs</sub></i>	flat at root of external thread	
<i>D<sub>2</sub></i>	Pitch diameter, internal thread		<i>f<sub>cn</sub></i>	flat at crest of internal thread	
<i>d<sub>1, d<sub>3</sub></sub></i>	Minor diameter, external thread		<i>f<sub>rn</sub></i>	flat at root of internal thread	
<i>D<sub>1</sub></i>	Minor diameter, internal thread			Width of:	
<i>P</i>	Pitch		<i>F</i>	flat (general)	
<i>1/P</i>	Number of threads per unit of length (per inch)		<i>F<sub>cs</sub></i>	flat at crest of external thread	
<i>1/L</i>	Number of turns per unit of length (per inch)		<i>F<sub>rs</sub></i>	flat at root of external thread	
<i>H</i>	Height of fundamental triangle		<i>F<sub>cn</sub></i>	flat at crest of internal thread	
<i>h</i>	Thread height (or depth)		<i>F<sub>rn</sub></i>	flat at root of internal thread	
<i>h<sub>a</sub></i>	Addendum				
<i>h<sub>d</sub></i>	Dedendum		<i>es</i>	Allowance at major, pitch, and minor diameters of external thread	
<i>h<sub>e</sub></i>	Depth of thread engagement				
<i>α</i>	Half angle of symmetrical thread		<i>L<sub>rs</sub></i>	Length of complete external thread	
<i>α<sub>1</sub></i>	Angle between leading flank of thread and normal to axis of thread		<i>L<sub>rn</sub></i>	Length of complete internal thread, including chamfer	
<i>α<sub>2</sub></i>	Angle between following flank of thread and normal to axis of thread		<i>LE</i>	Length of thread engagement	
<i>λ</i>	Lead angle	$\tan \lambda = \frac{L}{\pi(d_2 \text{ or } D_2)}$	<i>w</i>	Diameter of measuring wires	
<i>r</i>	Radius of rounding at:		<i>M<sub>w</sub></i>	Measurement over wires	
<i>r<sub>rs</sub></i>	crest of external thread		<i>C</i>	Correction to measurement over wires to give pitch diameter	$d_2 \text{ or } D_2 = M_w - C - c$ $C = w(1 + \operatorname{cosec} \alpha)$ $- (\cot \alpha)/2n$
<i>r<sub>cn</sub></i>	root of external thread				
<i>r<sub>rn</sub></i>	crest of internal thread		<i>λ'</i>	Wire angle	See ANSI/ASME B1.2
	root of internal thread		<i>c</i>	Wire angle correction	
<i>s<sub>cs</sub></i>	Radial distance from apex of fundamental triangle to:		Prefix symbol with Δ	Variation in any dimension	Examples: Variation in pitch, Δ <i>P</i> ; variation in half angle, Δ <i>α</i> <sub>1</sub> or Δ <i>α</i> <sub>2</sub>
	rounded crest of external thread		$\Delta d_2 \alpha,$ $\Delta D_2 \alpha$	Pitch diameter equivalent of variation in flank angles	
<i>s<sub>rs</sub></i>	rounded root of external thread		$\Delta d_2 \lambda,$ $\Delta D_2 \lambda$	Pitch diameter equivalent of variation in pitch (lead)	
<i>s<sub>cn</sub></i>	rounded crest of internal thread				
<i>s<sub>rn</sub></i>	rounded root of internal thread				

GENERAL NOTE: Refer to ANSI/ASME B1.7M for latest symbol identification. Greek alphabet is below.

A α Alpha	Δ δ Delta	H η Eta	K κ Kappa	N ν Nu	Π π Pi	T τ Tau	X χ Chi
B β Beta	E ε Epsilon	Θ θ Theta	Λ λ Lambda	Ξ ξ Xi	P ρ Rho	Υ υ Upsilon	Ψ ψ Psi
Γ γ Gamma	Z ζ Zeta	I ι Iota	M μ Mu	Ο ο Omicron	Σ σ Sigma	Φ φ Phi	Ω ω Omega

Major diameter of internal thread is  $D$ . Pitch diameter of internal thread is  $D_2$ . Minor diameter of internal thread

$$\begin{aligned} D_1 &= D - 2h_n \\ &= D - 1.08253P \end{aligned}$$

## 11 TABLES OF BASIC DIMENSIONS

### 11.1 Table Content

The basic dimensions tabulated in Tables 8 through 18 include major diameter, pitch diameter, minor diameter of external threads, minor diameter of internal threads, lead angle, cross-sectional area at the minor diameter, and the tensile stress area.

### 11.2 Thread Series

Basic dimensions are given for each of the standard series threads.

## 12 TABLES OF ALLOWANCE AND TOLERANCE FOR STANDARD SERIES THREADS (UN/UNR)

### 12.1 Table Content

Tables 19 through 30 provide the allowance for Classes 1A and 2A (external threads); major diameter tolerance for Classes 1A, 2A, and 3A (external threads); pitch diameter tolerance for Classes 1B, 2B, and 3B (internal threads); and minor diameter tolerance for Classes 1B, 2B, and 3B (internal threads).

### 12.2 Relationship to Limits of Size

The allowance and tolerance values given in this Section can be combined with the basic dimensions given in Section 11 to calculate limits of size as explained in Section 8.

Final figures may have 0.0001 difference between the limited values calculated in this manner and the standard values in Table 3A, due to the use of rounded four decimal place numbers.

## 13 TABLES OF ALLOWANCE AND TOLERANCE FOR THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS)

### 13.1 Table Content

Tables 31 through 40 provide the allowance for Classes 1A and 2A (external threads); major diameter tolerance for Classes 1A, 2A, and 3A (external threads); pitch diameter tolerance for Classes 1B, 2B, and 3B (internal threads); and minor diameter tolerance for Classes 1B, 2B, and 3B (internal threads).

### 13.2 Relationship to Limits of Size

The allowance and tolerance values given in this Section can be combined with the basic dimensions given in Section 11 to calculate limits of size as explained in Section 8.

TABLE 8 BASIC DIMENSIONS FOR COARSE THREAD SERIES (UNC/UNRC)

Nominal Size (1)	Basic Major Diameter $D$ , in.	Threads/in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
						deg.	min		
1 (0.073)*	0.0730	64	0.0629	0.0544	0.0561	4	31	0.00218	0.00263
2 (0.086)	0.0860	56	0.0744	0.0648	0.0667	4	22	0.00310	0.00370
3 (0.099)*	0.0990	48	0.0855	0.0741	0.0764	4	26	0.00406	0.00487
4 (0.112)	0.1120	40	0.0958	0.0822	0.0849	4	45	0.00496	0.00604
5 (0.125)	0.1250	40	0.1088	0.0952	0.0979	4	11	0.00672	0.00796
6 (0.138)	0.1380	32	0.1177	0.1008	0.1042	4	50	0.00745	0.00909
8 (0.164)	0.1640	32	0.1437	0.1268	0.1302	3	58	0.01196	0.0140
10 (0.190)	0.1900	24	0.1629	0.1404	0.1449	4	39	0.01450	0.0175
12 (0.216)*	0.2160	24	0.1889	0.1664	0.1709	4	1	0.0206	0.0242
1/4	0.2500	20	0.2175	0.1905	0.1959	4	11	0.0269	0.0318
5/16	0.3125	18	0.2764	0.2464	0.2524	3	40	0.0454	0.0524
3/8	0.3750	16	0.3344	0.3005	0.3073	3	24	0.0678	0.0775
7/16	0.4375	14	0.3911	0.3525	0.3602	3	20	0.0933	0.1063
1/2	0.5000	13	0.4500	0.4084	0.4167	3	7	0.1257	0.1419
9/16	0.5625	12	0.5084	0.4633	0.4723	2	59	0.162	0.182
5/8	0.6250	11	0.5660	0.5168	0.5266	2	56	0.202	0.226
3/4	0.7500	10	0.6850	0.6309	0.6417	2	40	0.302	0.334
7/8	0.8750	9	0.8028	0.7427	0.7547	2	31	0.419	0.462
1	1.0000	8	0.9188	0.8512	0.8647	2	29	0.551	0.606
1 1/8	1.1250	7	1.0322	0.9549	0.9704	2	31	0.693	0.763
1 1/4	1.2500	7	1.1572	1.0799	1.0954	2	15	0.890	0.969
1 3/8	1.3750	6	1.2667	1.1766	1.1946	2	24	1.054	1.155
1 1/2	1.5000	6	1.3917	1.3016	1.3196	2	11	1.294	1.405
1 3/4	1.7500	5	1.6201	1.5119	1.5335	2	15	1.74	1.90
2	2.0000	4 1/2	1.8557	1.7353	1.7594	2	11	2.30	2.50
2 1/4	2.2500	4 1/2	2.1057	1.9853	2.0094	1	55	3.02	3.25
2 1/2	2.5000	4	2.3376	2.2023	2.2294	1	57	3.72	4.00
2 3/4	2.7500	4	2.5876	2.4523	2.4794	1	46	4.62	4.93
3	3.0000	4	2.8376	2.7023	2.7294	1	36	5.62	5.97
3 1/4	3.2500	4	3.0876	2.9523	2.9794	1	29	6.72	7.10
3 1/2	3.5000	4	3.3376	3.2023	3.2294	1	22	7.92	8.33
3 3/4	3.7500	4	3.5876	3.4523	3.4794	1	16	9.21	9.66
4	4.0000	4	3.8376	3.7023	3.7294	1	11	10.61	11.08

## NOTES:

- (1) Asterisks denote secondary sizes.  
(2) See formulas in Appendix B, para. B1.



TABLE 9 BASIC DIMENSIONS FOR FINE THREAD SERIES (UNF/UNRF)

Nominal Size (1)	Basic Major Diameter $D$ , in.	Threads/in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
						deg.	min		
0 (0.060)	0.0600	80	0.0519	0.0451	0.0465	4	23	0.00151	0.00180
1 (0.073)*	0.0730	72	0.0640	0.0565	0.0580	3	57	0.00237	0.00278
2 (0.086)	0.0860	64	0.0759	0.0674	0.0691	3	45	0.00339	0.00394
3 (0.099)*	0.0990	56	0.0874	0.0778	0.0797	3	43	0.00451	0.00523
4 (0.112)	0.1120	48	0.0985	0.0871	0.0894	3	51	0.00566	0.00661
5 (0.125)	0.1250	44	0.1102	0.0979	0.1004	3	45	0.00716	0.00830
6 (0.138)	0.1380	40	0.1218	0.1082	0.1109	3	44	0.00874	0.01015
8 (0.164)	0.1640	36	0.1460	0.1309	0.1339	3	28	0.01285	0.01474
10 (0.190)	0.1900	32	0.1697	0.1528	0.1562	3	21	0.0175	0.0200
12 (0.216)*	0.2160	28	0.1928	0.1734	0.1773	3	22	0.0226	0.0258
1/4	0.2500	28	0.2268	0.2074	0.2113	2	52	0.0326	0.0364
5/16	0.3125	24	0.2854	0.2629	0.2674	2	40	0.0524	0.0580
3/8	0.3750	24	0.3479	0.3254	0.3299	2	11	0.0809	0.0878
7/16	0.4375	20	0.4050	0.3780	0.3834	2	15	0.1090	0.1187
1/2	0.5000	20	0.4675	0.4405	0.4459	1	57	0.1486	0.1599
5/8	0.5625	18	0.5264	0.4964	0.5024	1	55	0.189	0.203
3/4	0.6250	18	0.5889	0.5589	0.5649	1	43	0.240	0.256
7/8	0.7500	16	0.7094	0.6763	0.6823	1	36	0.351	0.373
1	0.8750	14	0.8286	0.7900	0.7977	1	34	0.480	0.509
1	1.0000	12	0.9459	0.9001	0.9098	1	36	0.625	0.663
1 1/8	1.1250	12	1.0709	1.0258	1.0348	1	25	0.812	0.856
1 1/4	1.2500	12	1.1959	1.1508	1.1598	1	16	1.024	1.073
1 3/8	1.3750	12	1.3209	1.2758	1.2848	1	9	1.260	1.315
1 1/2	1.5000	12	1.4459	1.4008	1.4098	1	3	1.521	1.581

## NOTES:

- (1) Asterisks denote secondary sizes.  
(2) See formulas in Appendix B, para. B1.

**TABLE 10 BASIC DIMENSIONS FOR EXTRA-FINE THREAD SERIES (UNEF/UNREF)**

Nominal Size, in.		Basic Major Diameter $D$ , in.	Threads/in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_f$ , sq in.	Tensile Stress Area, sq in. (1)
Primary	Secondary						deg.	min		
...	12 (0.216)	0.2160	32	0.1957	0.1788	0.1822	2	55	0.0242	0.0270
1/4	...	0.2500	32	0.2297	0.2128	0.2162	2	29	0.0344	0.0379
5/16	...	0.3125	32	0.2922	0.2753	0.2787	1	57	0.0581	0.0625
3/8	...	0.3750	32	0.3547	0.3378	0.3412	1	36	0.0878	0.0932
7/16	...	0.4375	28	0.4143	0.3949	0.3988	1	34	0.1201	0.1274
1/2	...	0.5000	28	0.4768	0.4574	0.4613	1	22	0.162	0.170
9/16	...	0.5625	24	0.5354	0.5129	0.5174	1	25	0.203	0.214
5/8	...	0.6250	24	0.5979	0.5754	0.5799	1	16	0.256	0.268
...	11/16	0.6875	24	0.6604	0.6379	0.6424	1	9	0.315	0.329
3/4	...	0.7500	20	0.7175	0.6905	0.6959	1	16	0.369	0.386
...	13/16	0.8125	20	0.7800	0.7530	0.7584	1	10	0.439	0.458
7/8	...	0.8750	20	0.8425	0.8155	0.8209	1	5	0.515	0.536
...	15/16	0.9375	20	0.9050	0.8780	0.8834	1	0	0.598	0.620
1	...	1.0000	20	0.9675	0.9405	0.9459	0	57	0.687	0.711
...	1 1/16	1.0625	18	1.0264	0.9964	1.0024	0	59	0.770	0.799
1 1/8	...	1.1250	18	1.0889	1.0589	1.0649	0	56	0.871	0.901
...	1 3/16	1.1875	18	1.1514	1.1214	1.1274	0	53	0.977	1.009
1 1/4	...	1.2500	18	1.2139	1.1839	1.1899	0	50	1.090	1.123
...	1 5/16	1.3125	18	1.2764	1.2464	1.2524	0	48	1.208	1.244
1 3/8	...	1.3750	18	1.3389	1.3089	1.3149	0	45	1.333	1.370
...	1 7/16	1.4375	18	1.4014	1.3714	1.3774	0	43	1.464	1.503
1 1/2	...	1.5000	18	1.4639	1.4339	1.4399	0	42	1.60	1.64
...	1 9/16	1.5625	18	1.5264	1.4964	1.5024	0	40	1.74	1.79
1 5/8	...	1.6250	18	1.5889	1.5589	1.5649	0	38	1.89	1.94
...	1 11/16	1.6875	18	1.6514	1.6214	1.6274	0	37	2.05	2.10

**NOTE:**

(1) See formulas in Appendix B, para. B1.

TABLE 11 BASIC DIMENSIONS FOR 4-THREAD SERIES (4-UN/4-UNR)

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
2½*	...	2.5000	2.3376	2.2023	2.2294	1	57	3.72	4.00
...	2½	2.6250	2.4626	2.3273	2.3544	1	51	4.16	4.45
2¾*	...	2.7500	2.5876	2.4523	2.4794	1	46	4.62	4.93
...	2¾	2.8750	2.7126	2.5773	2.6044	1	41	5.11	5.44
3*	...	3.0000	2.8376	2.7023	2.7294	1	36	5.62	5.97
...	3½	3.1250	2.9626	2.8273	2.8544	1	32	6.16	6.52
3¼*	...	3.2500	3.0876	2.9523	2.9794	1	29	6.72	7.10
...	3¾	3.3750	3.2126	3.0773	3.1044	1	25	7.31	7.70
3½*	...	3.5000	3.3376	3.2023	3.2294	1	22	7.92	8.33
...	3¾	3.6250	3.4626	3.3273	3.3544	1	19	8.55	9.00
3¾*	...	3.7500	3.5876	3.4523	3.4794	1	16	9.21	9.66
...	3¾	3.8750	3.7126	3.5773	3.6044	1	14	9.90	10.36
4*	...	4.0000	3.8376	3.7023	3.7294	1	11	10.61	11.08
...	4½	4.1250	3.9626	3.8273	3.8544	1	9	11.34	11.83
4¼*	...	4.2500	4.0876	3.9523	3.9794	1	7	12.10	12.61
...	4¾	4.3750	4.2126	4.0773	4.1044	1	5	12.88	13.41
4½*	...	4.5000	4.3376	4.2023	4.2294	1	3	13.69	14.23
...	4¾	4.6250	4.4626	4.3273	4.3544	1	1	14.52	15.1
4¾*	...	4.7500	4.5876	4.4523	4.4794	1	0	15.4	15.9
...	4¾	4.8750	4.7126	4.5773	4.6044	0	58	16.3	16.8
5	...	5.0000	4.8376	4.7023	4.7294	0	57	17.2	17.8
...	5½	5.1250	4.9626	4.8273	4.8544	0	55	18.1	18.7
5¼*	...	5.2500	5.0876	4.9523	4.9794	0	54	19.1	19.7
...	5¾	5.3750	5.2126	5.0773	5.1044	0	52	20.0	20.7
5½*	...	5.5000	5.3376	5.2023	5.2294	0	51	21.0	21.7
...	5¾	5.6250	5.4626	5.3273	5.3544	0	50	22.1	22.7
5¾*	...	5.7500	5.5876	5.4523	5.4794	0	49	23.1	23.8
...	5¾	5.8750	5.7126	5.5773	5.6044	0	48	24.2	24.9
6	...	6.0000	5.8376	5.7023	5.7294	0	47	25.3	26.0

## NOTES:

- (1) Asterisks denote standard sizes of the UNC series.  
(2) See formulas in Appendix B, para. B1.

TABLE 12 BASIC DIMENSIONS FOR 6-THREAD SERIES (6-UN/6-UNR)

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_p$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
1 $\frac{3}{8}$ *	...	1.3750	1.2667	1.1766	1.1946	2	24	1.054	1.155
...	1 $\frac{1}{16}$	1.4375	1.3292	1.2391	1.2571	2	17	1.171	1.277
1 $\frac{1}{2}$ *	...	1.5000	1.3917	1.3016	1.3196	2	11	1.294	1.405
...	1 $\frac{1}{16}$	1.5625	1.4542	1.3641	1.3821	2	5	1.423	1.54
1 $\frac{5}{8}$	...	1.6250	1.5167	1.4271	1.4446	2	0	1.56	1.68
...	1 $\frac{1}{16}$	1.6875	1.5792	1.4891	1.5071	1	55	1.70	1.83
1 $\frac{3}{4}$	...	1.7500	1.6417	1.5516	1.5696	1	51	1.85	1.98
...	1 $\frac{3}{16}$	1.8125	1.7042	1.6141	1.6321	1	47	2.00	2.14
1 $\frac{7}{8}$	...	1.8750	1.7667	1.6766	1.6946	1	43	2.16	2.30
...	1 $\frac{5}{16}$	1.9375	1.8292	1.7391	1.7571	1	40	2.33	2.47
2	...	2.0000	1.8917	1.8016	1.8196	1	36	2.50	2.65
...	2 $\frac{1}{8}$	2.1250	2.0167	1.9266	1.9446	1	30	2.86	3.03
2 $\frac{1}{4}$	...	2.2500	2.1417	2.0516	2.0696	1	25	3.25	3.42
...	2 $\frac{3}{8}$	2.3750	2.2667	2.1766	2.1946	1	20	3.66	3.85
2 $\frac{1}{2}$	...	2.5000	2.3917	2.3016	2.3196	1	16	4.10	4.29
...	2 $\frac{5}{8}$	2.6250	2.5167	2.4266	2.4446	1	12	4.56	4.76
2 $\frac{3}{4}$	...	2.7500	2.6417	2.5516	2.5696	1	9	5.04	5.26
...	2 $\frac{7}{8}$	2.8750	2.7667	2.6766	2.6946	1	6	5.55	5.78
3	...	3.0000	2.8917	2.8016	2.8196	1	3	6.09	6.33
...	3 $\frac{1}{8}$	3.1250	3.0167	2.9266	2.9446	1	0	6.64	6.89
3 $\frac{1}{4}$	...	3.2500	3.1417	3.0516	3.0696	0	58	7.23	7.49
...	3 $\frac{3}{8}$	3.3750	3.2667	3.1766	3.1946	0	56	7.84	8.11
3 $\frac{1}{2}$	...	3.5000	3.3917	3.3016	3.3196	0	54	8.47	8.75
...	3 $\frac{5}{8}$	3.6250	3.5167	3.4266	3.4446	0	52	9.12	9.42
3 $\frac{3}{4}$	...	3.7500	3.6417	3.5516	3.5696	0	50	9.81	10.11
...	3 $\frac{7}{8}$	3.8750	3.7667	3.6766	3.6946	0	48	10.51	10.83
4	...	4.0000	3.8917	3.8016	3.8196	0	47	11.24	11.57
...	4 $\frac{1}{8}$	4.1250	4.0167	3.9266	3.9446	0	45	12.00	12.33
4 $\frac{1}{4}$	...	4.2500	4.1417	4.0516	4.0696	0	44	12.78	13.12
...	4 $\frac{3}{8}$	4.3750	4.2667	4.1766	4.1946	0	43	13.58	13.94
4 $\frac{1}{2}$	...	4.5000	4.3917	4.3016	4.3196	0	42	14.41	14.78
...	4 $\frac{5}{8}$	4.6250	4.5167	4.4266	4.4446	0	40	15.3	15.6
4 $\frac{3}{4}$	...	4.7500	4.6417	4.5516	4.5696	0	39	16.1	16.5
...	4 $\frac{7}{8}$	4.8750	4.7667	4.6766	4.6946	0	38	17.0	17.5
5	...	5.0000	4.8917	4.8016	4.8196	0	37	18.0	18.4
...	5 $\frac{1}{8}$	5.1250	5.0167	4.9266	4.9446	0	36	18.9	19.3
5 $\frac{1}{4}$	...	5.2500	5.1417	5.0516	5.0696	0	35	19.9	20.3
...	5 $\frac{3}{8}$	5.3750	5.2667	5.1766	5.1946	0	35	20.9	21.3
5 $\frac{1}{2}$	...	5.5000	5.3917	5.3016	5.3196	0	34	21.9	22.4
...	5 $\frac{5}{8}$	5.6250	5.5167	5.4266	5.4446	0	33	23.0	23.4
5 $\frac{3}{4}$	...	5.7500	5.6417	5.5516	5.5696	0	32	24.0	24.5
...	5 $\frac{7}{8}$	5.8750	5.7667	5.6766	5.6946	0	32	25.1	25.6
6	...	6.0000	5.8917	5.8016	5.8196	0	31	26.3	26.8

## NOTES:

- (1) Asterisks denote standard sizes of the UNC series.  
(2) See formulas in Appendix B, para. B1.

TABLE 13 BASIC DIMENSIONS FOR 8-THREAD SERIES (8-UN/8-UNR)

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
1*	...	1.0000	0.9188	0.8512	0.8647	2	29	0.551	0.606
...	1 <sup>1</sup> / <sub>16</sub>	1.0625	0.9813	0.9137	0.9272	2	19	0.636	0.695
1 <sup>1</sup> / <sub>8</sub>	...	1.1250	1.0438	0.9792	0.9897	2	11	0.728	0.790
...	1 <sup>3</sup> / <sub>16</sub>	1.1875	1.1063	1.0387	1.0522	2	4	0.825	0.892
1 <sup>1</sup> / <sub>4</sub>	...	1.2500	1.1688	1.1012	1.1147	1	57	0.929	1.000
...	1 <sup>5</sup> / <sub>16</sub>	1.5625	1.2313	1.1637	1.1772	1	51	1.039	1.114
1 <sup>3</sup> / <sub>8</sub>	...	1.3750	1.2938	1.2262	1.2397	1	46	1.155	1.233
...	1 <sup>7</sup> / <sub>16</sub>	1.4375	1.3563	1.2887	1.3022	1	41	1.277	1.360
1 <sup>1</sup> / <sub>2</sub>	...	1.5000	1.4188	1.3512	1.3647	1	36	1.405	1.492
...	1 <sup>9</sup> / <sub>16</sub>	1.5625	1.4813	1.4137	1.4272	1	32	1.54	1.63
1 <sup>5</sup> / <sub>8</sub>	...	1.6250	1.5438	1.4806	1.4897	1	29	1.68	1.78
...	1 <sup>11</sup> / <sub>16</sub>	1.6875	1.6063	1.5387	1.5522	1	25	1.83	1.93
1 <sup>3</sup> / <sub>4</sub>	...	1.7500	1.6688	1.6012	1.6147	1	22	1.98	2.08
...	1 <sup>13</sup> / <sub>16</sub>	1.8125	1.7313	1.6637	1.6772	1	19	2.14	2.25
1 <sup>7</sup> / <sub>8</sub>	...	1.8750	1.7938	1.7262	1.7397	1	16	2.30	2.41
...	1 <sup>15</sup> / <sub>16</sub>	1.9375	1.8563	1.7887	1.8022	1	14	2.47	2.59
2	...	2.0000	1.9188	1.8512	1.8647	1	11	2.65	2.77
...	2 <sup>1</sup> / <sub>8</sub>	2.1250	2.0438	1.9762	1.9897	1	7	3.03	3.15
2 <sup>1</sup> / <sub>4</sub>	...	2.2500	2.1688	2.1012	2.1147	1	3	3.42	3.56
...	2 <sup>3</sup> / <sub>8</sub>	2.3750	2.2938	2.2262	2.2397	1	0	3.85	3.99
2 <sup>1</sup> / <sub>2</sub>	...	2.5000	2.4188	2.3512	2.3647	0	57	4.29	4.44
...	2 <sup>5</sup> / <sub>8</sub>	2.6250	2.5438	2.4762	2.4897	0	54	4.76	4.92
2 <sup>3</sup> / <sub>4</sub>	...	2.7500	2.6688	2.6012	2.6147	0	51	5.26	5.43
...	2 <sup>7</sup> / <sub>8</sub>	2.8750	2.7938	2.7262	2.7397	0	49	5.78	5.95
3	...	3.0000	2.9188	2.8512	2.8647	0	47	6.32	6.51
...	3 <sup>1</sup> / <sub>8</sub>	3.1250	3.0438	2.9762	2.9897	0	45	6.89	7.08
3 <sup>1</sup> / <sub>4</sub>	...	3.2500	3.1688	3.1012	3.1147	0	43	7.49	7.69
...	3 <sup>3</sup> / <sub>8</sub>	3.3750	3.2938	3.2262	3.2397	0	42	8.11	8.31
3 <sup>1</sup> / <sub>2</sub>	...	3.5000	3.4188	3.3512	3.3647	0	40	8.75	8.96
...	3 <sup>5</sup> / <sub>8</sub>	3.6250	3.5438	3.4762	3.4897	0	39	9.42	9.64
3 <sup>3</sup> / <sub>4</sub>	...	3.7500	3.6688	3.6012	3.6147	0	37	10.11	10.34
...	3 <sup>7</sup> / <sub>8</sub>	3.8750	3.7938	3.7262	3.7397	0	36	10.83	11.06
4	...	4.0000	3.9188	3.8512	3.8647	0	35	11.57	11.81
...	4 <sup>1</sup> / <sub>8</sub>	4.1250	4.0438	3.9762	3.9897	0	34	12.34	12.59
4 <sup>1</sup> / <sub>4</sub>	...	4.2500	4.1688	4.1012	4.1147	0	33	13.12	13.38
...	4 <sup>3</sup> / <sub>8</sub>	4.3750	4.2938	4.2262	4.2397	0	32	13.94	14.21
4 <sup>1</sup> / <sub>2</sub>	...	4.5000	4.4188	4.3512	4.3647	0	31	14.78	15.1
...	4 <sup>5</sup> / <sub>8</sub>	4.6250	4.5438	4.4762	4.4897	0	30	15.6	15.9
4 <sup>3</sup> / <sub>4</sub>	...	4.7500	4.6688	4.6012	4.6147	0	29	16.5	16.8
...	4 <sup>7</sup> / <sub>8</sub>	4.8750	4.7938	4.7262	4.7397	0	29	17.4	17.7
5	...	5.0000	4.9188	4.8512	4.8647	0	28	18.4	18.7
...	5 <sup>1</sup> / <sub>8</sub>	5.1250	5.0438	4.9762	4.9897	0	27	19.3	19.7
5 <sup>1</sup> / <sub>4</sub>	...	5.2500	5.1688	5.1012	5.1147	0	26	20.3	20.7
...	5 <sup>3</sup> / <sub>8</sub>	5.3750	5.2938	5.2262	5.2397	0	26	21.3	21.7

TABLE 13 BASIC DIMENSIONS FOR 8-THREAD SERIES (8-UN/8-UNR) (CONT'D)

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_p$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
5½	...	5.5000	5.4188	5.3512	5.3647	0	25	22.4	22.7
...	5⅝	5.6250	5.5438	5.4762	5.4897	0	25	23.4	23.8
5¾	...	5.7500	5.6688	5.6012	5.6147	0	24	24.5	24.9
...	5⅞	5.8750	5.7938	5.7262	5.7397	0	24	25.6	26.0
6	...	6.0000	5.9188	5.8512	5.8647	0	23	26.8	27.1

## GENERAL NOTE:

The 8-UN specified limits for all sizes to and including 6 in. are shown in Table 3A based on a length of engagement equal to the basic major (nominal) diameter.

## NOTES:

- (1) Asterisk denotes standard size of the UNC series.  
 (2) See formulas in Appendix B, para. B1.

**TABLE 14 BASIC DIMENSIONS FOR 12-THREAD SERIES (12-UN/12-UNR)**

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
9/16*	...	0.5625	0.5084	0.4633	0.4723	2	59	0.162	0.182
5/8	...	0.6250	0.5709	0.5258	0.5348	2	40	0.210	0.232
...	11/16	0.6875	0.6334	0.5883	0.5973	2	24	0.264	0.289
3/4	...	0.7500	0.6959	0.6508	0.6598	2	11	0.323	0.351
...	13/16	0.8125	0.7584	0.7133	0.7223	2	0	0.390	0.420
7/8	...	0.8750	0.8209	0.7758	0.7848	1	51	0.462	0.495
...	15/16	0.9375	0.8834	0.8383	0.8473	1	43	0.540	0.576
1*	...	1.0000	0.9459	0.9008	0.9098	1	36	0.625	0.663
...	11/16	1.0625	1.0084	0.9633	0.9723	1	30	0.715	0.756
1 1/8*	...	1.1250	1.0709	1.0258	1.0348	1	25	0.812	0.856
...	1 3/16	1.1875	1.1334	1.0883	1.0973	1	20	0.915	0.961
1 1/4*	...	1.2500	1.1959	1.1508	1.1598	1	16	1.024	1.073
...	1 5/16	1.3125	1.2584	1.2133	1.2223	1	12	1.139	1.191
1 3/8*	...	1.3750	1.3209	1.2758	1.2848	1	9	1.260	1.315
...	1 7/16	1.4375	1.3834	1.3383	1.3473	1	6	1.388	1.445
1 1/2*	...	1.5000	1.4459	1.4008	1.4098	1	3	1.52	1.58
...	1 9/16	1.5625	1.5084	1.4633	1.4723	1	0	1.66	1.72
1 5/8	...	1.6250	1.5709	1.5258	1.5348	0	58	1.81	1.87
...	1 11/16	1.6875	1.6334	1.5883	1.5973	0	56	1.96	2.03
1 3/4	...	1.7500	1.6959	1.6508	1.6598	0	54	2.12	2.19
...	1 13/16	1.8125	1.7584	1.7133	1.7223	0	52	2.28	2.35
1 7/8	...	1.8750	1.8209	1.7758	1.7848	0	50	2.45	2.53
...	1 15/16	1.9375	1.8834	1.8383	1.8473	0	48	2.63	2.71
2	...	2.0000	1.9459	1.9008	1.9098	0	47	2.81	2.89
...	2 1/8	2.1250	2.0709	2.0258	2.0348	0	44	3.19	3.28
2 1/4	...	2.2500	2.1959	2.1508	2.1598	0	42	3.60	3.69
...	2 3/8	2.3750	2.3209	2.2758	2.2848	0	39	4.04	4.13
2 1/2	...	2.5000	2.4459	2.4008	2.4098	0	37	4.49	4.60
...	2 5/8	2.6250	2.5709	2.5258	2.5348	0	35	4.97	5.08
2 3/4	...	2.7500	2.6959	2.6508	2.6598	0	34	5.48	5.59
...	2 7/8	2.8750	2.8209	2.7758	2.7848	0	32	6.01	6.13
3	...	3.0000	2.9459	2.9008	2.9098	0	31	6.57	6.69
...	3 1/8	3.1250	3.0709	3.0258	3.0348	0	30	7.15	7.28
3 1/4	...	3.2500	3.1959	3.1508	3.1598	0	29	7.75	7.89
...	3 3/8	3.3750	3.3209	3.2758	3.2848	0	27	8.38	8.52
3 1/2	...	3.5000	3.4459	3.4008	3.4098	0	26	9.03	9.18
...	3 5/8	3.6250	3.5709	3.5258	3.5348	0	26	9.71	9.86
3 3/4	...	3.7500	3.6959	3.6508	3.6598	0	25	10.42	10.57
...	3 7/8	3.8750	3.8209	3.7758	3.7848	0	24	11.14	11.30
4	...	4.0000	3.9459	3.9008	3.9098	0	23	11.90	12.06
...	4 1/8	4.1250	4.0709	4.0258	4.0348	0	22	12.67	12.84
4 1/4	...	4.2500	4.1959	4.1508	4.1598	0	22	13.47	13.65
...	4 3/8	4.3750	4.3209	4.2758	4.2848	0	21	14.30	14.48

**TABLE 14 BASIC DIMENSIONS FOR 12-THREAD SERIES (12-UN/12-UNR) (CONT'D)**

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
4½	...	4.5000	4.4459	4.4008	4.4098	0	21	15.1	15.3
...	4⅝	4.6250	4.5709	4.5258	4.5348	0	20	16.0	16.2
4¾	...	4.7500	4.6959	4.6508	4.6598	0	19	16.9	17.1
...	4⅞	4.8750	4.8209	4.7758	4.7848	0	19	17.8	18.0
5	...	5.0000	4.9459	4.9008	4.9098	0	18	18.8	19.0
...	5⅛	5.1250	5.0709	5.0258	5.0348	0	18	19.8	20.0
5¼	...	5.2500	5.1959	5.1508	5.1598	0	18	20.8	21.0
...	5⅜	5.3750	5.3209	5.2758	5.2848	0	17	21.8	22.0
5½	...	5.5000	5.4459	5.4008	5.4098	0	17	22.8	23.1
...	5⅝	5.6250	5.5709	5.5258	5.5348	0	16	23.9	24.1
5¾	...	5.7500	5.6959	5.6508	5.6598	0	16	25.0	25.2
...	5⅞	5.8750	5.8209	5.7758	5.7848	0	16	26.1	26.4
6	...	6.0000	5.9459	5.9008	5.9098	0	15	27.3	27.5

**NOTES:**

- (1) Asterisks denote standard sizes of the UNC or UNF series.
- (2) See formulas in Appendix B, para. B1.



**TABLE 15 BASIC DIMENSIONS FOR 16-THREAD SERIES (16-UN/16-UNR)**

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_s$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
3/8*	...	0.3750	0.3344	0.3005	0.3073	3	24	0.0678	0.0775
7/16	...	0.4375	0.3969	0.3630	0.3698	2	52	0.0997	0.1114
1/2	...	0.5000	0.4594	0.4255	0.4323	2	29	0.1378	0.151
9/16	...	0.5625	0.5219	0.4880	0.4948	2	11	0.182	0.198
5/8	...	0.6250	0.5844	0.5505	0.5573	1	57	0.232	0.250
...	1 1/16	0.6875	0.6469	0.6130	0.6198	1	46	0.289	0.308
3/4*	...	0.7500	0.7094	0.6755	0.6823	1	36	0.351	0.373
...	1 3/16	0.8125	0.7719	0.7380	0.7448	1	29	0.420	0.444
7/8	...	0.8750	0.8344	0.8005	0.8073	1	22	0.495	0.521
...	1 5/16	0.9375	0.8969	0.8630	0.8698	1	16	0.576	0.604
1	...	1.0000	0.9594	0.9255	0.9323	1	11	0.663	0.693
...	1 1/16	1.0625	1.0219	0.9880	0.9948	1	7	0.756	0.788
1 1/8	...	1.1250	1.0844	1.0505	1.0573	1	3	0.856	0.889
...	1 3/16	1.1875	1.1469	1.1130	1.1198	1	0	0.961	0.997
1 1/4	...	1.2500	1.2094	1.1755	1.1823	0	57	1.073	1.111
...	1 5/16	1.3125	1.2719	1.2380	1.2448	0	54	1.191	1.230
1 3/8	...	1.3750	1.3344	1.3005	1.3073	0	51	1.315	1.356
...	1 7/16	1.4375	1.3969	1.3630	1.3698	0	49	1.445	1.488
1 1/2	...	1.5000	1.4594	1.4255	1.4323	0	47	1.58	1.63
...	1 9/16	1.5625	1.5219	1.4880	1.4948	0	45	1.72	1.77
1 5/8	...	1.6250	1.5844	1.5505	1.5573	0	43	1.87	1.92
...	1 11/16	1.6875	1.6469	1.6130	1.6198	0	42	2.03	2.08
1 3/4	...	1.7500	1.7094	1.6755	1.6823	0	40	2.19	2.24
...	1 13/16	1.8125	1.7719	1.7380	1.7448	0	39	2.35	2.41
1 7/8	...	1.8750	1.8344	1.8005	1.8073	0	37	2.53	2.58
...	1 15/16	1.9375	1.8969	1.8630	1.8698	0	36	2.71	2.77
2	...	2.0000	1.9594	1.9255	1.9323	0	35	2.89	2.95
...	2 1/8	2.1250	2.0844	2.0505	2.0573	0	33	3.28	3.35
2 1/4	...	2.2500	2.2094	2.1755	2.1823	0	31	3.69	3.76
...	2 3/8	2.3750	2.3344	2.3005	2.3073	0	29	4.13	4.21
2 1/2	...	2.5000	2.4594	2.4255	2.4323	0	28	4.60	4.67
...	2 5/8	2.6250	2.5844	2.5505	2.5573	0	26	5.08	5.16
2 3/4	...	2.7500	2.7094	2.6755	2.6823	0	25	5.59	5.68
...	2 7/8	2.8750	2.8344	2.8005	2.8073	0	24	6.13	6.22
3	...	3.0000	2.9594	2.9255	2.9323	0	23	6.69	6.78
...	3 1/8	3.1250	3.0844	3.0505	3.0573	0	22	7.28	7.37
3 1/4	...	3.2500	3.2094	3.1755	3.1823	0	21	7.89	7.99
...	3 3/8	3.3750	3.3344	3.3005	3.3073	0	21	8.52	8.63
3 1/2	...	3.5000	3.4594	3.4255	3.4323	0	20	9.18	9.29
...	3 5/8	3.6250	3.5844	3.5505	3.5573	0	19	9.86	9.98
3 3/4	...	3.7500	3.7094	3.6755	3.6823	0	18	10.57	10.69
...	3 7/8	3.8750	3.8344	3.8005	3.8073	0	18	11.30	11.43
4	...	4.0000	3.9594	3.9255	3.9323	0	17	12.06	12.19
...	4 1/8	4.1250	4.0844	4.0505	4.0573	0	17	12.84	12.97
4 1/4	...	4.2500	4.2094	4.1755	4.1823	0	16	13.65	13.78
...	4 3/8	4.3750	4.3344	4.3005	4.3073	0	16	14.48	14.62

**TABLE 15 BASIC DIMENSIONS FOR 16-THREAD SERIES (16-UN/16-UNR) (CONT'D)**

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
4½	...	4.5000	4.4594	4.4255	4.4323	0	15	15.34	15.5
...	4⅝	4.6250	4.5844	4.5505	4.5573	0	15	16.2	16.4
4¾	...	4.7500	4.7094	4.6755	4.6823	0	15	17.1	17.3
...	4⅞	4.8750	4.8344	4.8005	4.8073	0	14	18.0	18.2
5	...	5.0000	4.9594	4.9255	4.9323	0	14	19.0	19.2
...	5⅛	5.1250	5.0844	5.0505	5.0573	0	13	20.0	20.1
5¼	...	5.2500	5.2094	5.1755	5.1823	0	13	21.0	21.1
...	5⅜	5.3750	5.3344	5.3005	5.3073	0	13	22.0	22.2
5½	...	5.5000	5.4594	5.4255	5.4323	0	13	23.1	23.2
...	5⅝	5.6250	5.5844	5.5505	5.5573	0	12	24.1	24.3
5¾	...	5.7500	5.7094	5.6755	5.6823	0	12	25.2	25.4
...	5⅞	5.8750	5.8344	5.8005	5.8073	0	12	26.4	26.5
6	...	6.0000	5.9594	5.9255	5.9323	0	11	27.5	27.7

**NOTES:**

- (1) Asterisks denote standard sizes of the UNC or UNF series.
- (2) See formulas in Appendix B, para. B1.

TABLE 16 BASIC DIMENSIONS FOR 20-THREAD SERIES (20-UN/20-UNR)

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
1/4*	...	0.2500	0.2175	0.1905	0.1959	4	11	0.0269	0.0318
5/16	...	0.3125	0.2800	0.2530	0.2584	3	15	0.0481	0.0547
3/8	...	0.3750	0.3425	0.3155	0.3209	2	40	0.0755	0.0836
7/16*	...	0.4375	0.4050	0.3780	0.3834	2	15	0.1090	0.1187
1/2*	...	0.5000	0.4675	0.4405	0.4459	1	57	0.1486	0.160
9/16	...	0.5625	0.5300	0.5030	0.5084	1	43	0.194	0.207
5/8	...	0.6250	0.5925	0.5655	0.5709	1	32	0.246	0.261
...	11/16	0.6875	0.6550	0.6280	0.6334	1	24	0.304	0.320
3/4*	...	0.7500	0.7175	0.6905	0.6959	1	16	0.369	0.386
...	13/16*	0.8125	0.7800	0.7530	0.7584	1	10	0.439	0.458
7/8*	...	0.8750	0.8425	0.8155	0.8209	1	5	0.515	0.536
...	15/16*	0.9375	0.9050	0.8780	0.8834	1	0	0.598	0.620
1*	...	1.0000	0.9675	0.9405	0.9459	0	57	0.687	0.711
...	11/16	1.0625	1.0300	1.0030	1.0084	0	53	0.782	0.807
1 1/8	...	1.1250	1.0925	1.0655	1.0709	0	50	0.882	0.910
...	1 3/16	1.1875	1.1550	1.1280	1.1334	0	47	0.990	1.018
1 1/4	...	1.2500	1.2175	1.1905	1.1959	0	45	1.103	1.133
...	1 5/16	1.3125	1.2800	1.2530	1.2584	0	43	1.222	1.254
1 3/8	...	1.3750	1.3425	1.3155	1.3209	0	41	1.348	1.382
...	1 7/16	1.4375	1.4050	1.3780	1.3834	0	39	1.479	1.51
1 1/2	...	1.5000	1.4675	1.4405	1.4459	0	37	1.62	1.65
...	1 9/16	1.5625	1.5300	1.5030	1.5084	0	36	1.76	1.80
1 5/8	...	1.6250	1.5925	1.5655	1.5709	0	34	1.91	1.95
...	1 11/16	1.6875	1.6550	1.6280	1.6334	0	33	2.07	2.11
1 3/4	...	1.7500	1.7175	1.6905	1.6959	0	32	2.23	2.27
...	1 13/16	1.8125	1.7800	1.7530	1.7584	0	31	2.40	2.44
1 7/8	...	1.8750	1.8425	1.8155	1.8209	0	30	2.57	2.62
...	1 15/16	1.9375	1.9050	1.8780	1.8834	0	29	2.75	2.80
2	...	2.0000	1.9675	1.9405	1.9459	0	28	2.94	2.99
...	2 1/8	2.1250	2.0925	2.0655	2.0709	0	26	3.33	3.39
2 1/4	...	2.2500	2.2175	2.1905	2.1959	0	25	3.75	3.81
...	2 3/8	2.3750	2.3425	2.3155	2.3209	0	23	4.19	4.25
2 1/2	...	2.5000	2.4675	2.4405	2.4459	0	22	4.66	4.72
...	2 5/8	2.6250	2.5925	2.5655	2.5709	0	21	5.15	5.21
2 3/4	...	2.7500	2.7175	2.6905	2.6959	0	20	5.66	5.73
...	2 7/8	2.8750	2.8425	2.8155	2.8209	0	19	6.20	6.27
3	...	3.0000	2.9675	2.9405	2.9459	0	18	6.77	6.84

NOTES:

- (1) Asterisks denote standard sizes of the UNC, UNF, or UNEF series.
- (2) See formulas in Appendix B, para. B1.

TABLE 17 BASIC DIMENSIONS FOR 28-THREAD SERIES (28-UN/28-UNR)

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
...	12* (0.216)	0.2160	0.1928	0.1734	0.1773	3	22	0.0226	0.0258
1/4*	...	0.2500	0.2268	0.2074	0.2113	2	52	0.0326	0.0364
5/16	...	0.3125	0.2893	0.2699	0.2738	2	15	0.0556	0.0606
3/8	...	0.3750	0.3518	0.3324	0.3363	1	51	0.0848	0.0909
7/16*	...	0.4375	0.4143	0.3949	0.3988	1	34	0.1201	0.1274
1/2*	...	0.5000	0.4768	0.4574	0.4613	1	22	0.162	0.170
9/16	...	0.5625	0.5393	0.5199	0.5238	1	12	0.209	0.219
5/8	...	0.6250	0.6018	0.5824	0.5863	1	5	0.263	0.274
...	11/16	0.6875	0.6643	0.6449	0.6488	0	59	0.323	0.335
3/4	...	0.7500	0.7268	0.7074	0.7113	0	54	0.389	0.402
...	13/16	0.8125	0.7893	0.7699	0.7738	0	50	0.461	0.475
7/8	...	0.8750	0.8518	0.8324	0.8363	0	46	0.539	0.554
...	15/16	0.9375	0.9143	0.8949	0.8988	0	43	0.624	0.640
1	...	1.0000	0.9768	0.9574	0.9613	0	40	0.714	0.732
...	11/16	1.0625	1.0393	1.0199	1.0238	0	38	0.811	0.830
1 1/8	...	1.1250	1.1018	1.0824	1.0863	0	35	0.914	0.933
...	13/16	1.1875	1.1643	1.1449	1.1488	0	34	1.023	1.044
1 1/4	...	1.2500	1.2268	1.2074	1.2113	0	32	1.138	1.160
...	15/16	1.3125	1.2893	1.2699	1.2738	0	30	1.259	1.282
1 3/8	...	1.3750	1.3518	1.3324	1.3363	0	29	1.386	1.411
...	17/16	1.4375	1.4143	1.3949	1.3988	0	28	1.52	1.55
1 1/2	...	1.5000	1.4768	1.4574	1.4613	0	26	1.66	1.69

## NOTES:

- (1) Asterisks denote standard sizes of the UNF or UNEF series.  
(2) See formulas in Appendix B, para. B1.

**TABLE 18 BASIC DIMENSIONS FOR 32-THREAD SERIES (32-UN/32-UNR)**

Nominal Size, in. (1)		Basic Major Diameter $D$ , in.	Basic Pitch Diameter $D_2$ , in.	UNR Design Minor Diameter External (Ref.) $d_3$ , in.	Basic Minor Diameter Internal $D_1$ , in.	Lead Angle at Basic Pitch Diameter $\lambda$		Section at Minor Diameter at $D - 2h_b$ , sq in.	Tensile Stress Area, sq in. (2)
Primary	Secondary					deg.	min		
6*	...	0.1380	0.1177	0.1008	0.1042	4	50	0.00745	0.00909
8*	...	0.1640	0.1437	0.1268	0.1302	3	58	0.01196	0.0140
10*	...	0.1900	0.1697	0.1528	0.1562	3	21	0.01750	0.0200
...	12* (0.216)	0.2160	0.1957	0.1788	0.1822	2	55	0.0242	0.0270
1/4*	...	0.2500	0.2297	0.2128	0.2162	2	29	0.0344	0.0379
5/16*	...	0.3125	0.2922	0.2753	0.2787	1	57	0.0581	0.0625
3/8*	...	0.3750	0.3547	0.3378	0.3412	1	36	0.0878	0.0932
7/16	...	0.4375	0.4172	0.4003	0.4037	1	22	0.1237	0.1301
1/2	...	0.5000	0.4797	0.4628	0.4662	1	11	0.166	0.173
9/16	...	0.5625	0.5422	0.5253	0.5287	1	3	0.214	0.222
5/8	...	0.6250	0.6047	0.5878	0.5912	0	57	0.268	0.278
...	1 1/16	0.6875	0.6672	0.6503	0.6537	0	51	0.329	0.339
3/4	...	0.7500	0.7297	0.7128	0.7162	0	47	0.395	0.407
...	1 3/16	0.8125	0.7922	0.7753	0.7787	0	43	0.468	0.480
7/8	...	0.8750	0.8547	0.8378	0.8412	0	40	0.547	0.560
...	1 5/16	0.9375	0.9172	0.9003	0.9037	0	37	0.632	0.646
1	...	1.0000	0.9797	0.9628	0.9662	0	35	0.723	0.738

**NOTES:**

- (1) Asterisks denote standard sizes of the UNC, UNF, or UNEF series.
- (2) See formulas in Appendix B, para. B1.

TABLE 19 INCREMENTS IN PITCH DIAMETER TOLERANCE — CLASS 2A  
 (PD Tolerance =  $0.0015\sqrt[3]{D} + 0.0015\sqrt{LE} + 0.015\sqrt[3]{P^2}$ )

ASME B1.1-1989

UNIFIED INCH SCREW THREADS

Diameter D				Length of Engagement LE												Pitch P			
D	$0.0015\sqrt[3]{D}$	D	$0.0015\sqrt[3]{D}$	Based on (1)			LE	$0.0015 \times \sqrt{LE}$	Based on (1)			LE	$0.0015 \times \sqrt{LE}$	Based on (1)		LE	$0.0015 \times \sqrt{LE}$	Threads/in.	$0.015\sqrt[3]{P^2}$
				1 D for Sizes	9P for TPI	20P for TPI			1 D for Sizes	9P for TPI	20P for TPI			1 D for Sizes	20P for TPI				
0.0600	0.000587	1.9375	0.001870	#0	...	...	0.0600	0.000367	1/2	18	40	0.5000	0.001061	2%	...	2.3750	0.002312	80	0.000808
0.0625	0.000595	2.0000	0.001890	1/16	...	...	0.0625	0.000375	...	...	36	0.5556	0.001118	2 1/2	8	2.5000	0.002372	72	0.000867
0.0730	0.000627	2.1250	0.001928	#1	...	...	0.0730	0.000405	3/16	16	...	0.5625	0.001125	2%	...	2.6250	0.002430	64	0.000938
0.0860	0.000662	2.2500	0.001966	3/64	...	...	0.0781	0.000419	5/8	...	32	0.6250	0.001186	2 3/4	...	2.7500	0.002487	60	0.000979
0.0938	0.000682	2.3750	0.002001	#2	...	...	0.0860	0.000440	...	14	...	0.6429	0.001203	...	7	2.8571	0.002535	56	0.001025
0.0990	0.000694	2.5000	0.002036	3/32	...	...	0.0938	0.000459	1 1/16	...	...	0.6875	0.001244	2 3/4	...	2.8750	0.002543	50	0.001105
0.1120	0.000723	2.6250	0.002069	#3	...	...	0.0990	0.000472	...	13	...	0.6923	0.001248	3	...	3.0000	0.002598	48	0.001136
0.1250	0.000750	2.7500	0.002102	7/64	...	...	0.1094	0.000496	...	...	28	0.7143	0.001268	3%	...	3.1250	0.002652	44	0.001204
0.1380	0.000775	2.8750	0.002133	#4	...	...	0.1120	0.000502	...	...	27	0.7407	0.001291	3 1/4	...	3.2500	0.002704	42	0.001241
0.1640	0.000821	3.0000	0.002163	...	80	...	0.1125	0.000503	3/4	12	...	0.7500	0.001299	...	6	3.3333	0.002739	40	0.001282
0.1875	0.000859	3.1250	0.002193	#5	72	...	0.1250	0.000530	...	11 1/2	...	0.7826	0.001327	3%	...	3.3750	0.002756	36	0.001376
0.1900	0.000862	3.2500	0.002222	#6	...	...	0.1380	0.000557	1 3/16	...	...	0.8125	0.001352	3 1/2	...	3.5000	0.002806	34	0.001429
0.2160	0.000900	3.3750	0.002250	...	64	...	0.1406	0.000562	...	11	...	0.8182	0.001357	3 5/8	...	3.6250	0.002856	32	0.001488
0.2500	0.000945	3.5000	0.002277	3/32	...	...	0.1562	0.000593	...	...	24	0.8333	0.001369	3 3/4	...	3.7500	0.002905	30	0.001554
0.3125	0.001018	3.6250	0.002304	...	56	...	0.1607	0.000601	7/8	...	...	0.8750	0.001403	3 7/8	...	3.8750	0.002953	28	0.001627
0.3750	0.001082	3.7500	0.002330	#8	...	...	0.1640	0.000607	...	10	...	0.9000	0.001423	4	5	4.0000	0.003000	27	0.001667
0.4375	0.001139	3.8750	0.002356	1 1/64	...	...	0.1719	0.000622	1 1/16	...	...	0.9375	0.001452	4 1/8	...	4.1250	0.003047	26	0.001709
0.5000	0.001191	4.0000	0.002381	3/16	48	...	0.1875	0.000650	1	9	20	1.0000	0.001500	4 1/4	...	4.2500	0.003092	24	0.001803
0.5625	0.001238	4.1250	0.002406	#10	...	...	0.1900	0.000654	1 1/16	...	...	1.0625	0.001546	4 3/8	...	4.3750	0.003137	22	0.001910
0.6250	0.001282	4.2500	0.002430	1 3/64	...	...	0.2031	0.000676	...	...	18	1.1111	0.001581	...	4 1/2	4.4444	0.003162	20	0.002036
0.6875	0.001324	4.3750	0.002453	...	44	...	0.2045	0.000678	1 1/8	8	...	1.1250	0.001591	4 1/2	...	4.5000	0.003182	18	0.002184
0.7500	0.001363	4.5000	0.002476	#12	...	...	0.2160	0.000697	1 3/16	...	...	1.1875	0.001635	4 3/8	...	4.6250	0.003226	16	0.002362
0.8125	0.001400	4.6250	0.002499	7/32	...	...	0.2188	0.000702	1 1/4	...	16	1.2500	0.001677	4 3/4	...	4.7500	0.003269	14	0.002582
0.8750	0.001435	4.7500	0.002521	...	40	...	0.2250	0.000712	...	7	...	1.2857	0.001701	4 7/8	...	4.8750	0.003312	13	0.002713
0.9375	0.001468	4.8750	0.002543	1 5/64	...	...	0.2344	0.000726	1 5/16	...	...	1.3125	0.001718	5	4	5.0000	0.003354	12	0.002862
1.0000	0.001500	5.0000	0.002565	1/4	36	80	0.2500	0.000750	1 3/8	...	...	1.3750	0.001759	5 1/8	...	5.1250	0.003396	11 1/2	0.002944
1.0625	0.001531	5.1250	0.002586	1 7/64	...	...	0.2656	0.000773	...	...	14	1.4286	0.001793	5 1/4	...	5.2500	0.003437	11	0.003033
1.1250	0.001560	5.2500	0.002607	...	...	72	0.2778	0.000791	1 7/16	...	...	1.4375	0.001798	5%	...	5.3750	0.003478	10	0.003232
1.1875	0.001588	5.3750	0.002628	...	32	...	0.2812	0.000795	1 1/2	6	...	1.5000	0.001837	5 1/2	...	5.5000	0.003518	9	0.003467
1.2500	0.001616	5.5000	0.002648	1 9/64	...	...	0.2969	0.000817	...	...	13	1.5385	0.001861	5%	...	5.6250	0.003558	8	0.003750
1.3125	0.001642	5.6250	0.002668	3/16	...	64	0.3125	0.000839	1 9/16	...	...	1.5625	0.001875	5 3/4	...	5.7500	0.003597	7	0.004099
1.3750	0.001668	5.7500	0.002687	...	28	...	0.3214	0.000850	1 5/8	...	...	1.6250	0.001912	5 7/8	...	5.8750	0.003636	6	0.004543
1.4375	0.001693	5.8750	0.002707	2 1/64	...	...	0.3281	0.000859	...	...	12	1.6667	0.001936	6	...	6.0000	0.003674	5 1/2	0.004814
1.5000	0.001717	6.0000	0.002726	...	...	27	0.3333	0.000866	1 1 1/16	...	...	1.6875	0.001949	6 1/2	...	6.5000	0.003824	5	0.005130
1.5625	0.001741	7.0000	0.002869	1 1/32	...	...	0.3438	0.000880	...	...	11 1/2	1.7391	0.001978	7	...	7.0000	0.003969	4 1/2	0.005503

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**TABLE 19 INCREMENTS IN PITCH DIAMETER TOLERANCE — CLASS 2A (CONT'D)**  
 (PD Tolerance =  $0.0015\sqrt[3]{D} + 0.0015\sqrt{LE} + 0.015\sqrt[3]{P^2}$ )

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Diameter <i>D</i>				Length of Engagement <i>LE</i>										Pitch <i>P</i>					
<i>D</i>	$0.0015\sqrt[3]{D}$	<i>D</i>	$0.0015\sqrt[3]{D}$	Based on (1)			<i>LE</i>	$0.0015 \times \sqrt{LE}$	Based on (1)			<i>LE</i>	$0.0015 \times \sqrt{LE}$	Based on (1)		<i>LE</i>	$0.0015 \times \sqrt{LE}$	Threads/ in.	$0.015\sqrt[3]{P^2}$
				1 <i>D</i> for Sizes	9 <i>P</i> for TPI	20 <i>P</i> for TPI			1 <i>D</i> for Sizes	9 <i>P</i> for TPI	20 <i>P</i> for TPI			1 <i>D</i> for Sizes	20 <i>P</i> for TPI				
1.6250	0.001764	8.0000	0.003000	...	...	56	0.3571	0.000896	1¼	...	...	1.7500	0.001984	7½	...	7.5000	0.004108	4	0.005953
1.6875	0.001786	9.0000	0.003120	23/64	...	...	0.3594	0.000899	...	5	...	1.8000	0.002012	8	...	8.0000	0.004243	...	...
1.7500	0.001808	10.0000	0.003232	3/8	24	...	0.3750	0.000919	113/16	...	...	1.8125	0.002019	8½	...	8.5000	0.004373	...	...
1.8125	0.001829	12.0000	0.003434	25/64	...	...	0.3906	0.000937	...	...	11	1.8182	0.002023	9	...	9.0000	0.004500	...	...
1.8750	0.001850	14.0000	0.003615	13/32	...	...	0.4063	0.000956	17/8	...	...	1.8750	0.002054	9½	...	9.5000	0.004623	...	...
...	...	16.0000	0.003780	...	...	48	0.4167	0.000968	115/16	...	...	1.9375	0.002088	10	...	10.0000	0.004743	...	...
...	...	18.0000	0.003931	27/64	...	...	0.4219	0.000974	2	4½	10	2.0000	0.002121	10½	...	10.5000	0.004861	...	...
...	...	20.0000	0.004072	7/16	...	...	0.4375	0.000992	2½	...	...	2.1250	0.002187	11	...	11.0000	0.004975	...	...
...	...	24.0000	0.004327	...	20	...	0.4500	0.001006	...	...	9	2.2222	0.002236	11½	...	11.5000	0.005087	...	...
...	...	...	...	...	...	44	0.4545	0.001011	2¼	4	...	2.2500	0.002250	12	...	12.0000	0.005196	...	...

**GENERAL NOTE:**  
 Class 2A tolerances are the bases for the tolerances for Classes 1A, 3A, 1B, 2B, and 3B.

**NOTE:**  
 (1) For example: *LE* = 0.5000 is equivalent to one diameter for the ½ in. size, 9 pitches for 18 threads per inch, or 20 pitches for 40 threads per inch.

**TABLE 20 ALLOWANCES AND TOLERANCES FOR COARSE THREAD SERIES (UNC/UNRC)**

Nominal Size	Basic Major Diameter <i>D</i>	Threads/in.	Allowances (1)	Tolerances									
				Major Diameter, External Threads (2)		Pitch Diameter						Minor Diameter, Internal Threads (3,4)	
				Classes 1A, 2A	Classes 1A, 2A (5)	Classes 2A, 3A	Class 1A	Class 1B	Class 2A	Class 2B	Class 3A	Class 3B	Classes 1B, 2B
1 (0.073)	0.0730	64	0.0006	...	0.0038	...	...	0.0020	0.0026	0.0015	0.0019	0.0062	0.0062
2 (0.086)	0.0860	56	0.0006	...	0.0041	...	...	0.0021	0.0028	0.0016	0.0021	0.0070	0.0070
3 (0.099)	0.0990	48	0.0007	...	0.0045	...	...	0.0023	0.0030	0.0017	0.0022	0.0081	0.0081
4 (0.112)	0.1120	40	0.0008	...	0.0051	...	...	0.0025	0.0033	0.0019	0.0024	0.0090	0.0090
5 (0.125)	0.1250	40	0.0008	...	0.0051	...	...	0.0026	0.0033	0.0019	0.0025	0.0083	0.0083
6 (0.138)	0.1380	32	0.0008	...	0.0060	...	...	0.0028	0.0037	0.0021	0.0027	0.0098	0.0098
8 (0.164)	0.1640	32	0.0009	...	0.0060	...	...	0.0029	0.0038	0.0022	0.0028	0.0087	0.0087
10 (0.190)	0.1900	24	0.0010	...	0.0072	...	...	0.0033	0.0043	0.0025	0.0032	0.0106	0.0106
12 (0.216)	0.2160	24	0.0010	...	0.0072	...	...	0.0034	0.0044	0.0026	0.0033	0.0098	0.0098
1/4	0.2500	20	0.0011	0.0122	0.0081	0.0056	0.0073	0.0037	0.0049	0.0028	0.0036	0.0115	0.0108
5/16	0.3125	18	0.0012	0.0131	0.0087	0.0061	0.0079	0.0040	0.0053	0.0030	0.0039	0.0127	0.0106
3/8	0.3750	16	0.0013	0.0142	0.0094	0.0065	0.0085	0.0044	0.0057	0.0033	0.0043	0.0141	0.0109
7/16	0.4375	14	0.0014	0.0155	0.0103	0.0071	0.0092	0.0047	0.0061	0.0035	0.0046	0.0158	0.0115
1/2	0.5000	13	0.0015	0.0163	0.0109	0.0074	0.0097	0.0050	0.0065	0.0037	0.0048	0.0169	0.0117
5/8	0.5625	12	0.0016	0.0172	0.0114	0.0078	0.0102	0.0052	0.0068	0.0039	0.0051	0.0180	0.0120
3/4	0.6250	11	0.0016	0.0182	0.0121	0.0083	0.0107	0.0055	0.0072	0.0041	0.0054	0.0194	0.0125
7/8	0.7500	10	0.0018	0.0194	0.0129	0.0088	0.0115	0.0059	0.0077	0.0044	0.0057	0.0210	0.0128
1	0.8750	9	0.0019	0.0208	0.0139	0.0095	0.0123	0.0063	0.0082	0.0047	0.0061	0.0228	0.0134
1	1.0000	8	0.0020	0.0225	0.0150	0.0101	0.0132	0.0068	0.0088	0.0051	0.0066	0.0250	0.0150
1 1/8	1.1250	7	0.0022	0.0246	0.0164	0.0109	0.0141	0.0072	0.0094	0.0054	0.0071	0.0276	0.0171
1 1/4	1.2500	7	0.0022	0.0246	0.0164	0.0111	0.0144	0.0074	0.0096	0.0055	0.0072	0.0276	0.0171
1 3/8	1.3750	6	0.0024	0.0273	0.0182	0.0120	0.0155	0.0080	0.0104	0.0060	0.0078	0.0306	0.0200
1 1/2	1.5000	6	0.0024	0.0273	0.0182	0.0121	0.0158	0.0081	0.0105	0.0061	0.0079	0.0306	0.0200
1 3/4	1.7500	5	0.0027	0.0308	0.0205	0.0134	0.0174	0.0089	0.0116	0.0067	0.0087	0.0340	0.0240
2	2.0000	4 1/2	0.0029	0.0330	0.0220	0.0143	0.0186	0.0095	0.0124	0.0071	0.0093	0.0358	0.0267
2 1/4	2.2500	4 1/2	0.0029	0.0330	0.0220	0.0146	0.0190	0.0097	0.0126	0.0073	0.0095	0.0358	0.0267
2 1/2	2.5000	4	0.0031	0.0357	0.0238	0.0155	0.0202	0.0104	0.0135	0.0078	0.0101	0.0375	0.0300
2 3/4	2.7500	4	0.0032	0.0357	0.0238	0.0158	0.0206	0.0105	0.0137	0.0079	0.0103	0.0375	0.0300
3	3.0000	4	0.0032	0.0357	0.0238	0.0161	0.0209	0.0107	0.0139	0.0080	0.0104	0.0375	0.0300
3 1/4	3.2500	4	0.0033	0.0357	0.0238	0.0163	0.0212	0.0109	0.0141	0.0082	0.0105	0.0375	0.0300
3 1/2	3.5000	4	0.0033	0.0357	0.0238	0.0166	0.0215	0.0110	0.0143	0.0083	0.0108	0.0375	0.0300
3 3/4	3.7500	4	0.0034	0.0357	0.0238	0.0168	0.0218	0.0112	0.0145	0.0084	0.0109	0.0375	0.0300
4	4.0000	4	0.0034	0.0357	0.0238	0.0170	0.0221	0.0113	0.0147	0.0085	0.0111	0.0375	0.0300

**GENERAL NOTE:**  
See Section 5 for application of allowances and tolerances.

- NOTES:**
- (1) Allowances apply to external thread Classes 1A and 2A only.
  - (2) Major diameter of internal threads may extend to a *P*/24 flat.
  - (3) Minor diameter of external threads may extend to a *P*/8 flat.
  - (4) Values are based on a length of engagement equal to the nominal diameter.
  - (5) For unfinished hot-rolled material threaded portion only, but does not include standard fasteners with rolled threads.



**TABLE 21 ALLOWANCES AND TOLERANCES FOR FINE THREAD SERIES (UNF/UNRF)**

Nominal Size (1)	Basic Major Diameter <i>D</i>	Threads/in.	Allowances (2)	Tolerances											
				Major Diameter, External Threads (3)				Pitch Diameter						Minor Diameter, Internal Threads (4,5)	
				Classes 1A, 2A	Class 1A	Classes 2A, 3A	Class 1A	Class 1B	Class 2A	Class 2B	Class 3A	Class 3B	Classes 1B, 2B	Class 3B	
0 (0.060)	0.0600	80	0.0005	...	0.0032	...	...	0.0018	0.0023	0.0013	0.0017	0.0049	0.0049		
1 (0.073)	0.0730	72	0.0006	...	0.0035	...	...	0.0019	0.0025	0.0014	0.0019	0.0055	0.0055		
2 (0.086)	0.0860	64	0.0006	...	0.0038	...	...	0.0020	0.0027	0.0015	0.0020	0.0062	0.0062		
3 (0.099)	0.0990	56	0.0007	...	0.0041	...	...	0.0022	0.0028	0.0016	0.0021	0.0068	0.0068		
4 (0.112)	0.1120	48	0.0007	...	0.0045	...	...	0.0024	0.0031	0.0018	0.0023	0.0074	0.0074		
5 (0.125)	0.1250	44	0.0007	...	0.0048	...	...	0.0025	0.0032	0.0019	0.0024	0.0075	0.0075		
6 (0.138)	0.1380	40	0.0008	...	0.0051	...	...	0.0026	0.0034	0.0020	0.0025	0.0077	0.0077		
8 (0.164)	0.1640	36	0.0008	...	0.0055	...	...	0.0028	0.0036	0.0021	0.0027	0.0077	0.0077		
10 (0.190)	0.1900	32	0.0009	...	0.0060	...	...	0.0030	0.0039	0.0023	0.0029	0.0079	0.0079		
12 (0.216)	0.2160	28	0.0010	...	0.0065	...	...	0.0032	0.0042	0.0024	0.0031	0.0084	0.0084		
1/4	0.2500	28	0.0010	0.0098	0.0065	0.0050	0.0065	0.0033	0.0043	0.0025	0.0032	0.0084	0.0077		
5/16	0.3125	24	0.0011	0.0108	0.0072	0.0055	0.0071	0.0037	0.0048	0.0027	0.0036	0.0097	0.0080		
3/8	0.3750	24	0.0011	0.0108	0.0072	0.0057	0.0074	0.0038	0.0049	0.0029	0.0037	0.0097	0.0073		
7/16	0.4375	20	0.0013	0.0122	0.0081	0.0062	0.0081	0.0042	0.0054	0.0031	0.0041	0.0115	0.0082		
1/2	0.5000	20	0.0013	0.0122	0.0081	0.0064	0.0084	0.0043	0.0056	0.0032	0.0042	0.0115	0.0078		
9/16	0.5625	18	0.0014	0.0131	0.0087	0.0068	0.0089	0.0045	0.0059	0.0034	0.0044	0.0127	0.0082		
5/8	0.6250	18	0.0014	0.0131	0.0087	0.0070	0.0091	0.0047	0.0060	0.0035	0.0045	0.0127	0.0081		
3/4	0.7500	16	0.0015	0.0142	0.0094	0.0075	0.0098	0.0050	0.0065	0.0038	0.0049	0.0141	0.0085		
7/8	0.8750	14	0.0016	0.0155	0.0103	0.0081	0.0106	0.0054	0.0070	0.0041	0.0053	0.0158	0.0091		
1*	1.0000	14	...	...	...	...	...	...	...	...	...	...	...		
1	1.0000	12	0.0018	0.0172	0.0114	0.0088	0.0114	0.0059	0.0076	0.0044	0.0057	0.0180	0.0100		
1 1/8	1.1250	12	0.0018	0.0172	0.0114	0.0090	0.0117	0.0060	0.0078	0.0045	0.0059	0.0180	0.0100		
1 1/4	1.2500	12	0.0018	0.0172	0.0114	0.0092	0.0120	0.0062	0.0080	0.0046	0.0060	0.0180	0.0100		
1 3/8	1.3750	12	0.0019	0.0172	0.0114	0.0094	0.0123	0.0063	0.0082	0.0047	0.0061	0.0180	0.0100		
1 1/2	1.5000	12	0.0019	0.0172	0.0114	0.0096	0.0125	0.0064	0.0083	0.0048	0.0063	0.0180	0.0100		

**GENERAL NOTE:**  
See Section 5 for application of allowances and tolerances.

- NOTES:**
- (1) Asterisk denotes NS designation.
  - (2) Allowances apply to external thread Classes 1A and 2A only.
  - (3) Major diameter of internal threads may extend to a *P*/24 flat.
  - (4) Minor diameter of external threads may extend to a *P*/8 flat.
  - (5) Values are based on a length of engagement equal to the nominal diameter.

**TABLE 22 ALLOWANCES AND TOLERANCES FOR EXTRA-FINE THREAD SERIES (UNEF/UNREF)**

Nominal Size	Basic Major Diameter <i>D</i>	Threads/in.	Allowances (1)	Tolerances						
				Major Diameter, External Threads (2)	Pitch Diameter (3)				Minor Diameter, Internal Threads (4,5)	
					Class 2A, 3A	Class 2A	Class 2B	Class 3A	Class 3B	Class 2B
12 (0.216)	0.2160	32	0.0009	0.0060	0.0031	0.0041	0.0024	0.0031	0.0074	0.0073
1/4	0.2500	32	0.0010	0.0060	0.0032	0.0042	0.0024	0.0031	0.0074	0.0067
5/16	0.3125	32	0.0010	0.0060	0.0032	0.0042	0.0024	0.0031	0.0074	0.0060
3/8	0.3750	32	0.0010	0.0060	0.0034	0.0044	0.0025	0.0033	0.0074	0.0057
7/16	0.4375	28	0.0011	0.0065	0.0036	0.0046	0.0027	0.0035	0.0084	0.0063
1/2	0.5000	28	0.0011	0.0065	0.0037	0.0048	0.0028	0.0036	0.0084	0.0063
9/16	0.5625	24	0.0012	0.0072	0.0039	0.0051	0.0029	0.0038	0.0097	0.0070
5/8	0.6250	24	0.0012	0.0072	0.0040	0.0052	0.0030	0.0039	0.0097	0.0070
11/16	0.6875	24	0.0012	0.0072	0.0040	0.0052	0.0030	0.0039	0.0097	0.0070
3/4	0.7500	20	0.0013	0.0081	0.0044	0.0057	0.0033	0.0043	0.0115	0.0078
13/16	0.8125	20	0.0013	0.0081	0.0044	0.0057	0.0033	0.0043	0.0115	0.0078
7/8	0.8750	20	0.0013	0.0081	0.0044	0.0057	0.0033	0.0043	0.0115	0.0078
15/16	0.9375	20	0.0014	0.0081	0.0045	0.0059	0.0034	0.0044	0.0115	0.0078
1	1.0000	20	0.0014	0.0081	0.0045	0.0059	0.0034	0.0044	0.0115	0.0078
1 1/16	1.0625	18	0.0014	0.0087	0.0047	0.0062	0.0036	0.0046	0.0127	0.0081
1 1/8	1.1250	18	0.0014	0.0087	0.0047	0.0062	0.0036	0.0046	0.0127	0.0081
1 3/16	1.1875	18	0.0015	0.0087	0.0049	0.0063	0.0036	0.0047	0.0127	0.0081
1 1/4	1.2500	18	0.0015	0.0087	0.0049	0.0063	0.0036	0.0047	0.0127	0.0081
1 5/16	1.3125	18	0.0015	0.0087	0.0049	0.0063	0.0036	0.0047	0.0127	0.0081
1 3/8	1.3750	18	0.0015	0.0087	0.0049	0.0063	0.0036	0.0047	0.0127	0.0081
1 7/16	1.4375	18	0.0015	0.0087	0.0050	0.0065	0.0037	0.0048	0.0127	0.0081
1 1/2	1.5000	18	0.0015	0.0087	0.0050	0.0065	0.0037	0.0048	0.0127	0.0081
1 9/16	1.5625	18	0.0015	0.0087	0.0050	0.0065	0.0037	0.0048	0.0127	0.0081
1 5/8	1.6250	18	0.0015	0.0087	0.0050	0.0065	0.0037	0.0048	0.0127	0.0081
1 11/16	1.6875	18	0.0015	0.0087	0.0051	0.0066	0.0038	0.0049	0.0127	0.0081

**GENERAL NOTE:**  
See Section 5 for application of allowances and tolerances.

- NOTES:**
- (1) Allowances apply to external thread Class 2A only and are taken from Table 32.
  - (2) Major diameter of internal threads may extend to a *P*/24 flat.
  - (3) Values for pitch diameter are based on a length of engagement of nine pitches, and those for Classes 2A and 2B are taken from the respective step tables.
  - (4) Minor diameter of external threads may extend to a *P*/8 flat.
  - (5) Values for minor diameter are based on a length of engagement of one diameter.

TABLE 23 ALLOWANCES AND TOLERANCES FOR 4-THREAD SERIES (4-UN/4-UNR)

Nominal Size (1)	Basic Major Diameter <i>D</i>	Allowances (2)	Tolerances						
			Major Diameter, External Threads (3)	Pitch Diameter (4)				Minor Diameter, Internal Threads (5,6)	
				Classes 2A, 3A	Class 2A	Class 2B	Class 3A	Class 3B	Class 2B
2½*	2.5000	0.0031	0.0238	0.0104	0.0135	0.0078	0.0101	0.0375	0.0300
2¾*	2.7500	0.0032	0.0238	0.0105	0.0137	0.0079	0.0103	0.0375	0.0300
3*	3.0000	0.0032	0.0238	0.0107	0.0139	0.0080	0.0104	0.0375	0.0300
3¼*	3.2500	0.0033	0.0238	0.0109	0.0141	0.0082	0.0106	0.0375	0.0300
3½*	3.5000	0.0033	0.0238	0.0110	0.0143	0.0083	0.0108	0.0375	0.0300
3¾*	3.7500	0.0034	0.0238	0.0112	0.0145	0.0084	0.0109	0.0375	0.0300
4*	4.0000	0.0034	0.0238	0.0113	0.0147	0.0085	0.0111	0.0375	0.0300
4¼	4.2500	0.0032	0.0238	0.0115	0.0149	0.0086	0.0112	0.0375	0.0300
4½	4.5000	0.0032	0.0238	0.0116	0.0151	0.0087	0.0113	0.0375	0.0300
4¾	4.7500	0.0032	0.0238	0.0117	0.0153	0.0088	0.0114	0.0375	0.0300
5	5.0000	0.0032	0.0238	0.0119	0.0154	0.0089	0.0116	0.0375	0.0300
5¼	5.2500	0.0032	0.0238	0.0120	0.0156	0.0090	0.0117	0.0375	0.0300
5½	5.5000	0.0032	0.0238	0.0121	0.0158	0.0091	0.0118	0.0375	0.0300
5¾	5.7500	0.0033	0.0238	0.0122	0.0159	0.0092	0.0119	0.0375	0.0300
6	6.0000	0.0033	0.0238	0.0124	0.0161	0.0093	0.0120	0.0375	0.0300

## GENERAL NOTE:

See Section 5 for application of allowances and tolerances.

## NOTES:

- (1) Asterisks denote standard sizes of the UNC series.
- (2) Allowances apply to external thread Class 2A only.
- (3) Major diameter of internal threads may extend to a  $P/24$  flat.
- (4) Classes 2A, 2B, 3A, and 3B PD tolerances are based on a length of engagement equal to the nominal diameter.
- (5) Minor diameter of external threads may extend to a  $P/8$  flat.
- (6) Classes 2B and 3B minor diameter tolerances are based on a length of engagement of one diameter.

**TABLE 24 ALLOWANCES AND TOLERANCES FOR 6-THREAD SERIES (6-UN/6-UNR)**

Nominal Size (1)	Basic Major Diameter <i>D</i>	Allowances (2)	Tolerances						
			Major Diameter, External Threads (3)	Pitch Diameter (4)				Minor Diameter, Internal Threads (5,6)	
				Classes 2A, 3A	Class 2A	Class 2B	Class 3A	Class 3B	Class 2B
1 <sup>3</sup> / <sub>8</sub> *	1.3750	0.0024	0.0182	0.0080	0.0104	0.0060	0.0078	0.0306	0.0200
1 <sup>7</sup> / <sub>16</sub>	1.4375	0.0024	0.0182	0.0080	0.0104	0.0060	0.0078	0.0306	0.0200
1 <sup>1</sup> / <sub>2</sub> *	1.5000	0.0024	0.0182	0.0081	0.0105	0.0061	0.0079	0.0306	0.0200
1 <sup>9</sup> / <sub>16</sub>	1.5625	0.0024	0.0182	0.0082	0.0106	0.0061	0.0080	0.0306	0.0200
1 <sup>5</sup> / <sub>8</sub>	1.6250	0.0025	0.0182	0.0082	0.0107	0.0062	0.0080	0.0306	0.0200
1 <sup>11</sup> / <sub>16</sub>	1.6875	0.0025	0.0182	0.0083	0.0108	0.0062	0.0081	0.0306	0.0200
1 <sup>3</sup> / <sub>4</sub>	1.7500	0.0025	0.0182	0.0083	0.0108	0.0063	0.0081	0.0306	0.0200
1 <sup>13</sup> / <sub>16</sub>	1.8125	0.0025	0.0182	0.0084	0.0109	0.0063	0.0082	0.0306	0.0200
1 <sup>7</sup> / <sub>8</sub>	1.8750	0.0025	0.0182	0.0084	0.0110	0.0063	0.0082	0.0306	0.0200
1 <sup>15</sup> / <sub>16</sub>	1.9375	0.0026	0.0182	0.0085	0.0111	0.0064	0.0083	0.0306	0.0200
2	2.0000	0.0026	0.0182	0.0086	0.0111	0.0064	0.0083	0.0306	0.0200
2 <sup>1</sup> / <sub>8</sub>	2.1250	0.0026	0.0182	0.0087	0.0113	0.0065	0.0084	0.0306	0.0200
2 <sup>1</sup> / <sub>4</sub>	2.2500	0.0026	0.0182	0.0088	0.0114	0.0066	0.0085	0.0306	0.0200
2 <sup>3</sup> / <sub>8</sub>	2.3750	0.0027	0.0182	0.0089	0.0115	0.0066	0.0086	0.0306	0.0200
2 <sup>1</sup> / <sub>2</sub>	2.5000	0.0027	0.0182	0.0090	0.0116	0.0067	0.0087	0.0306	0.0200
2 <sup>5</sup> / <sub>8</sub>	2.6250	0.0027	0.0182	0.0090	0.0118	0.0068	0.0088	0.0306	0.0200
2 <sup>3</sup> / <sub>4</sub>	2.7500	0.0027	0.0182	0.0091	0.0119	0.0068	0.0089	0.0306	0.0200
2 <sup>7</sup> / <sub>8</sub>	2.8750	0.0028	0.0182	0.0092	0.0120	0.0069	0.0090	0.0306	0.0200
3	3.0000	0.0028	0.0182	0.0093	0.0121	0.0070	0.0091	0.0306	0.0200
3 <sup>1</sup> / <sub>8</sub>	3.1250	0.0028	0.0182	0.0094	0.0122	0.0070	0.0092	0.0306	0.0200
3 <sup>1</sup> / <sub>4</sub>	3.2500	0.0028	0.0182	0.0095	0.0123	0.0071	0.0092	0.0306	0.0200
3 <sup>3</sup> / <sub>8</sub>	3.3750	0.0029	0.0182	0.0095	0.0124	0.0072	0.0093	0.0306	0.0200
3 <sup>1</sup> / <sub>2</sub>	3.5000	0.0029	0.0182	0.0096	0.0125	0.0072	0.0094	0.0306	0.0200
3 <sup>5</sup> / <sub>8</sub>	3.6250	0.0029	0.0182	0.0097	0.0126	0.0073	0.0095	0.0306	0.0200
3 <sup>3</sup> / <sub>4</sub>	3.7500	0.0029	0.0182	0.0098	0.0127	0.0073	0.0095	0.0306	0.0200
3 <sup>7</sup> / <sub>8</sub>	3.8750	0.0030	0.0182	0.0099	0.0128	0.0074	0.0096	0.0306	0.0200
4	4.0000	0.0030	0.0182	0.0099	0.0129	0.0074	0.0097	0.0306	0.0200
4 <sup>1</sup> / <sub>8</sub>	4.1250	0.0030	0.0182	0.0100	0.0130	0.0075	0.0097	0.0306	0.0200
4 <sup>1</sup> / <sub>4</sub>	4.2500	0.0030	0.0182	0.0101	0.0131	0.0075	0.0098	0.0306	0.0200
4 <sup>3</sup> / <sub>8</sub>	4.3750	0.0030	0.0182	0.0101	0.0132	0.0076	0.0099	0.0306	0.0200
4 <sup>1</sup> / <sub>2</sub>	4.5000	0.0031	0.0182	0.0102	0.0133	0.0077	0.0099	0.0306	0.0200
4 <sup>5</sup> / <sub>8</sub>	4.6250	0.0031	0.0182	0.0103	0.0133	0.0077	0.0100	0.0306	0.0200
4 <sup>3</sup> / <sub>4</sub>	4.7500	0.0031	0.0182	0.0103	0.0134	0.0077	0.0101	0.0306	0.0200
4 <sup>7</sup> / <sub>8</sub>	4.8750	0.0031	0.0182	0.0104	0.0135	0.0078	0.0101	0.0306	0.0200
5	5.0000	0.0031	0.0182	0.0105	0.0136	0.0078	0.0102	0.0306	0.0200
5 <sup>1</sup> / <sub>8</sub>	5.1250	0.0032	0.0182	0.0105	0.0137	0.0079	0.0103	0.0306	0.0200
5 <sup>1</sup> / <sub>4</sub>	5.2500	0.0032	0.0182	0.0106	0.0138	0.0079	0.0103	0.0306	0.0200
5 <sup>3</sup> / <sub>8</sub>	5.3750	0.0032	0.0182	0.0106	0.0138	0.0080	0.0104	0.0306	0.0200
5 <sup>1</sup> / <sub>2</sub>	5.5000	0.0032	0.0182	0.0107	0.0139	0.0080	0.0104	0.0306	0.0200
5 <sup>5</sup> / <sub>8</sub>	5.6250	0.0032	0.0182	0.0108	0.0140	0.0081	0.0105	0.0306	0.0200
5 <sup>3</sup> / <sub>4</sub>	5.7500	0.0032	0.0182	0.0108	0.0141	0.0081	0.0106	0.0306	0.0200
5 <sup>7</sup> / <sub>8</sub>	5.8750	0.0033	0.0182	0.0109	0.0142	0.0082	0.0106	0.0306	0.0200
6	6.0000	0.0033	0.0182	0.0109	0.0142	0.0082	0.0107	0.0306	0.0200

(Notes are on next page)

**TABLE 24 (CONT'D)****GENERAL NOTE:**

See Section 5 for application of allowances and tolerances.

**NOTES:**

- (1) Asterisks denote standard sizes of the UNC thread series. See Note (4).
- (2) Allowances apply to external thread Class 2A only and are taken from Table 32.
- (3) Major diameter of internal threads may extend to a  $P/24$  flat.
- (4) Classes 2A, 2B, 3A, and 3B PD tolerances will be based on a length of engagement to be determined later by negotiation, except that for the  $1\frac{3}{8}$  in. and  $1\frac{1}{2}$  in. sizes they are based on a length of engagement equal to the nominal diameter.
- (5) Minor diameter of external threads may extend to a  $P/8$  flat.
- (6) Class 2B minor diameter tolerances are based on a length of engagement of one diameter.

**TABLE 25 ALLOWANCES AND TOLERANCES FOR 8-THREAD SERIES (8-UN/8-UNR)**

Nominal Size (1)	Basic Major Diameter <i>D</i>	Allowances (2)	Tolerances						
			Major Diameter, External Threads (3)	Pitch Diameter (4)				Minor Diameter, Internal Threads (5,6)	
				Classes 2A, 3A	Class 2A	Class 2B	Class 3A	Class 3B	Class 2B
1 *	1.0000	0.0020	0.0150	0.0068	0.0088	0.0051	0.0066	0.0250	0.0150
1 <sup>1</sup> / <sub>16</sub>	1.0625	0.0020	0.0150	0.0068	0.0089	0.0051	0.0067	0.0250	0.0150
1 <sup>1</sup> / <sub>8</sub>	1.1250	0.0021	0.0150	0.0069	0.0090	0.0052	0.0067	0.0250	0.0150
1 <sup>3</sup> / <sub>16</sub>	1.1875	0.0021	0.0150	0.0070	0.0091	0.0052	0.0068	0.0250	0.0150
1 <sup>1</sup> / <sub>4</sub>	1.2500	0.0021	0.0150	0.0070	0.0092	0.0053	0.0069	0.0250	0.0150
1 <sup>5</sup> / <sub>16</sub>	1.3125	0.0021	0.0150	0.0071	0.0092	0.0053	0.0069	0.0250	0.0150
1 <sup>3</sup> / <sub>8</sub>	1.3750	0.0022	0.0150	0.0072	0.0093	0.0054	0.0070	0.0250	0.0150
1 <sup>7</sup> / <sub>16</sub>	1.4375	0.0022	0.0150	0.0072	0.0094	0.0054	0.0071	0.0250	0.0150
1 <sup>1</sup> / <sub>2</sub>	1.5000	0.0022	0.0150	0.0073	0.0095	0.0055	0.0071	0.0250	0.0150
1 <sup>9</sup> / <sub>16</sub>	1.5625	0.0022	0.0150	0.0074	0.0096	0.0055	0.0072	0.0250	0.0150
1 <sup>5</sup> / <sub>8</sub>	1.6250	0.0022	0.0150	0.0074	0.0097	0.0056	0.0072	0.0250	0.0150
1 <sup>11</sup> / <sub>16</sub>	1.6875	0.0022	0.0150	0.0075	0.0097	0.0056	0.0073	0.0250	0.0150
1 <sup>3</sup> / <sub>4</sub>	1.7500	0.0023	0.0150	0.0075	0.0098	0.0057	0.0074	0.0250	0.0150
1 <sup>13</sup> / <sub>16</sub>	1.8125	0.0023	0.0150	0.0076	0.0099	0.0057	0.0074	0.0250	0.0150
1 <sup>7</sup> / <sub>8</sub>	1.8750	0.0023	0.0150	0.0077	0.0100	0.0057	0.0075	0.0250	0.0150
1 <sup>15</sup> / <sub>16</sub>	1.9375	0.0023	0.0150	0.0077	0.0100	0.0058	0.0075	0.0250	0.0150
2	2.0000	0.0023	0.0150	0.0078	0.0101	0.0058	0.0076	0.0250	0.0150
2 <sup>1</sup> / <sub>16</sub>	2.1250	0.0024	0.0150	0.0079	0.0102	0.0059	0.0077	0.0250	0.0150
2 <sup>1</sup> / <sub>8</sub>	2.2500	0.0024	0.0150	0.0080	0.0104	0.0060	0.0078	0.0250	0.0150
2 <sup>3</sup> / <sub>8</sub>	2.3750	0.0024	0.0150	0.0081	0.0105	0.0060	0.0079	0.0250	0.0150
2 <sup>1</sup> / <sub>2</sub>	2.5000	0.0024	0.0150	0.0082	0.0106	0.0061	0.0080	0.0250	0.0150
2 <sup>5</sup> / <sub>8</sub>	2.6250	0.0025	0.0150	0.0082	0.0107	0.0062	0.0080	0.0250	0.0150
2 <sup>3</sup> / <sub>4</sub>	2.7500	0.0025	0.0150	0.0083	0.0108	0.0063	0.0081	0.0250	0.0150
2 <sup>7</sup> / <sub>8</sub>	2.8750	0.0025	0.0150	0.0084	0.0110	0.0063	0.0082	0.0250	0.0150
3	3.0000	0.0026	0.0150	0.0085	0.0111	0.0064	0.0083	0.0250	0.0150
3 <sup>1</sup> / <sub>8</sub>	3.1250	0.0026	0.0150	0.0086	0.0112	0.0064	0.0084	0.0250	0.0150
3 <sup>1</sup> / <sub>4</sub>	3.2500	0.0026	0.0150	0.0087	0.0113	0.0065	0.0085	0.0250	0.0150
3 <sup>3</sup> / <sub>8</sub>	3.3750	0.0026	0.0150	0.0088	0.0114	0.0066	0.0085	0.0250	0.0150
3 <sup>1</sup> / <sub>2</sub>	3.5000	0.0026	0.0150	0.0088	0.0115	0.0066	0.0086	0.0250	0.0150
3 <sup>5</sup> / <sub>8</sub>	3.6250	0.0027	0.0150	0.0089	0.0116	0.0067	0.0087	0.0250	0.0150
3 <sup>3</sup> / <sub>4</sub>	3.7500	0.0027	0.0150	0.0090	0.0117	0.0067	0.0088	0.0250	0.0150
3 <sup>7</sup> / <sub>8</sub>	3.8750	0.0027	0.0150	0.0091	0.0118	0.0068	0.0088	0.0250	0.0150
4	4.0000	0.0027	0.0150	0.0091	0.0119	0.0068	0.0089	0.0250	0.0150
4 <sup>1</sup> / <sub>8</sub>	4.1250	0.0028	0.0150	0.0092	0.0120	0.0069	0.0090	0.0250	0.0150
4 <sup>1</sup> / <sub>4</sub>	4.2500	0.0028	0.0150	0.0093	0.0120	0.0070	0.0091	0.0250	0.0150
4 <sup>3</sup> / <sub>8</sub>	4.3750	0.0028	0.0150	0.0093	0.0120	0.0070	0.0091	0.0250	0.0150
4 <sup>1</sup> / <sub>2</sub>	4.5000	0.0028	0.0150	0.0094	0.0122	0.0071	0.0092	0.0250	0.0150
4 <sup>5</sup> / <sub>8</sub>	4.6250	0.0029	0.0150	0.0095	0.0124	0.0071	0.0093	0.0250	0.0150
4 <sup>3</sup> / <sub>4</sub>	4.7500	0.0029	0.0150	0.0095	0.0124	0.0071	0.0093	0.0250	0.0150
4 <sup>7</sup> / <sub>8</sub>	4.8750	0.0029	0.0150	0.0096	0.0125	0.0072	0.0094	0.0250	0.0150

TABLE 25 ALLOWANCES AND TOLERANCES FOR 8-THREAD SERIES (8-UN/8-UNR) (CONT'D)

Nominal Size (1)	Basic Major Diameter <i>D</i>	Allowances (2)	Tolerances						
			Major Diameter, External Threads (3)	Pitch Diameter (4)				Minor Diameter, Internal Threads (5,6)	
				Class 2A	Class 2B	Class 3A	Class 3B	Class 2B	Class 3B
5	5.0000	0.0029	0.0150	0.0097	0.0126	0.0073	0.0095	0.0250	0.0150
5 <sup>1</sup> / <sub>8</sub>	5.1250	0.0029	0.0150	0.0097	0.0126	0.0073	0.0095	0.0250	0.0150
5 <sup>1</sup> / <sub>4</sub>	5.2500	0.0029	0.0150	0.0098	0.0127	0.0074	0.0096	0.0250	0.0150
5 <sup>3</sup> / <sub>8</sub>	5.3750	0.0030	0.0150	0.0099	0.0129	0.0074	0.0097	0.0250	0.0150
5 <sup>1</sup> / <sub>2</sub>	5.5000	0.0030	0.0150	0.0099	0.0129	0.0074	0.0097	0.0250	0.0150
5 <sup>5</sup> / <sub>8</sub>	5.6250	0.0030	0.0150	0.0100	0.0130	0.0075	0.0098	0.0250	0.0150
5 <sup>3</sup> / <sub>4</sub>	5.7500	0.0030	0.0150	0.0100	0.0130	0.0075	0.0098	0.0250	0.0150
5 <sup>7</sup> / <sub>8</sub>	5.8750	0.0031	0.0150	0.0101	0.0131	0.0076	0.0098	0.0250	0.0150
6	6.0000	0.0031	0.0150	0.0102	0.0133	0.0077	0.0099	0.0250	0.0150

## GENERAL NOTE:

See Section 5 for application of allowances and tolerances.

## NOTES:

- (1) Asterisk denotes standard size of the UNC series.
- (2) Allowances apply to external thread Class 2A only.
- (3) Major diameter of internal threads may extend to a  $P/24$  flat. For major diameter tolerances for Classes 2A and 2B unfinished hot-rolled material, see Tables 3A and 3B.
- (4) The values for 8-UN Classes 2A, 2B, 3A, and 3B are based on a length of engagement equal to the nominal diameter.
- (5) Minor diameter of external threads may extend to a  $P/8$  flat.
- (6) Values for minor diameter are based on a length of engagement of one diameter.

**TABLE 28 ALLOWANCES AND TOLERANCES FOR 20-THREAD SERIES (20-UN/20-UNR)**

Nominal Size (1)	Basic Major Diameter <i>D</i>	Allowances (2)	Tolerances						
			Major Diameter, External Threads (3)	Pitch Diameter (4)				Minor Diameter, Internal Threads (5,6)	
				Class 2A	Class 2B	Class 3A	Class 3B	Class 2B	Class 3B
1/4 *	0.2500	0.0011	0.0081	0.0037	0.0048	0.0028	0.0036	0.0115	0.0108
5/16	0.3125	0.0012	0.0081	0.0040	0.0052	0.0030	0.0039	0.0115	0.0096
3/8	0.3750	0.0012	0.0081	0.0041	0.0054	0.0031	0.0040	0.0115	0.0088
7/16 *	0.4375	0.0013	0.0081	0.0042	0.0054	0.0031	0.0041	0.0115	0.0082
1/2 *	0.5000	0.0013	0.0081	0.0043	0.0056	0.0032	0.0042	0.0115	0.0078
9/16	0.5625	0.0013	0.0081	0.0042	0.0055	0.0032	0.0041	0.0115	0.0078
5/8	0.6250	0.0013	0.0081	0.0043	0.0056	0.0032	0.0042	0.0115	0.0078
11/16	0.6875	0.0013	0.0081	0.0043	0.0056	0.0032	0.0042	0.0115	0.0078
3/4 *	0.7500	0.0013	0.0081	0.0044	0.0057	0.0033	0.0043	0.0115	0.0078
13/16 *	0.8125	0.0013	0.0081	0.0044	0.0057	0.0033	0.0043	0.0115	0.0078
7/8	0.8750	0.0013	0.0081	0.0044	0.0057	0.0033	0.0043	0.0115	0.0078
15/16 *	0.9375	0.0014	0.0081	0.0045	0.0059	0.0034	0.0044	0.0115	0.0078
1 *	1.0000	0.0014	0.0081	0.0045	0.0059	0.0034	0.0044	0.0115	0.0078
1 1/16	1.0625	0.0014	0.0081	0.0045	0.0059	0.0034	0.0044	0.0115	0.0078
1 1/8	1.1250	0.0014	0.0081	0.0045	0.0059	0.0034	0.0044	0.0115	0.0078
1 3/16	1.1875	0.0014	0.0081	0.0047	0.0061	0.0035	0.0045	0.0115	0.0078
1 1/4	1.2500	0.0014	0.0081	0.0047	0.0061	0.0035	0.0045	0.0115	0.0078
1 5/16	1.3125	0.0014	0.0081	0.0047	0.0061	0.0035	0.0045	0.0115	0.0078
1 3/8	1.3750	0.0014	0.0081	0.0047	0.0061	0.0035	0.0045	0.0115	0.0078
1 7/16	1.4375	0.0014	0.0081	0.0048	0.0062	0.0036	0.0046	0.0115	0.0078
1 1/2	1.5000	0.0014	0.0081	0.0048	0.0062	0.0036	0.0046	0.0115	0.0078
1 9/16	1.5625	0.0014	0.0081	0.0048	0.0062	0.0036	0.0046	0.0115	0.0078
1 5/8	1.6250	0.0014	0.0081	0.0048	0.0062	0.0036	0.0046	0.0115	0.0078
1 11/16	1.6875	0.0015	0.0081	0.0048	0.0063	0.0036	0.0047	0.0115	0.0078
1 3/4	1.7500	0.0015	0.0081	0.0048	0.0063	0.0036	0.0047	0.0115	0.0078
1 13/16	1.8125	0.0015	0.0081	0.0048	0.0063	0.0036	0.0047	0.0115	0.0078
1 7/8	1.8750	0.0015	0.0081	0.0048	0.0063	0.0036	0.0047	0.0115	0.0078
1 15/16	1.9375	0.0015	0.0081	0.0049	0.0064	0.0037	0.0048	0.0115	0.0078
2	2.0000	0.0015	0.0081	0.0049	0.0064	0.0037	0.0048	0.0115	0.0078
2 1/8	2.1250	0.0015	0.0081	0.0049	0.0064	0.0037	0.0048	0.0115	0.0078
2 1/4	2.2500	0.0015	0.0081	0.0049	0.0064	0.0038	0.0048	0.0115	0.0078
2 3/8	2.3750	0.0015	0.0081	0.0051	0.0066	0.0038	0.0050	0.0115	0.0078
2 1/2	2.5000	0.0015	0.0081	0.0051	0.0066	0.0038	0.0050	0.0115	0.0078
2 5/8	2.6250	0.0015	0.0081	0.0051	0.0066	0.0038	0.0050	0.0115	0.0078
2 3/4	2.7500	0.0015	0.0081	0.0051	0.0066	0.0038	0.0050	0.0115	0.0078
2 7/8	2.8750	0.0016	0.0081	0.0052	0.0068	0.0039	0.0051	0.0115	0.0078
3	3.0000	0.0016	0.0081	0.0052	0.0068	0.0039	0.0051	0.0115	0.0078

GENERAL NOTE:  
See Section 5 for application of allowances and tolerances.

- NOTES:  
 (1) Asterisks denote standard sizes of the UNC, UNF, or UNEF thread series. See Note (4).  
 (2) Allowances apply to external thread Class 2A only and are taken from Table 32.  
 (3) Major diameter of internal threads may extend to a *P*/24 flat.



**NOTES TO TABLE 28 (CONT'D)**

- (4) Classes 2A, 2B, 3A, and 3B PD tolerances are based on a length of engagement of nine pitches and are taken from Tables 34, 35, 37, and 38, except that for the  $\frac{1}{4}$ ,  $\frac{3}{16}$ , and  $\frac{1}{2}$  in. sizes they are based on a length of engagement equal to the nominal diameter.
- (5) Minor diameter of external threads may extend to a  $P/8$  flat.
- (6) Classes 2B and 3B minor diameter tolerances are based on a length of engagement of one diameter.

TABLE 29 ALLOWANCES AND TOLERANCES FOR 28-THREAD SERIES (28-UN/28-UNR)

Nominal Size (1)	Basic Major Diameter <i>D</i>	Allowances (2)	Tolerances						
			Major Diameter, External Threads (3)	Pitch Diameter (4)				Minor Diameter, Internal Threads (5,6)	
				Classes 2A, 3A	Class 2A	Class 2B	Class 3A	Class 3B	Class 2B
12 (0.216) *	0.2160	0.0010	0.0065	0.0032	0.0042	0.0024	0.0031	0.0084	0.0084
1/4 *	0.2500	0.0010	0.0065	0.0033	0.0043	0.0025	0.0032	0.0084	0.0077
5/16	0.3125	0.0010	0.0065	0.0034	0.0044	0.0026	0.0033	0.0084	0.0069
3/8	0.3750	0.0011	0.0065	0.0036	0.0046	0.0027	0.0035	0.0084	0.0063
7/16 *	0.4375	0.0011	0.0065	0.0036	0.0046	0.0027	0.0035	0.0084	0.0063
1/2 *	0.5000	0.0011	0.0065	0.0037	0.0048	0.0028	0.0036	0.0084	0.0063
9/16	0.5625	0.0011	0.0065	0.0037	0.0048	0.0028	0.0036	0.0084	0.0063
5/8	0.6250	0.0011	0.0065	0.0038	0.0049	0.0028	0.0037	0.0084	0.0063
11/16	0.6875	0.0011	0.0065	0.0038	0.0049	0.0028	0.0037	0.0084	0.0063
3/4	0.7500	0.0012	0.0065	0.0038	0.0050	0.0029	0.0037	0.0084	0.0063
13/16	0.8125	0.0012	0.0065	0.0038	0.0050	0.0029	0.0037	0.0084	0.0063
7/8	0.8750	0.0012	0.0065	0.0038	0.0050	0.0029	0.0037	0.0084	0.0063
15/16	0.9375	0.0012	0.0065	0.0040	0.0052	0.0030	0.0039	0.0084	0.0063
1	1.0000	0.0012	0.0065	0.0040	0.0052	0.0030	0.0039	0.0084	0.0063
1 1/16	1.0625	0.0012	0.0065	0.0040	0.0052	0.0030	0.0039	0.0084	0.0063
1 1/8	1.1250	0.0012	0.0065	0.0040	0.0052	0.0030	0.0039	0.0084	0.0063
1 3/16	1.1875	0.0012	0.0065	0.0041	0.0053	0.0031	0.0040	0.0084	0.0063
1 1/4	1.2500	0.0012	0.0065	0.0041	0.0053	0.0031	0.0040	0.0084	0.0063
1 5/16	1.3125	0.0012	0.0065	0.0041	0.0053	0.0031	0.0040	0.0084	0.0063
1 3/8	1.3750	0.0012	0.0065	0.0041	0.0053	0.0031	0.0040	0.0084	0.0063
1 7/16	1.4375	0.0013	0.0065	0.0042	0.0055	0.0031	0.0041	0.0084	0.0063
1 1/2	1.5000	0.0013	0.0065	0.0042	0.0055	0.0031	0.0041	0.0084	0.0063

## GENERAL NOTE:

See Section 5 for application of allowances and tolerances.

## NOTES:

- (1) Asterisks denote standard sizes of the UNC, UNF, or UNEF thread series. See Note (4).
- (2) Allowances apply to external thread Class 2A only and are taken from Table 32.
- (3) Major diameter of internal threads may extend to a  $P/24$  flat.
- (4) Classes 2A, 2B, 3A, and 3B PD tolerances are based on a length of engagement of nine pitches and are taken from Tables 34, 35, 37, and 38, except that for the No. 12 and 1/4 in. sizes they are based on a length of engagement equal to the nominal diameter.
- (5) Minor diameter of external threads may extend to a  $P/8$  flat.
- (6) Classes 2B and 3B minor diameter tolerances are based on a length of engagement of one diameter.

**TABLE 30 ALLOWANCES AND TOLERANCES FOR 32-THREAD SERIES (32-UN/32-UNR)**

Nominal Size (1)	Basic Major Diameter <i>D</i>	Allowances (2)	Tolerances						
			Major Diameter, External Threads (3)	Pitch Diameter (4)				Minor Diameter, Internal Threads (5, 6)	
				Class 2A	Class 2A, 3A	Class 2A	Class 2B	Class 3A	Class 3B
6 (0.138)*	0.1380	0.0008	0.0060	0.0028	0.0037	0.0021	0.0027	0.0098	0.0098
8 (0.164)*	0.1640	0.0009	0.0060	0.0029	0.0038	0.0022	0.0028	0.0087	0.0087
10 (0.190)*	0.1900	0.0009	0.0060	0.0030	0.0039	0.0023	0.0029	0.0079	0.0079
12 (0.216)*	0.2160	0.0009	0.0060	0.0031	0.0041	0.0024	0.0031	0.0074	0.0073
1/4 *	0.2500	0.0010	0.0060	0.0032	0.0042	0.0024	0.0031	0.0074	0.0067
5/16 *	0.3125	0.0010	0.0060	0.0032	0.0042	0.0024	0.0031	0.0074	0.0060
3/8 *	0.3750	0.0010	0.0060	0.0034	0.0044	0.0025	0.0033	0.0074	0.0057
7/16	0.4375	0.0010	0.0060	0.0034	0.0044	0.0025	0.0033	0.0074	0.0057
1/2	0.5000	0.0010	0.0060	0.0035	0.0045	0.0026	0.0034	0.0074	0.0057
9/16	0.5625	0.0010	0.0060	0.0035	0.0045	0.0026	0.0034	0.0074	0.0057
5/8	0.6250	0.0011	0.0060	0.0036	0.0046	0.0027	0.0035	0.0074	0.0057
11/16	0.6875	0.0011	0.0060	0.0036	0.0046	0.0027	0.0035	0.0074	0.0057
3/4	0.7500	0.0011	0.0060	0.0036	0.0047	0.0027	0.0036	0.0074	0.0057
13/16	0.8125	0.0011	0.0060	0.0036	0.0047	0.0027	0.0036	0.0074	0.0057
7/8	0.8750	0.0011	0.0060	0.0036	0.0047	0.0027	0.0036	0.0074	0.0057
15/16	0.9375	0.0011	0.0060	0.0038	0.0049	0.0028	0.0037	0.0074	0.0057
1	1.0000	0.0011	0.0060	0.0038	0.0049	0.0028	0.0037	0.0074	0.0057

GENERAL NOTE:  
See Section 5 for application of allowances and tolerances.

**NOTES:**

- (1) Asterisks denote standard sizes of the UNC, UNF, or UNEF thread series. See Note (4).
- (2) Allowances apply to external thread Class 2A only and are taken from Table 32.
- (3) Major diameter of internal threads may extend to a *P*/24 flat.
- (4) Classes 2A, 2B, 3A, and 3B PD tolerances are based on a length of engagement of nine pitches and are taken from Tables 34, 35, 37, and 38, except that for the Nos. 6, 8, and 10 sizes they are based on a length of engagement equal to the nominal diameter.
- (5) Minor diameter of external threads may extend to a *P*/8 flat.
- (6) Classes 2B and 3B minor diameter tolerances are based on a length of engagement of one diameter.

**TABLE 31 MAJOR DIAMETER TOLERANCES  
FOR EXTERNAL THREADS OF SPECIAL  
DIAMETERS, PITCHES, AND LENGTHS OF  
ENGAGEMENT (UNS/UNRS) — CLASSES  
1A, 2A, AND 3A**

Threads/in.	Major Diameter Tolerance	
	Class 1A $0.090 \sqrt[3]{P^2}$	Class 2A and Class 3A $0.060 \sqrt[3]{P^2}$
80	...	0.0032
72	...	0.0035
64	...	0.0038
56	...	0.0041
48	...	0.0045
44	...	0.0048
40	0.0077	0.0051
36	0.0083	0.0055
32	0.0089	0.0060
28	0.0098	0.0065
27	0.0100	0.0067
24	0.0108	0.0072
20	0.0122	0.0081
18	0.0131	0.0087
16	0.0142	0.0094
14	0.0155	0.0103
12	0.0172	0.0114
10	0.0194	0.0129
8	0.0225	0.0150
6	0.0273	0.0182
4	0.0357	0.0238
...	...	...

**TABLE 32 ALLOWANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS AND PITCHES  
(UNS/UNRS) – CLASSES 1A AND 2A**

Allowance based on basic major diameter of	0.0625	0.09375	0.125	0.1875	0.25	0.375	0.5	0.625	0.75	1	1.25	1.5
For diameter range above	0.0470	0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	1.125	1.375
To and including	0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	1.125	1.375	1.625
Threads/in.	Major, Pitch, and Minor Diameter Allowances, in.											
80	0.0006	0.0006	0.0006	0.0007	0.0007	...	...	...	...	...	...	...
72	0.0006	0.0006	0.0006	0.0007	0.0007	0.0007	...	...	...	...	...	...
64	0.0006	0.0007	0.0007	0.0007	0.0007	0.0008	0.0008	...	...	...	...	...
56	...	0.0007	0.0007	0.0007	0.0008	0.0008	0.0008	0.0009	0.0009	...	...	...
48	...	0.0007	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0009	...	...	...
44	...	0.0008	0.0008	0.0008	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	...	...
40	...	...	0.0008	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0010	...
36	...	...	0.0009	0.0009	0.0009	0.0010	0.0010	0.0010	0.0010	0.0011	0.0011	0.0012
32	...	...	0.0009	0.0009	0.0010	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012
28	...	...	...	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012	0.0012	0.0013
27	...	...	...	0.0010	0.0010	0.0011	0.0011	0.0011	0.0012	0.0012	0.0012	0.0013
24	...	...	...	0.0011	0.0011	0.0011	0.0012	0.0012	0.0012	0.0013	0.0013	0.0013
20	...	...	...	...	0.0012	0.0012	0.0013	0.0013	0.0013	0.0014	0.0014	0.0014
18	...	...	...	...	...	0.0013	0.0013	0.0014	0.0014	0.0014	0.0015	0.0015
16	...	...	...	...	...	0.0014	0.0014	0.0014	0.0015	0.0015	0.0015	0.0016
14	...	...	...	...	...	...	0.0015	0.0015	0.0015	0.0016	0.0016	0.0017
12	...	...	...	...	...	...	0.0016	0.0016	0.0017	0.0017	0.0017	0.0018
10	...	...	...	...	...	...	...	...	0.0018	0.0018	0.0019	0.0019
8	...	...	...	...	...	...	...	...	...	0.0021	0.0021	0.0021
6	...	...	...	...	...	...	...	...	...	...	...	0.0024
4	...	...	...	...	...	...	...	...	...	...	...	...

**TABLE 32 ALLOWANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS AND PITCHES  
(UNS/UNRS) – CLASSES 1A AND 2A (CONT'D)**

Allowance based on basic major diameter of	1.75	2	2.5	3	3.5	4	5	6	8	10	12	
For diameter range above	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	
To and including	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	13	
Threads/in.	Major, Pitch, and Minor Diameter Allowances, in.											
80	...	...	...	...	...	...	...	...	...	...	...	
72	...	...	...	...	...	...	...	...	...	...	...	
64	...	...	...	...	...	...	...	...	...	...	...	
56	...	...	...	...	...	...	...	...	...	...	...	
48	...	...	...	...	...	...	...	...	...	...	...	
44	...	...	...	...	...	...	...	...	...	...	...	
40	...	...	...	...	...	...	...	...	...	...	...	
36	...	...	...	...	...	...	...	...	...	...	...	
32	0.0012	0.0013	0.0013	0.0013	0.0013	...	...	...	...	...	...	
28	0.0013	0.0013	0.0014	0.0014	0.0014	0.0014	0.0015	...	...	...	...	
27	0.0013	0.0013	0.0014	0.0014	0.0014	0.0014	0.0015	0.0015	0.0016	...	...	
24	0.0014	0.0014	0.0014	0.0015	0.0015	0.0015	0.0015	0.0016	0.0016	...	...	
20	0.0015	0.0015	0.0015	0.0016	0.0016	0.0016	0.0016	0.0017	0.0017	...	...	
18	0.0015	0.0015	0.0016	0.0016	0.0017	0.0017	0.0017	0.0017	0.0018	0.0019	...	
16	0.0016	0.0016	0.0017	0.0017	0.0017	0.0017	0.0018	0.0018	0.0019	0.0019	0.0020	
14	0.0017	0.0017	0.0017	0.0018	0.0018	0.0018	0.0018	0.0019	0.0020	0.0020	0.0021	0.0022
12	0.0018	0.0018	0.0019	0.0019	0.0019	0.0019	0.0020	0.0020	0.0021	0.0021	0.0022	0.0023
10	0.0019	0.0020	0.0020	0.0020	0.0021	0.0021	0.0021	0.0022	0.0022	0.0023	0.0024	0.0024
8	0.0021	0.0022	0.0022	0.0023	0.0023	0.0023	0.0023	0.0024	0.0024	0.0025	0.0026	0.0026
6	0.0025	0.0025	0.0025	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0028	0.0029	0.0029
4	...	0.0030	0.0031	0.0031	0.0031	0.0031	0.0032	0.0032	0.0033	0.0034	0.0034	0.0035

Classes 1A and 2A allowances are determined by multiplying Class 2A pitch diameter tolerances (computed to six decimal places) by 0.3 and are based on lengths of engagement of nine pitches.

Table 33 begins on the next page.

**TABLE 33 PITCH DIAMETER TOLERANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS) — CLASS 1A**

Tolerance based on basic major diameter of		0.0625	0.09375	0.125	0.1875	0.25	0.375	0.5	0.625	0.75	1
For diameter range above		0.0470	0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875
To and including		0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	1.125
Threads/in.	Length of Engagement		Pitch Diameter Tolerances, in.								
	Number of Pitches	in.									
80	5 to 15	0.06 to 0.19	...	...	...	...	...	...	...	...	...
	16 to 30	0.191 to 0.38	...	...	...	...	...	...	...	...	...
72	5 to 15	0.07 to 0.21	...	...	...	...	...	...	...	...	...
	16 to 30	0.211 to 0.42	...	...	...	...	...	...	...	...	...
64	5 to 15	0.08 to 0.23	...	...	...	...	...	...	...	...	...
	16 to 30	0.231 to 0.46	...	...	...	...	...	...	...	...	...
56	5 to 15	0.09 to 0.27	...	...	...	...	...	...	...	...	...
	16 to 30	0.271 to 0.54	...	...	...	...	...	...	...	...	...
48	5 to 15	0.10 to 0.31	...	...	...	...	...	...	...	...	...
	16 to 30	0.311 to 0.62	...	...	...	...	...	...	...	...	...
44	5 to 15	0.11 to 0.34	...	0.0038	0.0039	0.0041	0.0042	0.0044	0.0046	0.0047	0.0049
	16 to 30	0.341 to 0.68	...	0.0048	0.0049	0.0051	0.0053	0.0056	0.0058	0.0059	0.0061
40	5 to 15	0.12 to 0.38	...	...	0.0041	0.0043	0.0044	0.0046	0.0048	0.0049	0.0050
	16 to 30	0.381 to 0.76	...	...	0.0051	0.0053	0.0055	0.0058	0.0060	0.0061	0.0063
36	5 to 15	0.14 to 0.42	...	...	0.0043	0.0045	0.0046	0.0048	0.0050	0.0051	0.0052
	16 to 30	0.421 to 0.84	...	...	0.0054	0.0056	0.0058	0.0060	0.0062	0.0064	0.0065
32	5 to 15	0.16 to 0.47	...	...	0.0045	0.0047	0.0048	0.0050	0.0052	0.0053	0.0055
	16 to 30	0.471 to 0.94	...	...	0.0057	0.0059	0.0061	0.0063	0.0065	0.0067	0.0068
28	5 to 15	0.18 to 0.54	...	...	...	0.0050	0.0051	0.0053	0.0055	0.0056	0.0058
	16 to 30	0.541 to 1.08	...	...	...	0.0063	0.0064	0.0067	0.0069	0.0070	0.0072
27	5 to 15	0.19 to 0.56	...	...	...	0.0051	0.0052	0.0056	0.0056	0.0057	0.0058
	16 to 30	0.561 to 1.12	...	...	...	0.0064	0.0065	0.0068	0.0070	0.0072	0.0073
24	5 to 15	0.21 to 0.62	...	...	...	0.0054	0.0055	0.0057	0.0059	0.0060	0.0061
	16 to 30	0.621 to 1.24	...	...	...	0.0067	0.0069	0.0071	0.0073	0.0075	0.0077
20	5 to 15	0.25 to 0.75	...	...	...	...	0.0060	0.0062	0.0063	0.0065	0.0066
	16 to 30	0.751 to 1.50	...	...	...	...	0.0075	0.0077	0.0079	0.0081	0.0083
18	5 to 15	0.28 to 0.83	...	...	...	...	...	0.0065	0.0067	0.0068	0.0069
	16 to 30	0.831 to 1.66	...	...	...	...	...	0.0081	0.0083	0.0085	0.0086
16	5 to 15	0.31 to 0.94	...	...	...	...	...	0.0069	0.0070	0.0072	0.0073
	16 to 30	0.941 to 1.88	...	...	...	...	...	0.0086	0.0088	0.0089	0.0091
14	5 to 15	0.36 to 1.07	...	...	...	...	...	...	0.0075	0.0076	0.0077
	16 to 30	1.071 to 2.14	...	...	...	...	...	...	0.0093	0.0095	0.0097
12	5 to 15	0.42 to 1.25	...	...	...	...	...	...	0.0080	0.0082	0.0083
	16 to 30	1.251 to 2.50	...	...	...	...	...	...	0.0100	0.0102	0.0104
10	5 to 15	0.50 to 1.50	...	...	...	...	...	...	...	...	0.0090
	16 to 30	1.501 to 3.00	...	...	...	...	...	...	...	...	0.0113
8	5 to 15	0.62 to 1.88	...	...	...	...	...	...	...	...	...
	16 to 30	1.881 to 3.76	...	...	...	...	...	...	...	...	0.0103
6	5 to 15	0.83 to 2.50	...	...	...	...	...	...	...	...	...
	16 to 30	2.501 to 5.00	...	...	...	...	...	...	...	...	0.0128
4	5 to 15	1.25 to 3.75	...	...	...	...	...	...	...	...	...
	16 to 30	3.751 to 7.50	...	...	...	...	...	...	...	...	...

**GENERAL NOTES:**

- (a) These values do not agree with and shall not be used in place of any tabulated values for the UNC, UNF, and 8-UN thread series.
- (b) Class 1A tolerances in this Table for 5 to 15 pitches are based on 9 pitches and are obtained by multiplying the Class 2A (external thread) tolerances for 9 pitches taken to six decimal places (see Table 19) by a factor of 1.5.
- (c) Class 1A tolerances in this Table for 16 to 30 pitches are obtained by multiplying the Class 2A (external thread) tolerances for 9 pitches taken to six decimal places by a factor of 1.875 (obtained by multiplying the 1.5 factor by 1.25). For lengths of engagement not tabulated, see Section 5.



**TABLE 33 PITCH DIAMETER TOLERANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS) — CLASS 1A**

1.25	1.5	1.75	2	2.5	3	3.5	4	5	6	8	10	12	Threads/in.
1.125	1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	
1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	13	
Pitch Diameter Tolerances, in.													
...	...	...	...	...	...	...	...	...	...	...	...	...	80
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	72
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	64
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	56
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	48
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	44
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	40
...	...	...	...	...	...	...	...	...	...	...	...	...	
0.0056	0.0058	...	...	...	...	...	...	...	...	...	...	...	36
0.0070	0.0072	...	...	...	...	...	...	...	...	...	...	...	
0.0058	0.0060	0.0061	0.0063	0.0065	0.0067	...	...	...	...	...	...	...	32
0.0073	0.0075	0.0077	0.0078	0.0081	0.0083	...	...	...	...	...	...	...	
0.0061	0.0063	0.0064	0.0066	0.0068	0.0070	0.0071	0.0073	...	...	...	...	...	28
0.0077	0.0079	0.0080	0.0082	0.0085	0.0087	0.0089	0.0091	...	...	...	...	...	
0.0061	0.0064	0.0065	0.0066	0.0069	0.0070	0.0072	0.0074	0.0076	0.0079	...	...	...	27
0.0078	0.0080	0.0081	0.0083	0.0086	0.0088	0.0090	0.0092	0.0096	0.0099	...	...	...	
0.0065	0.0067	0.0068	0.0069	0.0071	0.0073	0.0075	0.0077	0.0079	0.0082	...	...	...	24
0.0081	0.0083	0.0085	0.0086	0.0089	0.0092	0.0094	0.0096	0.0099	0.0102	...	...	...	
0.0070	0.0071	0.0073	0.0074	0.0076	0.0078	0.0080	0.0081	0.0084	0.0087	...	...	...	20
0.0087	0.0089	0.0091	0.0092	0.0095	0.0098	0.0100	0.0102	0.0105	0.0108	...	...	...	
0.0073	0.0074	0.0076	0.0077	0.0079	0.0081	0.0083	0.0084	0.0087	0.0090	0.0094	...	...	18
0.0091	0.0093	0.0095	0.0096	0.0099	0.0101	0.0104	0.0105	0.0109	0.0112	0.0117	...	...	
0.0077	0.0078	0.0078	0.0081	0.0083	0.0085	0.0086	0.0088	0.0091	0.0093	0.0097	0.0101	...	16
0.0096	0.0098	0.0099	0.0101	0.0104	0.0106	0.0108	0.0110	0.0113	0.0116	0.0122	0.0126	...	
0.0081	0.0083	0.0084	0.0085	0.0087	0.0089	0.0091	0.0092	0.0095	0.0098	0.0102	0.0105	0.0108	14
0.0101	0.0103	0.0105	0.0108	0.0109	0.0112	0.0114	0.0116	0.0119	0.0122	0.0127	0.0132	0.0135	
0.0087	0.0088	0.0090	0.0091	0.0093	0.0095	0.0097	0.0098	0.0101	0.0103	0.0107	0.0111	0.0114	12
0.0108	0.0110	0.0112	0.0113	0.0116	0.0119	0.0121	0.0123	0.0126	0.0129	0.0134	0.0139	0.0142	
0.0094	0.0096	0.0097	0.0098	0.0100	0.0102	0.0104	0.0106	0.0108	0.0111	0.0115	0.0118	0.0121	10
0.0118	0.0119	0.0121	0.0123	0.0125	0.0128	0.0130	0.0132	0.0135	0.0138	0.0144	0.0148	0.0152	
0.0104	0.0106	0.0107	0.0108	0.0111	0.0113	0.0114	0.0116	0.0119	0.0121	0.0125	0.0129	0.0132	8
0.0130	0.0132	0.0134	0.0136	0.0138	0.0141	0.0143	0.0145	0.0148	0.0151	0.0156	0.0161	0.0165	
...	0.0121	0.0123	0.0124	0.0126	0.0128	0.0130	0.0131	0.0134	0.0137	0.0141	0.0144	0.0147	6
...	0.0152	0.0154	0.0155	0.0158	0.0160	0.0162	0.0164	0.0168	0.0171	0.0176	0.0180	0.0184	
...	...	...	0.0151	0.0154	0.0155	0.0157	0.0159	0.0162	0.0164	0.0168	0.0172	0.0175	4
...	...	...	0.0189	0.0192	0.0194	0.0196	0.0198	0.0202	0.0205	0.0210	0.0214	0.0214	

(d) Pitches listed are those used most commonly and are recommended. Where intermediate pitches are specified, the formula in Section 5 should be applied.  
 (e) Tolerances are tabulated only for combinations of diameter, pitch, and length of engagement that are considered to be generally used. For other combinations encountered, see Section 5.

**TABLE 34 PITCH DIAMETER TOLERANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS) — CLASS 2A**

Tolerance based on basic major diameter of		0.0625	0.09375	0.125	0.1875	0.25	0.375	0.5	0.625	0.75	1	
For diameter range above		0.0470	0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	
To and including		0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	1.125	
Threads/in.	Length of Engagement		Pitch Diameter Tolerances, in.									
	Number of Pitches	in.										
80	5 to 15	0.06 to 0.19	0.0019	0.0020	0.0021	0.0022	0.0023	...	...	...	...	...
	16 to 30	0.191 to 0.38	0.0024	0.0025	0.0026	0.0027	0.0028	...	...	...	...	...
72	5 to 15	0.07 to 0.21	0.0020	0.0021	0.0021	0.0023	0.0023	0.0025	...	...	...	...
	16 to 30	0.211 to 0.42	0.0025	0.0026	0.0027	0.0028	0.0029	0.0031	...	...	...	...
64	5 to 15	0.08 to 0.23	0.0021	0.0022	0.0022	0.0024	0.0024	0.0026	0.0027	...	...	...
	16 to 30	0.231 to 0.46	0.0026	0.0027	0.0028	0.0029	0.0031	0.0032	0.0034	...	...	...
56	5 to 15	0.09 to 0.27	...	0.0023	0.0024	0.0025	0.0026	0.0027	0.0028	0.0029	0.0030	...
	16 to 30	0.271 to 0.54	...	0.0029	0.0030	0.0031	0.0032	0.0034	0.0035	0.0036	0.0037	...
48	5 to 15	0.10 to 0.31	...	0.0025	0.0025	0.0026	0.0027	0.0029	0.0030	0.0031	0.0031	...
	16 to 30	0.311 to 0.62	...	0.0031	0.0032	0.0033	0.0034	0.0036	0.0037	0.0038	0.0039	...
44	5 to 15	0.11 to 0.34	...	0.0026	0.0026	0.0027	0.0028	0.0030	0.0031	0.0032	0.0032	0.0034
	16 to 30	0.341 to 0.68	...	0.0032	0.0033	0.0034	0.0035	0.0037	0.0038	0.0040	0.0041	0.0042
40	5 to 15	0.12 to 0.38	...	...	0.0027	0.0029	0.0029	0.0031	0.0032	0.0033	0.0034	0.0035
	16 to 30	0.381 to 0.76	...	...	0.0034	0.0036	0.0037	0.0038	0.0040	0.0041	0.0042	0.0044
36	5 to 15	0.14 to 0.42	...	...	0.0029	0.0030	0.0031	0.0032	0.0033	0.0034	0.0035	0.0036
	16 to 30	0.421 to 0.84	...	...	0.0036	0.0037	0.0038	0.0040	0.0041	0.0043	0.0044	0.0045
32	5 to 15	0.16 to 0.47	...	...	0.0030	0.0031	0.0032	0.0034	0.0035	0.0036	0.0036	0.0038
	16 to 30	0.471 to 0.94	...	...	0.0038	0.0039	0.0040	0.0042	0.0043	0.0045	0.0046	0.0047
28	5 to 15	0.18 to 0.54	...	...	...	0.0033	0.0034	0.0036	0.0037	0.0038	0.0038	0.0040
	16 to 30	0.541 to 1.08	...	...	...	0.0042	0.0043	0.0044	0.0046	0.0047	0.0048	0.0050
27	5 to 15	0.19 to 0.56	...	...	...	0.0034	0.0035	0.0036	0.0037	0.0038	0.0039	0.0040
	16 to 30	0.561 to 1.12	...	...	...	0.0042	0.0043	0.0045	0.0047	0.0048	0.0049	0.0050
24	5 to 15	0.21 to 0.62	...	...	...	0.0036	0.0037	0.0038	0.0039	0.0040	0.0041	0.0042
	16 to 30	0.621 to 1.24	...	...	...	0.0045	0.0046	0.0048	0.0049	0.0050	0.0051	0.0053
20	5 to 15	0.25 to 0.75	...	...	...	...	0.0040	0.0041	0.0042	0.0043	0.0044	0.0045
	16 to 30	0.751 to 1.50	...	...	...	...	0.0050	0.0052	0.0053	0.0054	0.0055	0.0057
18	5 to 15	0.28 to 0.83	...	...	...	...	...	0.0043	0.0044	0.0045	0.0046	0.0047
	16 to 30	0.831 to 1.66	...	...	...	...	...	0.0054	0.0055	0.0057	0.0058	0.0059
16	5 to 15	0.31 to 0.94	...	...	...	...	...	0.0046	0.0047	0.0048	0.0049	0.0050
	16 to 30	0.941 to 1.88	...	...	...	...	...	0.0057	0.0058	0.0060	0.0061	0.0062
14	5 to 15	0.36 to 1.07	...	...	...	...	...	...	0.0050	0.0051	0.0051	0.0053
	16 to 30	1.071 to 2.14	...	...	...	...	...	...	0.0062	0.0063	0.0064	0.0066
12	5 to 15	0.42 to 1.25	...	...	...	...	...	...	0.0054	0.0054	0.0055	0.0057
	16 to 30	1.251 to 2.50	...	...	...	...	...	...	0.0067	0.0068	0.0069	0.0071
10	5 to 15	0.50 to 1.50	...	...	...	...	...	...	...	...	0.0060	0.0062
	16 to 30	1.501 to 3.00	...	...	...	...	...	...	...	...	0.0075	0.0077
8	5 to 15	0.62 to 1.88	...	...	...	...	...	...	...	...	...	0.0068
	16 to 30	1.881 to 3.76	...	...	...	...	...	...	...	...	...	0.0086
6	5 to 15	0.83 to 2.50	...	...	...	...	...	...	...	...	...	...
	16 to 30	2.501 to 5.00	...	...	...	...	...	...	...	...	...	...
4	5 to 15	1.25 to 3.75	...	...	...	...	...	...	...	...	...	...
	16 to 30	3.751 to 7.50	...	...	...	...	...	...	...	...	...	...

**GENERAL NOTES:**

(a) These values do not agree with and shall not be used in place of any tabulated values for the UNC, UNF, and 8-UN thread series.

(b) Formula:

Class 2A tolerances =  $0.0015 \sqrt[3]{D} + 0.0015 \sqrt{LE} + 0.015 \sqrt[3]{P^2}$ , where

*D* = basic major diameter

*LE* = length of engagement

*P* = pitch

**TABLE 34 PITCH DIAMETER TOLERANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS)—CLASS 2A**

1.25	1.5	1.75	2	2.5	3	3.5	4	5	6	8	10	12		
1.125	1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11		
1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	13		
Pitch Diameter Tolerances, in.													Threads/in.	
...	...	...	...	...	...	...	...	...	...	...	...	...	80	
...	...	...	...	...	...	...	...	...	...	...	...	...	72	
...	...	...	...	...	...	...	...	...	...	...	...	...	64	
...	...	...	...	...	...	...	...	...	...	...	...	...	56	
...	...	...	...	...	...	...	...	...	...	...	...	...	48	
...	...	...	...	...	...	...	...	...	...	...	...	...	44	
...	...	...	...	...	...	...	...	...	...	...	...	...	40	
0.0037	0.0038	...	...	...	...	...	...	...	...	...	...	...	36	
0.0047	0.0048	...	...	...	...	...	...	...	...	...	...	...	32	
0.0039	0.0040	0.0041	0.0042	0.0043	0.0044	...	...	...	...	...	...	...	28	
0.0049	0.0050	0.0051	0.0052	0.0054	0.0056	...	...	...	...	...	...	...	27	
0.0041	0.0042	0.0043	0.0044	0.0045	0.0046	0.0048	0.0049	...	...	...	...	...	24	
0.0051	0.0052	0.0054	0.0055	0.0056	0.0058	0.0059	0.0061	...	...	...	...	...	20	
0.0041	0.0042	0.0043	0.0044	0.0046	0.0047	0.0048	0.0049	0.0051	0.0053	...	...	...	18	
0.0052	0.0053	0.0054	0.0055	0.0057	0.0059	0.0060	0.0061	0.0064	0.0066	...	...	...	16	
0.0043	0.0044	0.0045	0.0046	0.0048	0.0049	0.0050	0.0051	0.0053	0.0054	...	...	...	14	
0.0054	0.0055	0.0057	0.0058	0.0059	0.0061	0.0062	0.0064	0.0066	0.0068	...	...	...	12	
0.0047	0.0048	0.0048	0.0049	0.0051	0.0052	0.0053	0.0054	0.0056	0.0058	...	...	...	10	
0.0058	0.0059	0.0061	0.0062	0.0063	0.0065	0.0066	0.0068	0.0070	0.0072	...	...	...	8	
0.0049	0.0050	0.0051	0.0051	0.0053	0.0054	0.0055	0.0056	0.0058	0.0060	0.0062	...	...	6	
0.0061	0.0062	0.0063	0.0064	0.0066	0.0068	0.0069	0.0070	0.0073	0.0075	0.0078	...	...	4	
0.0051	0.0052	0.0053	0.0054	0.0055	0.0056	0.0058	0.0059	0.0061	0.0062	0.0065	0.0067	...	...	...
0.0064	0.0065	0.0066	0.0067	0.0069	0.0071	0.0072	0.0073	0.0076	0.0078	0.0081	0.0084	...	...	...
0.0054	0.0055	0.0056	0.0057	0.0058	0.0059	0.0061	0.0062	0.0064	0.0065	0.0068	0.0070	0.0072	...	...
0.0068	0.0069	0.0070	0.0071	0.0073	0.0074	0.0076	0.0077	0.0079	0.0081	0.0085	0.0088	0.0090	...	...
0.0058	0.0059	0.0060	0.0061	0.0062	0.0063	0.0064	0.0065	0.0067	0.0069	0.0072	0.0074	0.0076	...	...
0.0072	0.0073	0.0075	0.0076	0.0077	0.0079	0.0080	0.0082	0.0084	0.0086	0.0090	0.0092	0.0095	...	...
0.0063	0.0064	0.0065	0.0065	0.0067	0.0068	0.0069	0.0070	0.0072	0.0074	0.0077	0.0079	0.0081	...	...
0.0078	0.0080	0.0081	0.0082	0.0084	0.0085	0.0087	0.0088	0.0090	0.0092	0.0096	0.0099	0.0101	...	...
0.0070	0.0071	0.0071	0.0072	0.0074	0.0075	0.0076	0.0077	0.0079	0.0081	0.0083	0.0086	0.0088	...	...
0.0087	0.0088	0.0089	0.0090	0.0092	0.0094	0.0095	0.0097	0.0099	0.0101	0.0104	0.0107	0.0110	...	...
...	0.0081	0.0082	0.0083	0.0084	0.0085	0.0087	0.0088	0.0089	0.0091	0.0094	0.0096	0.0098	...	...
...	0.0101	0.0102	0.0103	0.0105	0.0107	0.0108	0.0110	0.0112	0.0114	0.0117	0.0120	0.0123	...	...
...	...	...	0.0101	0.0102	0.0104	0.0105	0.0106	0.0108	0.0109	0.0112	0.0114	0.0116	...	...
...	...	...	0.0126	0.0128	0.0130	0.0131	0.0132	0.0135	0.0137	0.0140	0.0143	0.0145	...	...

- (c) Length of engagement increments included in the tabulated tolerances for lengths of engagement of from 5 to 15 pitches are based on lengths of 9 pitches; those for lengths of engagement of from 16 to 30 pitches are obtained by multiplying the 9 pitch values taken to six decimal places by 1.25. For lengths of engagement not tabulated, the formula in (b) above should be applied except as modified.
- (d) Pitches listed are those used most commonly and are recommended. When intermediate pitches are specified, the formula in (b) above should be applied.
- (e) Tolerances are tabulated only for combinations of diameter, pitch, and length of engagement that are considered to be generally used. For other combinations encountered, see Section 5.

**TABLE 35 PITCH DIAMETER TOLERANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS) — CLASS 3A**

Tolerance based on basic major diameter of		0.0625	0.09375	0.125	0.1875	0.25	0.375	0.5	0.625	0.75	1	
For diameter range above		0.0470	0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	
To and including		0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	1.125	
Threads/in.	Length of Engagement		Pitch Diameter Tolerances, in.									
	Number of Pitches	in.										
80	5 to 15	0.06 to 0.19	0.0014	0.0015	0.0015	0.0016	0.0017	...	...	...	...	...
	16 to 30	0.191 to 0.38	0.0018	0.0019	0.0019	0.0020	0.0021	...	...	...	...	...
72	5 to 15	0.07 to 0.21	0.0015	0.0016	0.0016	0.0017	0.0018	0.0019	...	...	...	...
	16 to 30	0.211 to 0.42	0.0019	0.0019	0.0020	0.0021	0.0022	0.0023	...	...	...	...
64	5 to 15	0.08 to 0.23	0.0016	0.0016	0.0017	0.0018	0.0018	0.0019	0.0020	...	...	...
	16 to 30	0.231 to 0.46	0.0020	0.0020	0.0021	0.0022	0.0023	0.0024	0.0025	...	...	...
56	5 to 15	0.09 to 0.27	...	0.0017	0.0018	0.0019	0.0019	0.0020	0.0021	0.0022	0.0022	...
	16 to 30	0.271 to 0.54	...	0.0022	0.0022	0.0023	0.0024	0.0025	0.0026	0.0027	0.0028	...
48	5 to 15	0.10 to 0.31	...	0.0019	0.0019	0.0019	0.0020	0.0020	0.0022	0.0023	0.0024	...
	16 to 30	0.311 to 0.62	...	0.0022	0.0023	0.0024	0.0025	0.0026	0.0027	0.0029	0.0030	...
44	5 to 15	0.11 to 0.34	...	0.0019	0.0020	0.0021	0.0021	0.0022	0.0023	0.0024	0.0024	0.0025
	16 to 30	0.341 to 0.68	...	0.0024	0.0025	0.0026	0.0026	0.0028	0.0029	0.0030	0.0030	0.0032
40	5 to 15	0.12 to 0.38	...	...	0.0021	0.0021	0.0022	0.0023	0.0024	0.0025	0.0025	0.0026
	16 to 30	0.381 to 0.76	...	...	0.0026	0.0027	0.0028	0.0029	0.0030	0.0031	0.0031	0.0033
36	5 to 15	0.14 to 0.42	...	...	0.0022	0.0022	0.0023	0.0024	0.0025	0.0026	0.0026	0.0027
	16 to 30	0.421 to 0.84	...	...	0.0027	0.0028	0.0029	0.0030	0.0031	0.0032	0.0033	0.0034
32	5 to 15	0.16 to 0.47	...	...	0.0023	0.0024	0.0024	0.0025	0.0026	0.0027	0.0027	0.0028
	16 to 30	0.471 to 0.94	...	...	0.0028	0.0029	0.0030	0.0032	0.0033	0.0033	0.0034	0.0035
28	5 to 15	0.18 to 0.54	...	...	...	0.0025	0.0026	0.0027	0.0028	0.0028	0.0029	0.0030
	16 to 30	0.541 to 1.08	...	...	...	0.0031	0.0032	0.0033	0.0034	0.0035	0.0036	0.0037
27	5 to 15	0.19 to 0.56	...	...	...	0.0025	0.0026	0.0027	0.0028	0.0029	0.0029	0.0030
	16 to 30	0.561 to 1.12	...	...	...	0.0032	0.0033	0.0034	0.0035	0.0036	0.0037	0.0038
24	5 to 15	0.21 to 0.62	...	...	...	0.0027	0.0028	0.0029	0.0029	0.0030	0.0031	0.0032
	16 to 30	0.621 to 1.24	...	...	...	0.0034	0.0034	0.0036	0.0037	0.0038	0.0038	0.0040
20	5 to 15	0.25 to 0.75	...	...	...	...	0.0030	0.0031	0.0032	0.0032	0.0033	0.0034
	16 to 30	0.751 to 1.50	...	...	...	...	0.0037	0.0039	0.0040	0.0041	0.0041	0.0043
18	5 to 15	0.28 to 0.83	...	...	...	...	...	0.0032	0.0033	0.0034	0.0035	0.0036
	16 to 30	0.831 to 1.66	...	...	...	...	...	0.0041	0.0042	0.0042	0.0043	0.0044
16	5 to 15	0.31 to 0.94	...	...	...	...	...	0.0034	0.0035	0.0036	0.0036	0.0037
	16 to 30	0.941 to 1.88	...	...	...	...	...	0.0043	0.0044	0.0045	0.0045	0.0047
14	5 to 15	0.36 to 1.07	...	...	...	...	...	...	0.0037	0.0038	0.0039	0.0040
	16 to 30	1.071 to 2.14	...	...	...	...	...	...	0.0047	0.0048	0.0048	0.0050
12	5 to 15	0.42 to 1.25	...	...	...	...	...	...	0.0040	0.0041	0.0041	0.0042
	16 to 30	1.251 to 2.50	...	...	...	...	...	...	0.0050	0.0051	0.0052	0.0053
10	5 to 15	0.50 to 1.50	...	...	...	...	...	...	...	...	0.0045	0.0046
	16 to 30	1.501 to 3.00	...	...	...	...	...	...	...	...	0.0056	0.0058
8	5 to 15	0.62 to 1.88	...	...	...	...	...	...	...	...	...	0.0051
	16 to 30	1.881 to 3.76	...	...	...	...	...	...	...	...	...	0.0064
6	5 to 15	0.83 to 2.50	...	...	...	...	...	...	...	...	...	...
	16 to 30	2.501 to 5.00	...	...	...	...	...	...	...	...	...	...
4	5 to 15	1.25 to 3.75	...	...	...	...	...	...	...	...	...	...
	16 to 30	3.751 to 7.50	...	...	...	...	...	...	...	...	...	...

**GENERAL NOTES:**

- (a) These values do not agree with and shall not be used in place of any tabulated values for the UNC, UNF, and 8-UN thread series.
- (b) Class 3A tolerances in this Table for 5 to 15 pitches are based on 9 pitches and are obtained by multiplying the Class 2A (external thread) tolerances for 9 pitches taken to six decimal places by a factor of 0.75.
- (c) Class 3A tolerances in this Table for 16 to 30 pitches are obtained by multiplying the Class 2A (external thread) tolerances for 9 pitches taken to six decimal places by a factor of 0.9375 (obtained by multiplying the 0.75 factor by 1.25). For lengths of engagement not tabulated, see Section 5.

**TABLE 35 PITCH DIAMETER TOLERANCES FOR EXTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS)—CLASS 3A**

1.25	1.5	1.75	2	2.5	3	3.5	4	5	6	8	10	12	
1.125	1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	
1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	13	
Pitch Diameter Tolerances, in.													Threads/in.
...	...	...	...	...	...	...	...	...	...	...	...	...	80
...	...	...	...	...	...	...	...	...	...	...	...	...	72
...	...	...	...	...	...	...	...	...	...	...	...	...	64
...	...	...	...	...	...	...	...	...	...	...	...	...	56
...	...	...	...	...	...	...	...	...	...	...	...	...	48
...	...	...	...	...	...	...	...	...	...	...	...	...	44
...	...	...	...	...	...	...	...	...	...	...	...	...	40
...	...	...	...	...	...	...	...	...	...	...	...	...	36
0.0028	0.0029	...	...	...	...	...	...	...	...	...	...	...	32
0.0035	0.0036	...	...	...	...	...	...	...	...	...	...	...	28
0.0029	0.0030	0.0031	0.0031	0.0032	0.0033	...	...	...	...	...	...	...	27
0.0037	0.0038	0.0038	0.0039	0.0040	0.0042	...	...	...	...	...	...	...	24
0.0031	0.0031	0.0032	0.0033	0.0034	0.0035	0.0036	0.0036	...	...	...	...	...	20
0.0038	0.0039	0.0040	0.0041	0.0042	0.0044	0.0045	0.0046	...	...	...	...	...	18
0.0031	0.0032	0.0033	0.0033	0.0034	0.0035	0.0036	0.0037	0.0038	0.0039	...	...	...	16
0.0039	0.0040	0.0041	0.0041	0.0043	0.0044	0.0045	0.0046	0.0048	0.0049	...	...	...	14
0.0033	0.0033	0.0034	0.0035	0.0036	0.0037	0.0037	0.0038	0.0040	0.0041	...	...	...	12
0.0041	0.0042	0.0042	0.0043	0.0045	0.0046	0.0047	0.0048	0.0050	0.0051	...	...	...	10
0.0035	0.0036	0.0036	0.0037	0.0038	0.0039	0.0040	0.0041	0.0042	0.0043	...	...	...	8
0.0044	0.0045	0.0045	0.0046	0.0048	0.0049	0.0050	0.0051	0.0053	0.0054	...	...	...	6
0.0036	0.0037	0.0038	0.0039	0.0040	0.0041	0.0041	0.0042	0.0044	0.0045	0.0047	...	...	4
0.0046	0.0047	0.0047	0.0048	0.0050	0.0051	0.0052	0.0053	0.0054	0.0056	0.0059	...	...	
0.0038	0.0039	0.0040	0.0040	0.0041	0.0042	0.0043	0.0045	0.0045	0.0047	0.0049	0.0050	...	
0.0048	0.0049	0.0050	0.0050	0.0052	0.0053	0.0054	0.0055	0.0057	0.0058	0.0061	0.0063	...	
0.0041	0.0041	0.0042	0.0043	0.0044	0.0045	0.0045	0.0046	0.0048	0.0049	0.0051	0.0053	0.0054	
0.0051	0.0052	0.0052	0.0053	0.0055	0.0056	0.0057	0.0058	0.0060	0.0061	0.0064	0.0066	0.0068	
0.0043	0.0044	0.0045	0.0045	0.0046	0.0047	0.0048	0.0049	0.0050	0.0052	0.0054	0.0055	0.0057	
0.0054	0.0055	0.0056	0.0057	0.0058	0.0059	0.0060	0.0061	0.0063	0.0065	0.0067	0.0069	0.0071	
0.0047	0.0048	0.0048	0.0049	0.0050	0.0051	0.0052	0.0053	0.0054	0.0055	0.0057	0.0059	0.0061	
0.0059	0.0060	0.0061	0.0061	0.0063	0.0064	0.0065	0.0066	0.0068	0.0069	0.0072	0.0074	0.0076	
0.0052	0.0053	0.0054	0.0054	0.0055	0.0056	0.0057	0.0058	0.0059	0.0061	0.0063	0.0064	0.0066	
0.0065	0.0066	0.0067	0.0068	0.0069	0.0070	0.0071	0.0072	0.0074	0.0076	0.0078	0.0080	0.0082	
...	0.0061	0.0061	0.0062	0.0063	0.0064	0.0065	0.0066	0.0067	0.0068	0.0070	0.0072	0.0074	
...	0.0076	0.0077	0.0078	0.0079	0.0080	0.0081	0.0082	0.0084	0.0085	0.0088	0.0090	0.0092	
...	...	...	0.0076	0.0077	0.0078	0.0079	0.0079	0.0081	0.0082	0.0084	0.0086	0.0087	
...	...	...	0.0095	0.0096	0.0097	0.0098	0.0098	0.0101	0.0102	0.0105	0.0107	0.0109	

- (d) Pitches listed are those used most commonly and are recommended. Where intermediate pitches are specified, the formula in Section 5 should be applied.
- (e) Tolerances are tabulated only for combinations of diameter, pitch, and length of engagement that are considered to be generally used. For other combinations encountered, see Section 5.

**TABLE 37 PITCH DIAMETER TOLERANCES FOR INTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS) – CLASS 2B**

Tolerance based on basic major diameter of		0.0625	0.09375	0.125	0.1875	0.25	0.375	0.5	0.625	0.75	1	
For diameter range above		0.0470	0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	
To and including		0.0781	0.1094	0.1562	0.2188	0.3125	0.4375	0.5625	0.6875	0.875	1.125	
Threads/in.	Length of Engagement		Pitch Diameter Tolerances, in.									
	Number of Pitches	in.										
80	5 to 15	0.06 to 0.19	0.0025	0.0026	0.0027	0.0028	0.0029	...	...	...	...	
	16 to 30	0.191 to 0.38	0.0031	0.0032	0.0033	0.0035	0.0037	...	...	...	...	
72	5 to 15	0.07 to 0.21	0.0026	0.0027	0.0028	0.0029	0.0030	0.0032	...	...	...	
	16 to 30	0.211 to 0.42	0.0032	0.0034	0.0035	0.0037	0.0038	0.0040	...	...	...	
64	5 to 15	0.08 to 0.23	0.0027	0.0028	0.0029	0.0031	0.0032	0.0034	0.0035	...	...	
	16 to 30	0.231 to 0.46	0.0034	0.0035	0.0037	0.0038	0.0040	0.0042	0.0044	...	...	
56	5 to 15	0.09 to 0.27	...	0.0030	0.0031	0.0032	0.0033	0.0035	0.0037	0.0038	0.0039	
	16 to 30	0.271 to 0.54	...	0.0037	0.0039	0.0040	0.0042	0.0044	0.0046	0.0047	0.0049	
48	5 to 15	0.10 to 0.31	...	0.0032	0.0033	0.0034	0.0036	0.0037	0.0039	0.0040	0.0041	
	16 to 30	0.311 to 0.62	...	0.0040	0.0041	0.0043	0.0044	0.0047	0.0048	0.0050	0.0051	
44	5 to 15	0.11 to 0.34	...	0.0033	0.0034	0.0036	0.0037	0.0039	0.0040	0.0041	0.0042	
	16 to 30	0.341 to 0.68	...	0.0042	0.0043	0.0045	0.0046	0.0048	0.0050	0.0051	0.0053	
40	5 to 15	0.12 to 0.38	...	...	0.0036	0.0037	0.0038	0.0041	0.0041	0.0043	0.0044	
	16 to 30	0.381 to 0.76	...	...	0.0045	0.0046	0.0048	0.0050	0.0052	0.0053	0.0055	
36	5 to 15	0.14 to 0.42	...	...	0.0037	0.0039	0.0040	0.0042	0.0043	0.0044	0.0045	
	16 to 30	0.421 to 0.84	...	...	0.0047	0.0049	0.0050	0.0052	0.0054	0.0055	0.0057	
32	5 to 15	0.16 to 0.47	...	...	0.0030	0.0041	0.0042	0.0044	0.0045	0.0046	0.0047	
	16 to 30	0.471 to 0.94	...	...	0.0049	0.0051	0.0052	0.0055	0.0056	0.0058	0.0059	
28	5 to 15	0.18 to 0.54	...	...	...	0.0043	0.0044	0.0046	0.0048	0.0049	0.0050	
	16 to 30	0.541 to 1.08	...	...	...	0.0054	0.0056	0.0058	0.0060	0.0061	0.0062	
27	5 to 15	0.19 to 0.56	...	...	...	0.0044	0.0045	0.0047	0.0048	0.0050	0.0051	
	16 to 30	0.561 to 1.12	...	...	...	0.0055	0.0057	0.0059	0.0061	0.0062	0.0063	
24	5 to 15	0.21 to 0.62	...	...	...	0.0047	0.0048	0.0049	0.0051	0.0052	0.0053	
	16 to 30	0.621 to 1.24	...	...	...	0.0058	0.0060	0.0062	0.0064	0.0065	0.0066	
20	5 to 15	0.25 to 0.75	...	...	...	...	...	0.0052	0.0055	0.0056	0.0057	
	16 to 30	0.751 to 1.50	...	...	...	...	...	0.0065	0.0067	0.0069	0.0072	
18	5 to 15	0.28 to 0.83	...	...	...	...	...	0.0056	0.0059	0.0060	0.0060	
	16 to 30	0.831 to 1.66	...	...	...	...	...	0.0070	0.0072	0.0074	0.0075	
16	5 to 15	0.31 to 0.94	...	...	...	...	...	0.0059	0.0061	0.0062	0.0063	
	16 to 30	0.941 to 1.88	...	...	...	...	...	0.0074	0.0076	0.0077	0.0079	
14	5 to 15	0.36 to 1.07	...	...	...	...	...	...	0.0065	0.0066	0.0067	
	16 to 30	1.071 to 2.14	...	...	...	...	...	...	0.0081	0.0082	0.0084	
12	5 to 15	0.42 to 1.25	...	...	...	...	...	...	0.0070	0.0071	0.0072	
	16 to 30	1.251 to 2.50	...	...	...	...	...	...	0.0087	0.0088	0.0090	
10	5 to 15	0.50 to 1.50	...	...	...	...	...	...	...	...	0.0078	
	16 to 30	1.501 to 3.00	...	...	...	...	...	...	...	...	0.0098	
8	5 to 15	0.62 to 1.88	...	...	...	...	...	...	...	...	...	
	16 to 30	1.881 to 3.76	...	...	...	...	...	...	...	...	0.0089	
6	5 to 15	0.83 to 2.50	...	...	...	...	...	...	...	...	...	
	16 to 30	2.501 to 5.00	...	...	...	...	...	...	...	...	0.0111	
4	5 to 15	1.25 to 3.75	...	...	...	...	...	...	...	...	...	
	16 to 30	3.751 to 7.50	...	...	...	...	...	...	...	...	...	

**GENERAL NOTES:**

- (a) These values do not agree with and shall not be used in place of any tabulated values for the UNC, UNF, and 8-UN thread series.
- (b) Class 2B (internal thread) tolerances in this Table for 5 to 15 pitches are based on 9 pitches and are obtained by multiplying the Class 2A (external thread) tolerances for 9 pitches taken to six decimal places by a factor of 1.3.
- (c) Class 2B tolerances in this Table for 16 to 30 pitches are obtained by multiplying the Class 2A (external thread) tolerances for 9 pitches taken to six decimal places by a factor of 1.625 (obtained by multiplying the 1.3 factor by 1.25). For lengths of engagement not tabulated, see Section 5.

**TABLE 37 PITCH DIAMETER TOLERANCES FOR INTERNAL THREADS OF SPECIAL DIAMETERS, PITCHES, AND LENGTHS OF ENGAGEMENT (UNS/UNRS) – CLASS 2B**

1.25	1.5	1.75	2	2.5	3	3.5	4	5	6	8	10	12	Threads/in.
1.125	1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	
1.375	1.625	1.875	2.25	2.75	3.25	3.75	4.5	5.5	7	9	11	13	
Pitch Diameter Tolerances, in.													
...	...	...	...	...	...	...	...	...	...	...	...	...	} 80
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	} 72
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	} 64
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	} 56
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	} 48
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	} 44
...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	} 40
...	...	...	...	...	...	...	...	...	...	...	...	...	
0.0049	0.0050	...	...	...	...	...	...	...	...	...	...	...	} 36
0.0061	0.0062	...	...	...	...	...	...	...	...	...	...	...	
0.0051	0.0052	0.0053	0.0054	0.0056	0.0058	...	...	...	...	...	...	...	} 32
0.0063	0.0065	0.0066	0.0068	0.0070	0.0072	...	...	...	...	...	...	...	
0.0053	0.0055	0.0056	0.0057	0.0059	0.0060	0.0062	0.0063	...	...	...	...	...	} 28
0.0067	0.0068	0.0070	0.0071	0.0073	0.0075	0.0077	0.0079	...	...	...	...	...	
0.0053	0.0055	0.0056	0.0057	0.0059	0.0061	0.0063	0.0064	0.0066	0.0068	...	...	...	} 27
0.0067	0.0069	0.0071	0.0072	0.0074	0.0076	0.0078	0.0080	0.0083	0.0085	...	...	...	
0.0056	0.0058	0.0059	0.0060	0.0062	0.0064	0.0065	0.0066	0.0069	0.0071	...	...	...	} 24
0.0070	0.0072	0.0074	0.0075	0.0077	0.0079	0.0081	0.0083	0.0086	0.0089	...	...	...	
0.0061	0.0062	0.0063	0.0064	0.0066	0.0068	0.0069	0.0070	0.0073	0.0075	...	...	...	} 20
0.0076	0.0077	0.0079	0.0080	0.0083	0.0085	0.0086	0.0088	0.0091	0.0094	...	...	...	
0.0063	0.0065	0.0066	0.0067	0.0069	0.0070	0.0072	0.0073	0.0076	0.0078	0.0081	...	...	} 18
0.0079	0.0081	0.0082	0.0083	0.0086	0.0088	0.0090	0.0091	0.0094	0.0097	0.0101	...	...	
0.0066	0.0068	0.0069	0.0070	0.0072	0.0073	0.0075	0.0076	0.0079	0.0081	0.0084	0.0087	...	} 16
0.0083	0.0085	0.0086	0.0087	0.0090	0.0092	0.0094	0.0095	0.0098	0.0101	0.0105	0.0109	...	
0.0070	0.0072	0.0073	0.0074	0.0076	0.0077	0.0079	0.0080	0.0083	0.0085	0.0088	0.0091	0.0094	} 14
0.0088	0.0089	0.0091	0.0092	0.0095	0.0097	0.0099	0.0100	0.0103	0.0106	0.0110	0.0114	0.0117	
0.0075	0.0076	0.0078	0.0079	0.0081	0.0082	0.0084	0.0085	0.0087	0.0090	0.0093	0.0096	0.0099	} 12
0.0094	0.0096	0.0097	0.0098	0.0101	0.0103	0.0105	0.0106	0.0109	0.0112	0.0116	0.0120	0.0123	
0.0082	0.0083	0.0084	0.0085	0.0087	0.0089	0.0090	0.0091	0.0094	0.0096	0.0100	0.0103	0.0105	} 10
0.0102	0.0104	0.0105	0.0106	0.0109	0.0111	0.0113	0.0114	0.0117	0.0120	0.0124	0.0128	0.0131	
0.0090	0.0092	0.0093	0.0094	0.0096	0.0098	0.0099	0.0100	0.0103	0.0105	0.0108	0.0111	0.0114	} 8
0.0113	0.0115	0.0116	0.0118	0.0120	0.0122	0.0124	0.0125	0.0128	0.0131	0.0136	0.0139	0.0143	
...	0.0105	0.0106	0.0108	0.0109	0.0111	0.0113	0.0114	0.0116	0.0118	0.0122	0.0125	0.0128	} 6
...	0.0132	0.0133	0.0134	0.0137	0.0139	0.0141	0.0142	0.0145	0.0148	0.0152	0.0156	0.0159	
...	...	...	0.0131	0.0133	0.0135	0.0136	0.0138	0.0140	0.0142	0.0146	0.0149	0.0151	} 4
...	...	...	0.0164	0.0166	0.0168	0.0170	0.0172	0.0175	0.0178	0.0182	0.0186	0.0189	

- (d) Pitches listed are those used most commonly and are recommended. Where intermediate pitches are specified, the formula in Section 5 should be applied.
- (e) Tolerances are tabulated only for combinations of diameter, pitch, and length of engagement that are considered to be generally used. For other combinations encountered, see Section 5.

**TABLE 39 MINOR DIAMETER TOLERANCES FOR INTERNAL SPECIAL SCREW THREADS (UNS/UNRS) — CLASSES 1B AND 2B**

Tolerance based on basic major diameter of		0.060	0.073	0.086	0.099	0.112	0.125	0.138	0.164	0.190	0.216	All Larger Diameters		
For diameter range above		0.053	0.066	0.079	0.092	0.105	0.118	0.131	0.151	0.177	0.203			
To and including		0.066	0.079	0.092	0.105	0.118	0.131	0.151	0.177	0.203	0.233			
Threads/ in.	Tolerance Ratios	Length of Eng. in Terms of Diam. (1)		Minor Diameter Tolerances, in. (2)										
		Above	To and Incl.	0.060	0.073	0.086	0.099	0.112	0.125	0.138	0.164	0.190	0.216	0.233
80	0.5	0	0.33D	0.0035	0.0029	0.0025	0.0022	0.0020	0.0018	0.0017	0.0016	0.0016	0.0016	0.0016
	0.75	0.33D	0.67D	0.0049	0.0044	0.0038	0.0034	0.0030	0.0028	0.0026	0.0023	0.0023	0.0023	0.0023
	1.0	0.67D	1.5D	0.0049	0.0049	0.0049	0.0045	0.0040	0.0037	0.0034	0.0031	0.0031	0.0031	0.0031
	1.25	1.5D	3D	0.0049	0.0049	0.0049	0.0049	0.0049	0.0046	0.0043	0.0039	0.0039	0.0039	0.0039
72	0.5	0	0.33D	0.0039	0.0033	0.0029	0.0026	0.0023	0.0021	0.0020	0.0017	0.0017	0.0017	0.0017
	0.75	0.33D	0.67D	0.0055	0.0049	0.0043	0.0040	0.0035	0.0032	0.0029	0.0026	0.0026	0.0026	0.0026
	1.0	0.67D	1.5D	0.0055	0.0055	0.0055	0.0051	0.0046	0.0042	0.0039	0.0034	0.0034	0.0034	0.0034
	1.25	1.5D	3D	0.0055	0.0055	0.0055	0.0055	0.0055	0.0053	0.0049	0.0043	0.0042	0.0042	0.0042
64	0.5	0	0.33D	0.0045	0.0038	0.0033	0.0029	0.0027	0.0024	0.0023	0.0020	0.0019	0.0019	0.0019
	0.75	0.33D	0.67D	0.0062	0.0057	0.0049	0.0044	0.0040	0.0037	0.0034	0.0030	0.0028	0.0028	0.0028
	1.0	0.67D	1.5D	0.0062	0.0062	0.0062	0.0059	0.0053	0.0049	0.0045	0.0040	0.0038	0.0038	0.0038
	1.25	1.5D	3D	0.0062	0.0062	0.0062	0.0062	0.0062	0.0061	0.0057	0.0050	0.0048	0.0048	0.0048
56	0.5	0	0.33D	...	0.0044	0.0038	0.0034	0.0031	0.0029	0.0026	0.0023	0.0022	0.0022	0.0022
	0.75	0.33D	0.67D	...	0.0066	0.0057	0.0051	0.0046	0.0043	0.0040	0.0035	0.0032	0.0032	0.0032
	1.0	0.67D	1.5D	...	0.0070	0.0070	0.0068	0.0062	0.0057	0.0053	0.0047	0.0043	0.0043	0.0043
	1.25	1.5D	3D	...	0.0070	0.0070	0.0070	0.0070	0.0070	0.0066	0.0059	0.0054	0.0054	0.0054
48	0.5	0	0.33D	...	...	0.0045	0.0040	0.0037	0.0034	0.0032	0.0028	0.0025	0.0025	0.0025
	0.75	0.33D	0.67D	...	...	0.0068	0.0061	0.0055	0.0051	0.0047	0.0042	0.0038	0.0038	0.0038
	1.0	0.67D	1.5D	...	...	0.0082	0.0081	0.0074	0.0068	0.0063	0.0056	0.0051	0.0050	0.0050
	1.25	1.5D	3D	...	...	0.0082	0.0082	0.0082	0.0082	0.0079	0.0070	0.0063	0.0062	0.0062
44	0.5	0	0.33D	...	...	0.0050	0.0044	0.0040	0.0037	0.0035	0.0031	0.0028	0.0028	0.0028
	0.75	0.33D	0.67D	...	...	0.0075	0.0067	0.0061	0.0056	0.0052	0.0046	0.0042	0.0041	0.0041
	1.0	0.67D	1.5D	...	...	0.0090	0.0089	0.0081	0.0075	0.0070	0.0062	0.0056	0.0055	0.0055
	1.25	1.5D	3D	...	...	0.0090	0.0090	0.0090	0.0090	0.0087	0.0077	0.0070	0.0069	0.0069
40	0.5	0	0.33D	...	...	...	0.0049	0.0045	0.0041	0.0039	0.0034	0.0031	0.0030	0.0030
	0.75	0.33D	0.67D	...	...	...	0.0074	0.0067	0.0062	0.0058	0.0051	0.0047	0.0045	0.0045
	1.0	0.67D	1.5D	...	...	...	0.0098	0.0090	0.0083	0.0077	0.0068	0.0062	0.0060	0.0060
	1.25	1.5D	3D	...	...	...	0.0098	0.0098	0.0098	0.0096	0.0086	0.0078	0.0075	0.0075
36	0.5	0	0.33D	...	...	...	...	0.0050	0.0046	0.0043	0.0038	0.0035	0.0033	0.0033
	0.75	0.33D	0.67D	...	...	...	...	0.0075	0.0069	0.0065	0.0058	0.0052	0.0050	0.0050
	1.0	0.67D	1.5D	...	...	...	...	0.0100	0.0093	0.0086	0.0077	0.0070	0.0066	0.0066
	1.25	1.5D	3D	...	...	...	...	0.0109	0.0109	0.0108	0.0096	0.0087	0.0082	0.0082
32	0.5	0	0.33D	...	...	...	...	...	...	0.0049	0.0043	0.0039	0.0037	0.0037
	0.75	0.33D	0.67D	...	...	...	...	...	...	0.0073	0.0065	0.0059	0.0056	0.0056
	1.0	0.67D	1.5D	...	...	...	...	...	...	0.0098	0.0087	0.0079	0.0074	0.0074
	1.25	1.5D	3D	...	...	...	...	...	...	0.0122	0.0108	0.0099	0.0092	0.0092
28	0.5	0	0.33D	...	...	...	...	...	...	...	...	0.0045	0.0042	0.0042
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	0.0068	0.0063	0.0063
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	0.0091	0.0084	0.0084
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	0.0113	0.0105	0.0105
27	0.5	0	0.33D	...	...	...	...	...	...	...	...	0.0047	0.0044	0.0044
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	0.0071	0.0065	0.0065
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	0.0094	0.0087	0.0087
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	0.0118	0.0109	0.0109
24	0.5	0	0.33D	...	...	...	...	...	...	...	...	0.0053	0.0049	0.0048
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	0.0079	0.0073	0.0073
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	0.0106	0.0098	0.0097
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	0.0132	0.0122	0.0121

Tolerance Ratios	Length of Eng. in Terms of Diam.		Minor Diameter Tolerances, in. (Not applicable to diameters less than 0.25 in.)														
	Above	To and Including	20 TPI	18 TPI	16 TPI	14 TPI	13 TPI	12 TPI	11 TPI	10 TPI	9 TPI	8 TPI	7 TPI	6 TPI	5 TPI	4.5 TPI	4 TPI
0.5	0	0.33D	0.0058	0.0064	0.0070	0.0079	0.0085	0.0090	0.0097	0.0105	0.0114	0.0125	0.0138	0.0153	0.0170	0.0179	0.0188
0.75	0.33D	0.67D	0.0086	0.0095	0.0106	0.0118	0.0128	0.0135	0.0146	0.0158	0.0171	0.0188	0.0207	0.0230	0.0255	0.0268	0.0281
1.0	0.67D	1.5D	0.0115	0.0127	0.0141	0.0158	0.0170	0.0180	0.0194	0.0210	0.0228	0.0250	0.0276	0.0306	0.0340	0.0358	0.0375
1.25	1.5D	3D	0.0144	0.0159	0.0176	0.0198	0.0213	0.0225	0.0242	0.0262	0.0286	0.0312	0.0344	0.0382	0.0425	0.0448	0.0469



**NOTES TO TABLE 39**

- (1) Tolerances for lengths of engagement in terms of pitch should be selected from equivalent lengths of engagement in terms of diameter ranges.
- (2) If the minor diameter tolerance as selected from this Table is less than the pitch diameter tolerance, use the latter.

**TABLE 40 MINOR DIAMETER TOLERANCES FOR INTERNAL SPECIAL SCREW THREADS (UNS/UNRS) — CLASS 3B**

Tolerance based on basic major diameter of		0.161	0.190	0.216	0.250	0.3125	0.375	0.4375	0.500	0.5625	0.625	0.6875	All Larger Diameters				
For diameter range above		0.053	0.151	0.177	0.203	0.233	0.281	0.344	0.406	0.469	0.531	0.594		0.656			
To and including		0.151 (1)	0.177	0.203	0.233	0.281	0.344	0.406	0.469	0.531	0.594	0.656		0.719			
Threads/ in.	Tolerance Ratios	Length of Eng. in Terms of Diam. (2)		Minor Diameter Tolerances, in. (3)													
		Above	To and Including	0.161	0.190	0.216	0.250	0.3125	0.375	0.4375	0.500	0.5625	0.625	0.6875	0.719		
80	0.5	0	0.33D	0.0015	0.0013	0.0013	0.0013	0.0013	0.0013	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
	0.75	0.33D	0.67D	0.0022	0.0020	0.0020	0.0020	0.0020	0.0020	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022
	1.0	0.67D	1.5D	0.0030	0.0027	0.0026	0.0026	0.0026	0.0026	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
	1.25	1.5D	3D	0.0037	0.0033	0.3033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033
72	0.5	0	0.33D	0.0017	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
	0.75	0.33D	0.67D	0.0026	0.0023	0.0023	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022
	1.0	0.67D	1.5D	0.0034	0.0031	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029
	1.25	1.5D	3D	0.0043	0.0039	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036
64	0.5	0	0.33D	0.0020	0.0018	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
	0.75	0.33D	0.67D	0.0030	0.0027	0.0025	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024
	1.0	0.67D	1.5D	0.0040	0.0036	0.0033	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032
	1.25	1.5D	3D	0.0050	0.0045	0.0041	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040	0.0040
56	0.5	0	0.33D	0.0023	0.0021	0.0019	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018
	0.75	0.33D	0.67D	0.0035	0.0032	0.0029	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027	0.0027
	1.0	0.67D	1.5D	0.0047	0.0042	0.0039	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036
	1.25	1.5D	3D	0.0059	0.0053	0.0049	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045
48	0.5	0	0.33D	0.0028	0.0025	0.0023	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021
	0.75	0.33D	0.67D	0.0042	0.0038	0.0035	0.0032	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031	0.0031
	1.0	0.67D	1.5D	0.0056	0.0051	0.0047	0.0043	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041
	1.25	1.5D	3D	0.0070	0.0063	0.0059	0.0054	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052
44	0.5	0	0.33D	0.0031	0.0028	0.0026	0.0024	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022	0.0022
	0.75	0.33D	0.67D	0.0046	0.0042	0.0039	0.0036	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033
	1.0	0.67D	1.5D	0.0062	0.0056	0.0052	0.0047	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045	0.0045
	1.25	1.5D	3D	0.0077	0.0070	0.0065	0.0059	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056	0.0056
40	0.5	0	0.33D	0.0034	0.0031	0.0029	0.0026	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024	0.0024
	0.75	0.33D	0.67D	0.0051	0.0047	0.0043	0.0040	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036	0.0036
	1.0	0.67D	1.5D	0.0068	0.0062	0.0057	0.0053	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048
	1.25	1.5D	3D	0.0086	0.0078	0.0072	0.0066	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062
36	0.5	0	0.33D	0.0038	0.0035	0.0032	0.0030	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026	0.0026
	0.75	0.33D	0.67D	0.0058	0.0052	0.0048	0.0044	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039
	1.0	0.67D	1.5D	0.0077	0.0070	0.0064	0.0059	0.0053	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052	0.0052
	1.25	1.5D	3D	0.0096	0.0087	0.0081	0.0074	0.0066	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065
32	0.5	0	0.33D	0.0043	0.0039	0.0036	0.0034	0.0030	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029	0.0029
	0.75	0.33D	0.67D	0.0065	0.0059	0.0055	0.0050	0.0045	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	0.0043	
	1.0	0.67D	1.5D	0.0087	0.0079	0.0073	0.0067	0.0060	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	0.0057	
	1.25	1.5D	3D	0.0108	0.0099	0.0091	0.0084	0.0075	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	
28	0.5	0	0.33D	0.0045	0.0042	0.0039	0.0034	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	
	0.75	0.33D	0.67D	0.0068	0.0063	0.0058	0.0051	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047		
	1.0	0.67D	1.5D	0.0091	0.0084	0.0077	0.0069	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063	0.0063		
	1.25	1.5D	3D	0.0113	0.0105	0.0096	0.0086	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079		
27	0.5	0	0.33D	0.0047	0.0044	0.0040	0.0036	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032	0.0032		
	0.75	0.33D	0.67D	0.0071	0.0065	0.0060	0.0053	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048	0.0048			
	1.0	0.67D	1.5D	0.0094	0.0087	0.0080	0.0071	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065	0.0065			
	1.25	1.5D	3D	0.0118	0.0109	0.0100	0.0089	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081	0.0081			
24	0.5	0	0.33D	0.0053	0.0049	0.0045	0.0040	0.0037	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035			
	0.75	0.33D	0.67D	0.0079	0.0073	0.0068	0.0060	0.0055	0.0052	0.0052	0.0052	0.0052	0.0052				
	1.0	0.67D	1.5D	0.0106	0.0098	0.0090	0.0080	0.0073	0.0070	0.0070	0.0070	0.0070	0.0070				
	1.25	1.5D	3D	0.0132	0.0122	0.0113	0.0100	0.0092	0.0087	0.0087	0.0087	0.0087	0.0087				
20	0.5	0	0.33D	0.0054	0.0048	0.0044	0.0041	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039				
	0.75	0.33D	0.67D	0.0081	0.0072	0.0066	0.0062	0.0058	0.0058	0.0058	0.0058	0.0058	0.0058				
	1.0	0.67D	1.5D	0.0108	0.0096	0.0088	0.0082	0.0078	0.0078	0.0078	0.0078	0.0078	0.0078				
	1.25	1.5D	3D	0.0135	0.0120	0.0110	0.0103	0.0097	0.0097	0.0097	0.0097	0.0097	0.0097				
18	0.5	0	0.33D	0.0053	0.0049	0.0045	0.0043	0.0041	0.0041	0.0041	0.0041	0.0041	0.0041				
	0.75	0.33D	0.67D	0.0080	0.0073	0.0068	0.0065	0.0062	0.0062	0.0062	0.0062	0.0062	0.0062				
	1.0	0.67D	1.5D	0.0106	0.0097	0.0091	0.0086	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082				
	1.25	1.5D	3D	0.0133	0.0122	0.0114	0.0108	0.0103	0.0103	0.0103	0.0103	0.0103	0.0103				
16	0.5	0	0.33D	0.0054	0.0048	0.0044	0.0041	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039				
	0.75	0.33D	0.67D	0.0082	0.0076	0.0072	0.0068	0.0064	0.0064	0.0064	0.0064	0.0064	0.0064				
	1.0	0.67D	1.5D	0.0109	0.0102	0.0096	0.0092	0.0088	0.0088	0.0088	0.0088	0.0088	0.0088				
	1.25	1.5D	3D	0.0136	0.0127	0.0120	0.0115	0.0111	0.0111	0.0111	0.0111	0.0111	0.0111				

**TABLE 40 MINOR DIAMETER TOLERANCES FOR INTERNAL SPECIAL SCREW THREADS (UNS/UNRS) — CLASS 3B (CONT'D)**

Tolerance based on basic major diameter of			0.375	0.4375	0.500	0.5625	0.625	0.6875	0.750	0.8125	0.875	0.9375	All Larger Diameters	
For diameter range above			0.344	0.406	0.469	0.531	0.594	0.656	0.719	0.781	0.844	0.906		
To and including			0.406	0.469	0.531	0.594	0.656	0.719	0.781	0.844	0.906	0.969		
Threads/ in.	Tolerance Ratios	Length of Eng. in Terms of Diam. (2)		Minor Diameter Tolerances, in. (3)										
		Above	To and Including											
14	0.5	0	0.33D	...	0.0058	0.0054	0.0052	0.0050	0.0049	0.0047	0.0046	0.0045	0.0044	0.0044
	0.75	0.33D	0.67D	...	0.0086	0.0082	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0067	0.0066
	1.0	0.67D	1.5D	...	0.0115	0.0109	0.0104	0.0100	0.0097	0.0095	0.0092	0.0091	0.0089	0.0088
	1.25	1.5D	3D	...	0.0144	0.0136	0.0130	0.0125	0.0122	0.0118	0.0116	0.0113	0.0111	0.0110
13	0.5	0	0.33D	...	...	0.0058	0.0056	0.0054	0.0052	0.0050	0.0050	0.0049	0.0048	0.0047
	0.75	0.33D	0.67D	...	...	0.0087	0.0083	0.0080	0.0078	0.0076	0.0074	0.0073	0.0071	0.0070
	1.0	0.67D	1.5D	...	...	0.0117	0.0111	0.0107	0.0104	0.0101	0.0099	0.0097	0.0095	0.0094
	1.25	1.5D	3D	...	...	0.0146	0.0139	0.0134	0.0130	0.0126	0.0124	0.0122	0.0119	0.0118
12	0.5	0	0.33D	...	...	0.0063	0.0060	0.0058	0.0056	0.0054	0.0053	0.0052	0.0051	0.0050
	0.75	0.33D	0.67D	...	...	0.0094	0.0090	0.0087	0.0084	0.0082	0.0080	0.0078	0.0077	0.0075
	1.0	0.67D	1.5D	...	...	0.0125	0.0120	0.0115	0.0112	0.0109	0.0106	0.0104	0.0102	0.0100
	1.25	1.5D	3D	...	...	0.0157	0.0150	0.0144	0.0140	0.0136	0.0133	0.0130	0.0128	0.0125
11	0.5	0	0.33D	...	...	...	...	0.0062	0.0060	0.0058	0.0058	0.0056	0.0055	0.0054
	0.75	0.33D	0.67D	...	...	...	...	0.0094	0.0091	0.0088	0.0086	0.0084	0.0082	0.0082
	1.0	0.67D	1.5D	...	...	...	...	0.0125	0.0121	0.0117	0.0115	0.0112	0.0110	0.0109
	1.25	1.5D	3D	...	...	...	...	0.0156	0.0151	0.0146	0.0144	0.0140	0.0138	0.0136
10	0.5	0	0.33D	...	...	...	...	...	0.0066	0.0064	0.0062	0.0061	0.0060	0.0060
	0.75	0.33D	0.67D	...	...	...	...	...	0.0099	0.0096	0.0093	0.0092	0.0090	0.0090
	1.0	0.67D	1.5D	...	...	...	...	...	0.0131	0.0128	0.0125	0.0122	0.0120	0.0120
	1.25	1.5D	3D	...	...	...	...	...	0.0164	0.0160	0.0156	0.0153	0.0150	0.0150
9	0.5	0	0.33D	...	...	...	...	...	...	...	0.0068	0.0067	0.0066	0.0066
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	0.0103	0.0100	0.0100	0.0100
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	0.0137	0.0134	0.0133	0.0133
	1.25	1.5D	3D	...	...	...	...	...	...	...	0.0171	0.0168	0.0166	0.0166
8	0.5	0	0.33D	...	...	...	...	...	...	...	0.0075	0.0075	0.0075	0.0075
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	0.0112	0.0112	0.0112	0.0112
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	0.0150	0.0150	0.0150	0.0150
	1.25	1.5D	3D	...	...	...	...	...	...	...	0.0188	0.0188	0.0188	0.0188
7	0.5	0	0.33D	...	...	...	...	...	...	...	...	...	0.0086	0.0086
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	...	0.0129	0.0129
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	...	0.0171	0.0171
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	...	0.0214	0.0214
6	0.5	0	0.33D	...	...	...	...	...	...	...	...	...	...	0.0100
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	...	...	0.0150
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	...	...	0.0200
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	...	...	0.0250
5	0.5	0	0.33D	...	...	...	...	...	...	...	...	...	...	0.0120
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	...	...	0.0180
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	...	...	0.0240
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	...	...	0.0300
4.5	0.5	0	0.33D	...	...	...	...	...	...	...	...	...	...	0.0133
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	...	...	0.0200
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	...	...	0.0267
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	...	...	0.0333
4	0.5	0	0.33D	...	...	...	...	...	...	...	...	...	...	0.0150
	0.75	0.33D	0.67D	...	...	...	...	...	...	...	...	...	...	0.0225
	1.0	0.67D	1.5D	...	...	...	...	...	...	...	...	...	...	0.0300
	1.25	1.5D	3D	...	...	...	...	...	...	...	...	...	...	0.0375

NOTES:

- (1) For 0.151 in. diameter sizes and smaller, tolerance values for all three classes are the same. For smaller sizes, tolerance values are given in Table 39.
- (2) Tolerances for lengths of engagement in terms of pitch should be selected from equivalent lengths of engagement in terms of diameter ranges.
- (3) If the minor diameter tolerance as selected from this Table is less than the pitch diameter tolerance, use the latter.

**APPENDIX A**  
**TERMINOLOGY AND IDENTIFICATION OF UNIFIED INCH SCREW THREADS**

(This Appendix is not part of ASME B1.1-1989, and is included for information purposes only.)

**A1 TERMINOLOGY**

All terms relating to screw threads used in this Standard are defined in ANSI/ASME B1.7M.

**A2 IDENTIFICATION**

The various unified screw threads covered by B1 standards are compared in Fig. A1 and Table A1.

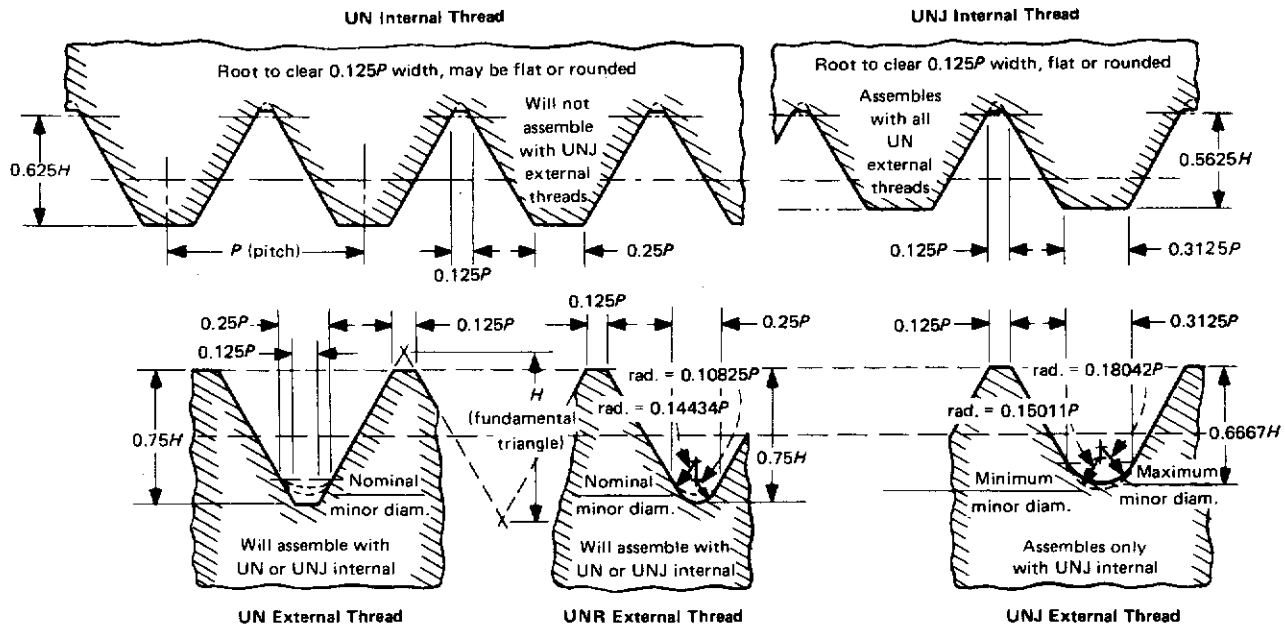


FIG. A1 IDENTIFICATION OF 60 DEG. INCH SCREW THREADS WITHIN THE SCOPE OF ASME COMMITTEE B1

**TABLE A1 IDENTIFICATION OF 60 DEG. INCH SCREW THREADS WITHIN THE SCOPE OF ASME COMMITTEE B1**

<b>Thread Identification</b>	<b>UN Threads, Internal and External</b>	<b>UNR Threads, External Only</b>	<b>UNJ Threads, Internal and External</b>
ANSI standards documents	B1.1, Unified Inch Screw Threads; B1.2, Gages and Gaging for Unified Inch Screw Threads	B1.1, Unified Inch Screw Threads; B1.2, Gages and Gaging for Unified Inch Screw Threads	Draft of B1.15, Unified Inch Screw Threads – UNJ Thread Form; draft of B1.23, Gages and Gaging for Unified Inch Screw Threads – UNJ
External root	External thread root may be flat or rounded	Rounded root specified	Rounded root specified
External minor diameter	External thread minor diameter is not toleranced	External thread minor diameter is not toleranced	External thread minor diameter is toleranced
External threads	UN Classes 1A, 2A, and 3A	UNR Classes 1A, 2A, and 3A	UNJ Class 3A mates only with UNJ internal threads
Internal threads	UN Classes 1B, 2B, and 3B	No internal threads designated UNR; UNR mates with UN internal threads	UNJ Class 3B (no rounding required on internal thread root)

**GENERAL NOTES:**

- (a) The above cannot be used as a working sheet. Refer to the appropriate standards, as listed, for complete thread details and conformance data.
- (b) The appropriate current standard is the authoritative document for complete details and data and takes precedence over this sheet.
- (c) These standards may be purchased from the ASME Order Department, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300; telephone (201) 882-1167.

## APPENDIX C

### UNIFIED INCH SCREW THREADS — METRIC TRANSLATION

(This Appendix is not part of ASME B1.1-1989, and is included for information purposes only.)

#### C1 BACKGROUND

This Appendix presents a translation of unified inch screw threads into metric units of measurement. It is very important to recognize that this translation is not ISO metric screw threads. The tables of limiting dimensions of standard and UNS/UNRS series threads and the table of thread form data translated from inches to millimeters presented in this Appendix implement the decision of the B1 Committee that there should be official metric translations of inch screw thread standards to better fill communication needs in international exchange of technical data. This philosophy originated at the May 4, 1964, meeting of the Committee and was approved by a letter ballot of the Committee on November 2, 1966.

The tables in this Appendix were originally published as USAS B1.1a—1968 Supplement to USAS B1.1—1960, in the interest of meeting urgent needs of industry.

#### C2 DIMENSIONS

All dimensions in this Appendix are given in millimeters unless otherwise specified. Metric values in the limiting dimension tables are translations of the inch values tabulated in ASME B1.1.

In all cases, the metric values have been rounded toward the interior of the tolerance zone, that is, maximum limits have been rounded downward and minimum limits have been rounded upward. This method of rounding the translated values was selected to permit the use of existing gages. To avoid penalizing the producer excessively, gages should be based on the inch values rather than the metric translations.

Where it is necessary to use metric values of threads for which the metric limiting dimensions are not tabulated herein, the inch values should be determined in accordance with Section 8 of ASME B1.1

before translating to metric values and rounding by the method prescribed in the foregoing paragraph.

#### C3 DESIGNATIONS

Designation of unified inch screw threads expressed in metric dimensions shall be as prescribed in paras. C3.1 and C3.2.

##### C3.1 Metric Drawings or Documents

On metric drawings or documents, the designation shall specify, in sequence, the nominal size (expressed in decimal inches), the number of threads per inch, thread series symbol, and thread class symbol. All supplemental dimensions shall be as shown in metric units. The equivalent inch dimensions, as indicated and enclosed in parentheses, may be included if desired.

EXAMPLE (on metric drawing or metric document):  
0.250-28 UNF-2A (22)  
PD 5.735-5.652  
(0.2258-0.2225 in.) (optional)

##### C3.2 Inch Drawings or Documents

On inch drawings or documents, the designation and supplemental dimensions expressed in inches may be further supplemented by inclusion of the equivalent metric dimensions, so indicated and enclosed in parentheses.

EXAMPLE:  
0.250-28 UNF-2A (22)  
PD 0.2258-0.2225  
(5.735-5.652 mm) (optional)

#### C4 TABLES

Tables C1, C2, and C3 give limits of size for standard series and UNS/UNRS series threads and thread form data.

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
		Diameter	Pitch			Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
0-80 or 0.060-80	UNF	1.524	0.318	2A	0.014	1.511	1.431	...	1.305	1.260	0.045	1.133	2B	1.182	1.305	1.319	1.376	0.057	1.524
				3A	0.000	1.524	1.443	...	1.318	1.286	0.032	1.146	3B	1.182	1.305	1.319	1.361	0.042	1.524
1-64 or 0.073-64	UNC	1.854	0.397	2A	0.016	1.838	1.743	...	1.582	1.532	0.050	1.367	2B	1.425	1.582	1.598	1.663	0.065	1.855
				3A	0.000	1.854	1.758	...	1.597	1.560	0.037	1.382	3B	1.425	1.582	1.598	1.645	0.047	1.855
1-72 or 0.073-72	UNF	1.854	0.353	2A	0.016	1.838	1.751	...	1.610	1.563	0.047	1.420	2B	1.474	1.612	1.626	1.689	0.063	1.855
				3A	0.000	1.854	1.766	...	1.625	1.591	0.034	1.435	3B	1.474	1.612	1.626	1.673	0.047	1.855
2-56 or 0.086-56	UNC	2.184	0.454	2A	0.016	2.169	2.066	...	1.874	1.822	0.052	1.631	2B	1.695	1.871	1.890	1.960	0.070	2.185
				3A	0.000	2.184	2.081	...	1.889	1.850	0.039	1.646	3B	1.695	1.871	1.890	1.943	0.053	2.185
2-64 or 0.086-64	UNF	2.184	0.397	2A	0.016	2.169	2.073	...	1.912	1.862	0.050	1.697	2B	1.756	1.912	1.928	1.996	0.068	2.185
				3A	0.000	2.184	2.088	...	1.927	1.890	0.037	1.712	3B	1.756	1.912	1.928	1.978	0.050	2.185
3-48 or 0.099-48	UNC	2.514	0.529	2A	0.019	2.496	2.383	...	2.153	2.096	0.057	1.864	2B	1.941	2.146	2.172	2.247	0.075	2.515
				3A	0.000	2.514	2.401	...	2.171	2.129	0.042	1.882	3B	1.941	2.146	2.172	2.227	0.055	2.515
3-56 or 0.099-56	UNF	2.514	0.454	2A	0.018	2.496	2.393	...	2.202	2.147	0.055	1.958	2B	2.025	2.197	2.220	2.291	0.071	2.515
				3A	0.000	2.514	2.411	...	2.219	2.180	0.039	1.976	3B	2.025	2.197	2.220	2.273	0.053	2.515
4-40 or 0.112-40	UNC	2.844	0.635	2A	0.021	2.824	2.695	...	2.413	2.350	0.063	2.068	2B	2.157	2.385	2.434	2.517	0.083	2.845
				3A	0.000	2.844	2.716	...	2.433	2.386	0.047	2.088	3B	2.157	2.385	2.434	2.494	0.060	2.845
4-48 or 0.112-48	UNF	2.844	0.529	2A	0.018	2.827	2.713	...	2.484	2.424	0.060	2.195	2B	2.271	2.458	2.502	2.580	0.078	2.845
				3A	0.000	2.844	2.731	...	2.501	2.457	0.044	2.212	3B	2.271	2.458	2.502	2.560	0.058	2.845
5-40 or 0.125-40	UNC	3.175	0.635	2A	0.021	3.154	3.026	...	2.743	2.678	0.065	2.398	2B	2.487	2.697	2.764	2.847	0.083	3.175
				3A	0.000	3.175	3.046	...	2.763	2.716	0.047	2.418	3B	2.487	2.697	2.764	2.827	0.063	3.175
5-44 or 0.125-44	UNF	3.175	0.577	2A	0.019	3.157	3.036	...	2.781	2.718	0.063	2.469	2B	2.551	2.740	2.800	2.880	0.080	3.175
				3A	0.000	3.175	3.054	...	2.799	2.751	0.048	2.487	3B	2.551	2.740	2.800	2.860	0.060	3.175
6-32 or 0.138-32	UNC	3.505	0.794	2A	0.021	3.484	3.333	...	2.969	2.899	0.070	2.540	2B	2.642	2.895	2.990	3.083	0.093	3.506
				3A	0.000	3.505	3.353	...	2.989	2.937	0.052	2.560	3B	2.642	2.895	2.990	3.058	0.068	3.506
6-40 or 0.138-40	UNF	3.505	0.635	2A	0.021	3.484	3.356	...	3.073	3.008	0.065	2.728	2B	2.820	3.022	3.094	3.180	0.086	3.506
				3A	0.000	3.505	3.376	...	3.093	3.043	0.050	2.748	3B	2.820	3.012	3.094	3.157	0.063	3.506
8-32 or 0.164-32	UNC	4.165	0.794	2A	0.023	4.142	3.991	...	3.627	3.554	0.073	3.198	2B	3.302	3.530	3.650	3.746	0.096	4.166
				3A	0.000	4.165	4.014	...	3.649	3.595	0.054	3.221	3B	3.302	3.528	3.650	3.721	0.071	4.166
8-36 or 0.164-36	UNF	4.165	0.706	2A	0.021	4.145	4.006	...	3.688	3.617	0.071	3.305	2B	3.404	3.606	3.709	3.799	0.090	4.166
				3A	0.000	4.165	4.026	...	3.708	3.656	0.052	3.325	3B	3.404	3.596	3.709	3.776	0.067	4.166
10-24 or 0.190-24	UNC	4.826	1.058	2A	0.026	4.800	4.618	...	4.112	4.029	0.083	3.541	2B	3.683	3.962	4.138	4.246	0.108	4.826
				3A	0.000	4.826	4.644	...	4.137	4.075	0.062	3.566	3B	3.683	3.949	4.138	4.218	0.080	4.826
10-32 or 0.190-32	UNF	4.826	0.794	2A	0.024	4.803	4.651	...	4.287	4.212	0.075	3.858	2B	3.963	4.165	4.311	4.409	0.098	4.826
				3A	0.000	4.826	4.674	...	4.310	4.252	0.058	3.881	3B	3.963	4.165	4.311	4.384	0.073	4.826
12-24 or 0.216-24	UNC	5.486	1.058	2A	0.027	5.461	5.279	...	4.772	4.687	0.085	4.201	2B	4.344	4.597	4.799	4.909	0.110	5.487
				3A	0.000	5.486	5.304	...	4.798	4.733	0.065	4.227	3B	4.344	4.589	4.799	4.881	0.082	5.487
12-28 or 0.216-28	UNF	5.486	0.907	2A	0.027	5.461	5.296	...	4.871	4.791	0.080	4.379	2B	4.496	4.724	4.898	5.003	0.105	5.487
				3A	0.000	5.486	5.322	...	4.897	4.837	0.060	4.404	3B	4.496	4.716	4.898	4.975	0.077	5.487



TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Diameter	Pitch			Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	Min.
12-32 or 0.216-32	UNEF	5.486	0.794	2A	0.024	5.463	5.312	...	4.947	4.870	0.077	4.519	2B	4.623	4.826	4.971	5.074	0.103	5.487
				3A	0.000	5.486	5.334	...	4.970	4.910	0.060	4.542	3B	4.623	4.813	4.971	5.049	0.078	5.487
1/4-20 or 0.250-20	UNC	6.350	1.270	1A	0.029	6.322	6.013	...	5.496	5.365	0.141	4.811	1B	4.979	5.257	5.525	5.709	0.184	6.350
				2A	0.029	6.322	6.117	6.013	5.496	5.403	0.093	4.811	2B	4.979	5.257	5.525	5.648	0.123	6.350
				3A	0.000	6.350	6.145	...	5.524	5.454	0.070	4.839	3B	4.979	5.250	5.525	5.615	0.090	6.350
1/4-28 or 0.250-28	UNF	6.350	0.907	1A	0.026	6.324	6.076	...	5.735	5.609	0.126	5.243	1B	5.360	5.588	5.761	5.925	0.164	6.350
				2A	0.026	6.324	6.160	...	5.735	5.652	0.083	5.243	2B	5.360	5.588	5.761	5.869	0.108	6.350
				3A	0.000	6.350	6.185	...	5.760	5.698	0.062	5.268	3B	5.360	5.562	5.761	5.842	0.081	6.350
1/4-32 or 0.250-32	UNEF	6.350	0.794	2A	0.027	6.324	6.173	...	5.808	5.728	0.080	5.380	2B	5.487	5.689	5.835	5.941	0.106	6.350
				3A	0.000	6.350	6.198	...	5.834	5.774	0.060	5.405	3B	5.487	5.661	5.835	5.913	0.078	6.350
5/16-18 or 0.3125-18	UNC	7.937	1.411	1A	0.031	7.907	7.575	...	6.990	6.836	0.154	6.228	1B	6.401	6.731	7.021	7.221	0.200	7.938
				2A	0.031	7.907	7.687	7.575	6.990	6.889	0.101	6.228	2B	6.401	6.731	7.021	7.155	0.134	7.938
				3A	0.000	7.937	7.717	...	7.020	6.945	0.075	6.259	3B	6.401	6.680	7.021	7.119	0.098	7.938
5/16-20 or 0.3125-20	UN	7.937	1.270	2A	0.031	7.907	7.702	...	7.081	6.980	0.101	6.396	2B	6.554	6.858	7.112	7.244	0.132	7.938
				3A	0.000	7.937	7.732	...	7.112	7.036	0.076	6.426	3B	6.554	6.807	7.112	7.211	0.099	7.938
5/16-24 or 0.3125-24	UNF	7.937	1.058	1A	0.029	7.909	7.636	...	7.221	7.082	0.139	6.650	1B	6.782	7.035	7.250	7.429	0.179	7.938
				2A	0.029	7.909	7.727	...	7.221	7.128	0.093	6.650	2B	6.782	7.035	7.250	7.371	0.121	7.938
				3A	0.000	7.937	7.755	...	7.249	7.181	0.068	6.678	3B	6.782	6.995	7.250	7.340	0.090	7.938
5/16-28 or 0.3125-28	UN	7.937	0.907	2A	0.027	7.912	7.747	...	7.322	7.237	0.085	6.830	2B	6.960	7.162	7.349	7.459	0.110	7.938
				3A	0.000	7.937	7.773	...	7.348	7.283	0.065	6.855	3B	6.960	7.129	7.349	7.432	0.033	7.938
5/16-32 or 0.3125-32	UNEF	7.937	0.794	2A	0.026	7.912	7.760	...	7.396	7.316	0.080	6.967	2B	7.087	7.264	7.422	7.528	0.106	7.938
				3A	0.000	7.937	7.786	...	7.421	7.361	0.060	6.993	3B	7.087	7.231	7.422	7.500	0.078	7.938
3/8-16 or 0.375-16	UNC	9.525	1.588	1A	0.034	9.491	9.132	...	8.460	8.296	0.164	7.600	1B	7.798	8.153	8.494	8.709	0.215	9.525
				2A	0.034	9.491	9.254	9.132	8.460	8.349	0.111	7.600	2B	7.798	8.153	8.494	8.638	0.144	9.525
				3A	0.000	9.525	9.287	...	8.493	8.410	0.083	7.633	3B	7.798	8.082	8.494	8.602	0.108	9.525
3/8-20 or 0.375-20	UN	9.525	1.270	2A	0.031	9.494	9.289	...	8.669	8.565	0.104	7.983	2B	8.154	8.432	8.700	8.836	0.136	9.525
				3A	0.000	9.525	9.320	...	8.699	8.621	0.078	8.014	3B	8.154	8.374	8.700	8.801	0.101	9.525
3/8-24 or 0.375-24	UNF	9.525	1.058	1A	0.029	9.497	9.223	...	8.808	8.664	0.144	8.237	1B	8.382	8.636	8.837	9.024	0.187	9.525
				2A	0.029	9.497	9.315	...	8.808	8.713	0.095	8.237	2B	8.382	8.636	8.837	8.961	0.124	9.525
				3A	0.000	9.525	9.343	...	8.836	8.763	0.073	8.265	3B	8.382	8.564	8.837	8.930	0.093	9.525
3/8-28 or 0.375-28	UN	9.525	0.907	2A	0.029	9.497	9.332	...	8.907	8.817	0.090	8.415	2B	8.535	8.763	8.936	9.052	0.116	9.525
				3A	0.000	9.525	9.360	...	8.935	8.868	0.067	8.443	3B	8.535	8.702	8.936	9.024	0.088	9.525
3/8-32 or 0.375-32	UNEF	9.525	0.794	2A	0.027	9.499	9.348	...	8.983	8.898	0.085	8.555	2B	8.662	8.864	9.010	9.121	0.111	9.525
				3A	0.000	9.525	9.373	...	9.009	8.946	0.063	8.580	3B	8.662	8.811	9.010	9.093	0.083	9.525
7/16-14 or 0.4375-14	UNC	11.112	1.814	1A	0.036	11.076	10.684	...	9.898	9.719	0.179	8.918	1B	9.144	9.550	9.934	10.167	0.233	11.113
				2A	0.036	11.076	10.816	10.684	9.898	9.779	0.119	8.918	2B	9.144	9.550	9.934	10.088	0.154	11.113
				3A	0.000	11.112	10.851	...	9.933	9.846	0.087	8.954	3B	9.144	9.441	9.934	10.050	0.116	11.113
7/16-16 or 0.4375-16	UN	11.112	1.588	2A	0.037	11.076	10.839	...	10.045	9.929	0.116	9.185	2B	9.398	9.753	10.082	10.231	0.149	11.113
				3A	0.000	11.112	10.874	...	10.081	9.995	0.086	9.220	3B	9.398	9.652	10.082	10.195	0.113	11.113

(Notes follow at end of table)

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (In.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance	Min.		
1/16-20 or 0.4375-20	UNF	11.112	1.270	1A	0.033	11.079	10.770	...	10.254	10.096	0.158	9.568	1B	9.729	10.033	10.287	10.492	0.205	11.113
				2A	0.033	11.079	10.874	...	10.254	10.147	0.107	9.568	2B	9.729	10.033	10.287	10.424	0.137	11.113
				3A	0.000	11.112	10.907	...	10.287	10.208	0.079	9.601	3B	9.729	9.946	10.287	10.391	0.104	11.113
7/16-28 or 0.4375-28	UNEF	11.112	0.907	2A	0.029	11.084	10.920	...	10.495	10.404	0.091	10.003	2B	10.135	10.337	10.524	10.640	0.116	11.113
				3A	0.000	11.112	10.948	...	10.523	10.455	0.068	10.030	3B	10.135	10.289	10.524	10.612	0.088	11.113
				2A	0.026	11.087	10.935	...	10.571	10.485	0.086	10.142	2B	10.262	10.439	10.597	10.708	0.111	11.113
7/16-32 or 0.4375-32	UN	11.112	0.794	3A	0.000	11.112	10.961	...	10.597	10.533	0.064	10.168	3B	10.262	10.398	10.597	10.680	0.083	11.113
				1A	0.038	12.661	12.248	...	11.392	11.204	0.188	10.335	1B	10.592	11.023	11.430	11.676	0.246	12.700
				2A	0.038	12.661	12.386	12.248	11.392	11.265	0.127	10.335	2B	10.592	11.023	11.430	11.595	0.165	12.700
1/2-13 or 0.500-13	UNC	12.700	1.954	3A	0.000	12.700	12.424	...	11.430	11.336	0.094	10.373	3B	10.592	10.881	11.430	11.551	0.121	12.700
				2A	0.036	12.664	12.426	...	11.633	11.514	0.119	10.772	2B	10.973	11.328	11.669	11.823	0.154	12.700
				3A	0.000	12.700	12.462	...	11.669	11.580	0.089	10.808	3B	10.973	11.224	11.669	11.785	0.116	12.700
1/2-20 or 0.500-20	UNF	12.700	1.270	1A	0.034	12.666	12.358	...	11.841	11.679	0.162	11.156	1B	11.329	11.607	11.875	12.087	0.212	12.700
				2A	0.034	12.666	12.462	...	11.841	11.732	0.109	11.156	2B	11.329	11.607	11.875	12.016	0.141	12.700
				3A	0.000	12.700	12.495	...	11.874	11.793	0.081	11.189	3B	11.329	11.523	11.875	11.981	0.106	12.700
1/2-28 or 0.500-28	UNEF	12.700	0.907	2A	0.028	12.672	12.507	...	12.083	11.989	0.094	11.590	2B	11.710	11.938	12.111	12.232	0.121	12.700
				3A	0.000	12.700	12.535	...	12.111	12.040	0.071	11.618	3B	11.710	11.877	12.111	12.202	0.091	12.700
				2A	0.026	12.674	12.523	...	12.159	12.070	0.089	11.730	2B	11.837	12.039	12.185	12.298	0.113	12.700
1/2-32 or 0.500-32	UN	12.700	0.794	3A	0.000	12.700	12.548	...	12.184	12.118	0.066	11.755	3B	11.837	11.986	12.185	12.270	0.085	12.700
				1A	0.041	14.246	13.810	...	12.873	12.675	0.198	11.727	1B	11.989	12.446	12.914	13.172	0.258	14.288
				2A	0.041	14.246	13.958	13.810	12.873	12.741	0.132	11.727	2B	11.989	12.446	12.914	13.086	0.172	14.288
9/16-12 or 0.5625-12	UNC	14.287	2.117	3A	0.000	14.287	13.998	...	12.913	12.814	0.099	11.768	3B	11.989	12.301	12.914	13.042	0.128	14.288
				2A	0.036	14.251	14.014	...	13.221	13.101	0.120	12.360	2B	12.573	12.928	13.257	13.411	0.154	14.288
				3A	0.000	14.287	14.049	...	13.256	13.167	0.089	12.395	3B	12.573	12.801	13.257	13.373	0.116	14.288
9/16-18 or 0.5625-18	UNF	14.287	1.411	1A	0.036	14.251	13.920	...	13.335	13.163	0.172	12.573	1B	12.751	13.081	13.371	13.586	0.225	14.288
				2A	0.036	14.251	14.031	...	13.335	13.221	0.114	12.573	2B	12.751	13.081	13.371	13.520	0.149	14.288
				3A	0.000	14.287	14.067	...	13.370	13.285	0.085	12.609	3B	12.751	12.969	13.371	13.482	0.111	14.288
9/16-20 or 0.5625-20	UN	14.287	1.270	2A	0.034	14.254	14.049	...	13.428	13.323	0.105	12.743	2B	12.904	13.208	13.462	13.601	0.139	14.288
				3A	0.000	14.287	14.082	...	13.462	13.381	0.081	12.776	3B	12.904	13.111	13.462	13.566	0.104	14.288
				2A	0.032	14.257	14.075	...	13.568	13.470	0.098	12.997	2B	13.132	13.385	13.600	13.728	0.128	14.288
9/16-24 or 0.5625-24	UNEF	14.287	1.058	3A	0.000	14.287	14.105	...	13.599	13.526	0.073	13.028	3B	13.132	13.319	13.600	13.695	0.095	14.288
				2A	0.029	14.259	14.095	...	13.670	13.577	0.093	13.178	2B	13.310	13.512	13.699	13.820	0.121	14.288
				3A	0.000	14.287	14.123	...	13.698	13.628	0.070	13.205	3B	13.310	13.464	13.699	13.789	0.090	14.288
9/16-28 or 0.5625-28	UN	14.287	0.907	2A	0.026	14.262	14.110	...	13.746	13.658	0.088	13.317	2B	13.437	13.614	13.772	13.886	0.114	14.288
				3A	0.000	14.287	14.136	...	13.771	13.706	0.065	13.342	3B	13.437	13.573	13.772	13.858	0.086	14.288
				1A	0.042	15.834	15.373	...	14.335	14.125	0.210	13.086	1B	13.386	13.868	14.377	14.648	0.271	15.875
5/8-11 or 0.625-11	UNC	15.875	2.309	2A	0.042	15.834	15.528	15.373	14.335	14.197	0.138	13.086	2B	13.386	13.868	14.377	14.559	0.182	15.875
				3A	0.000	15.875	15.568	...	14.376	14.273	0.103	13.127	3B	13.386	13.693	14.377	14.513	0.136	15.875
				2A	0.041	15.834	15.545	...	14.460	14.324	0.136	13.315	2B	13.589	14.046	14.501	14.681	0.180	15.875
5/8-12 or 0.625-12	UN	15.875	2.117	3A	0.000	15.875	15.586	...	14.500	14.397	0.103	13.355	3B	13.589	13.876	14.501	14.635	0.134	15.875

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Diameter	Pitch			Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
5/8-16 or 0.625-16	UN	15.875	1.588	2A	0.036	15.839	15.601	...	14.808	14.687	0.121	13.947	2B	14.148	14.503	14.844	15.001	0.157	15.875
				3A	0.000	15.875	15.637	...	14.843	14.753	0.090	13.983	3B	14.148	14.381	14.844	14.960	0.116	15.875
5/8-18 or 0.625-18	UNF	15.875	1.411	1A	0.037	15.839	15.507	...	14.922	14.745	0.177	14.161	1B	14.351	14.681	14.959	15.189	0.230	15.875
				2A	0.037	15.839	15.619	...	14.922	14.804	0.118	14.161	2B	14.351	14.681	14.959	15.110	0.151	15.875
				3A	0.000	15.875	15.655	...	14.958	14.870	0.088	14.196	3B	14.351	14.554	14.959	15.072	0.113	15.875
5/8-20 or 0.625-20	UN	15.875	1.270	2A	0.034	15.841	15.637	...	15.016	14.908	0.108	14.331	2B	14.504	14.782	15.050	15.191	0.141	15.875
				3A	0.000	15.875	15.670	...	15.049	14.969	0.080	14.364	3B	14.504	14.698	15.050	15.156	0.106	15.875
5/8-24 or 0.625-24	UNEF	15.875	1.058	2A	0.031	15.844	15.662	...	15.156	15.055	0.101	14.585	2B	14.732	14.986	15.187	15.318	0.131	15.875
				3A	0.000	15.875	15.693	...	15.186	15.111	0.075	14.615	3B	14.732	14.907	15.187	15.285	0.098	15.875
5/8-28 or 0.625-28	UN	15.875	0.907	2A	0.029	15.847	15.682	...	15.257	15.162	0.095	14.765	2B	14.885	15.113	15.286	15.410	0.124	15.875
				3A	0.000	15.875	15.710	...	15.285	15.215	0.070	14.793	3B	14.885	15.052	15.286	15.379	0.093	15.875
5/8-32 or 0.625-32	UN	15.875	0.794	2A	0.029	15.847	15.695	...	15.331	15.240	0.091	14.902	2B	15.012	15.214	15.360	15.476	0.116	15.875
				3A	0.000	15.875	15.723	...	15.359	15.291	0.068	14.930	3B	15.012	15.161	15.360	15.448	0.088	15.875
1 1/16-12 or 0.6875-12	UN	17.462	2.117	2A	0.042	17.421	17.133	...	16.047	15.911	0.136	14.902	2B	15.164	15.621	16.089	16.268	0.179	17.463
				3A	0.000	17.462	17.173	...	16.088	15.985	0.103	14.942	3B	15.164	15.455	16.089	16.222	0.133	17.463
1 1/16-16 or 0.6875-16	UN	17.462	1.588	2A	0.037	17.426	17.189	...	16.395	16.274	0.121	15.535	2B	15.748	16.103	16.432	16.588	0.156	17.463
				3A	0.000	17.462	17.224	...	16.431	16.340	0.091	15.570	3B	15.748	15.961	16.432	16.548	0.116	17.463
1 1/16-20 or 0.6875-20	UN	17.462	1.270	2A	0.034	17.429	17.224	...	16.603	16.495	0.108	15.918	2B	16.079	16.383	16.637	16.779	0.142	17.463
				3A	0.000	17.462	17.257	...	16.637	16.556	0.081	15.951	3B	16.079	16.286	16.637	16.743	0.106	17.463
1 1/16-24 or 0.6875-24	UNEF	17.462	1.058	2A	0.032	17.432	17.250	...	16.743	16.643	0.100	16.172	2B	16.307	16.560	16.775	16.906	0.131	17.463
				3A	0.000	17.462	17.280	...	16.774	16.698	0.076	16.203	3B	16.307	16.494	16.775	16.873	0.098	17.463
1 1/16-28 or 0.6875-28	UN	17.462	0.907	2A	0.029	17.434	17.270	...	16.845	16.749	0.096	16.353	2B	16.485	16.687	16.874	16.997	0.123	17.463
				3A	0.000	17.462	17.298	...	16.873	16.803	0.070	16.380	3B	16.485	16.639	16.874	16.967	0.093	17.463
1 1/16-32 or 0.6875-32	UN	17.462	0.794	2A	0.029	17.434	17.283	...	16.918	16.828	0.090	16.490	2B	16.612	16.789	16.947	17.063	0.116	17.463
				3A	0.000	17.462	17.311	...	16.946	16.879	0.067	16.518	3B	16.612	16.748	16.947	17.035	0.088	17.463
3/4-10 or 0.750-10	UNC	19.050	2.540	1A	0.046	19.004	18.512	...	17.353	17.130	0.223	15.979	1B	16.307	16.840	17.399	17.691	0.292	19.050
				2A	0.046	19.004	18.677	18.512	17.353	17.204	0.149	15.979	2B	16.307	16.840	17.399	17.594	0.195	19.050
				3A	0.000	19.050	18.722	...	17.399	17.288	0.111	16.025	3B	16.307	16.624	17.399	17.543	0.144	19.050
3/4-12 or 0.750-12	UN	19.050	2.117	2A	0.044	19.006	18.718	...	17.632	17.493	0.139	16.487	2B	16.764	17.221	17.676	17.858	0.182	19.050
				3A	0.000	19.050	18.761	...	17.675	17.572	0.103	16.530	3B	16.764	17.035	17.676	17.813	0.137	19.050
3/4-16 or 0.750-16	UNF	19.050	1.588	1A	0.039	19.011	18.652	...	17.980	17.791	0.189	17.120	1B	17.323	17.678	18.019	18.267	0.248	19.050
				2A	0.039	19.011	18.774	...	17.980	17.854	0.126	17.120	2B	17.323	17.678	18.019	18.183	0.164	19.050
				3A	0.000	19.050	18.812	...	18.018	17.923	0.095	17.158	3B	17.323	17.546	18.019	18.143	0.124	19.050
3/4-20 or 0.750-20	UNEF	19.050	1.270	2A	0.034	19.016	18.812	...	18.191	18.080	0.111	17.506	2B	17.679	17.957	18.225	18.369	0.144	19.050
				3A	0.000	19.050	18.845	...	18.224	18.141	0.083	17.539	3B	17.679	17.873	18.225	18.333	0.108	19.050
3/4-28 or 0.750-28	UN	19.050	0.907	2A	0.031	19.019	18.855	...	18.430	18.334	0.096	17.937	2B	18.060	18.288	18.461	18.587	0.126	19.050
				3A	0.000	19.050	18.885	...	18.460	18.388	0.072	17.968	3B	18.060	18.227	18.461	18.554	0.093	19.050
3/4-32 or 0.750-32	UN	19.050	0.794	2A	0.029	19.022	18.870	...	18.506	18.415	0.091	18.077	2B	18.187	18.389	18.535	18.653	0.118	19.050
				3A	0.000	19.050	18.898	...	18.534	18.466	0.068	18.105	3B	18.187	18.336	18.535	18.625	0.090	19.050

(Notes follow at end of table)

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance	Min.		
1 <sup>3</sup> / <sub>16</sub> -12 or 0.8125-12	UN	20.637	2.117	2A	0.044	20.594	20.305	...	19.220	19.081	0.139	18.075	2B	18.339	18.796	19.264	19.446	0.182	20.638
				3A	0.000	20.637	20.348	...	19.263	19.160	0.103	18.118	3B	18.339	18.615	19.264	19.400	0.136	20.638
1 <sup>3</sup> / <sub>16</sub> -16 or 0.8125-16	UN	20.637	1.588	2A	0.039	20.599	20.361	...	19.568	19.444	0.124	18.707	2B	18.923	19.278	19.607	19.766	0.159	20.638
				3A	0.000	20.637	20.399	...	19.606	19.515	0.091	18.745	3B	18.923	19.133	19.607	19.725	0.118	20.638
1 <sup>3</sup> / <sub>16</sub> -20 or 0.8125-20	UNEF	20.637	1.270	2A	0.034	20.604	20.399	...	19.778	19.668	0.110	19.093	2B	19.254	19.558	19.812	19.956	0.144	20.638
				3A	0.000	20.637	20.432	...	19.812	19.729	0.083	19.126	3B	19.254	19.461	19.812	19.921	0.109	20.638
1 <sup>3</sup> / <sub>16</sub> -28 or 0.8125-28	UN	20.637	0.907	2A	0.032	20.607	20.442	...	20.017	19.922	0.095	19.525	2B	19.660	19.862	20.049	20.175	0.126	20.638
				3A	0.000	20.637	20.473	...	20.048	19.975	0.073	19.555	3B	19.660	19.814	20.049	20.142	0.093	20.638
1 <sup>3</sup> / <sub>16</sub> -32 or 0.8125-32	UN	20.637	0.794	2A	0.029	20.609	20.458	...	20.093	20.003	0.090	19.665	2B	19.787	19.964	20.122	20.241	0.119	20.638
				3A	0.000	20.637	20.486	...	20.121	20.054	0.067	19.693	3B	19.787	19.923	20.122	20.213	0.091	20.638
7/8-9 or 0.875-9	UNC	22.225	2.822	1A	0.050	22.176	21.649	...	20.342	20.102	0.240	18.816	1B	19.177	19.761	20.392	20.703	0.311	22.225
				2A	0.050	22.176	21.824	21.649	20.342	20.183	0.159	18.816	2B	19.177	19.761	20.392	20.599	0.207	22.225
				3A	0.000	22.225	21.872	...	20.391	20.272	0.119	18.865	3B	19.177	19.509	20.392	20.546	0.154	22.225
7/8-12 or 0.875-12	UN	22.225	2.117	2A	0.044	22.181	21.893	...	20.807	20.668	0.139	19.662	2B	19.939	20.396	20.851	21.033	0.182	22.225
				3A	0.000	22.225	21.936	...	20.850	20.747	0.103	19.705	3B	19.939	20.187	20.851	20.988	0.137	22.225
7/8-14 or 0.875-14	UNF	22.225	1.814	1A	0.042	22.184	21.791	...	21.005	20.801	0.204	20.025	1B	20.270	20.675	21.047	21.315	0.268	22.225
				2A	0.042	22.184	21.923	...	21.005	20.869	0.136	20.025	2B	20.270	20.675	21.047	21.224	0.177	22.225
				3A	0.000	22.225	21.964	...	21.046	20.943	0.103	20.066	3B	20.270	20.492	21.047	21.181	0.134	22.225
7/8-16 or 0.875-16	UN	22.225	1.588	2A	0.039	22.186	21.949	...	21.155	21.032	0.123	20.295	2B	20.498	20.853	21.194	21.353	0.159	22.225
				3A	0.000	22.225	21.987	...	21.193	21.103	0.090	20.333	3B	20.498	20.721	21.194	21.313	0.119	22.225
7/8-20 or 0.875-20	UNEF	22.225	1.270	2A	0.034	22.191	21.987	...	21.366	21.255	0.111	20.681	2B	20.854	21.132	21.400	21.544	0.144	22.225
				3A	0.000	22.225	22.020	...	21.399	21.316	0.083	20.714	3B	20.854	21.048	21.400	21.508	0.108	22.225
7/8-28 or 0.875-28	UN	22.225	0.907	2A	0.031	22.194	22.030	...	21.605	21.509	0.096	21.112	2B	21.235	21.463	21.636	21.762	0.126	22.225
				3A	0.000	22.225	22.060	...	21.635	21.563	0.072	21.143	3B	21.235	21.402	21.636	21.729	0.093	22.225
7/8-32 or 0.875-32	UN	22.225	0.794	2A	0.029	22.197	22.045	...	21.681	21.590	0.091	21.252	2B	21.362	21.564	21.710	21.828	0.118	22.225
				3A	0.000	22.225	22.073	...	21.709	21.641	0.068	21.280	3B	21.362	21.511	21.710	21.800	0.090	22.225
1 <sup>5</sup> / <sub>16</sub> -12 or 0.9375-12	UN	23.812	2.117	2A	0.044	23.769	23.480	...	22.395	22.251	0.144	21.250	2B	21.514	21.971	22.439	22.626	0.187	23.813
				3A	0.000	23.812	23.523	...	22.438	22.332	0.106	21.293	3B	21.514	21.780	22.439	22.578	0.139	23.813
1 <sup>5</sup> / <sub>16</sub> -16 or 0.9375-16	UN	23.812	1.588	2A	0.039	23.774	23.536	...	22.743	22.617	0.126	21.882	2B	22.098	22.453	22.782	22.946	0.164	23.813
				3A	0.000	23.812	23.574	...	22.781	22.688	0.093	21.920	3B	22.098	22.308	22.782	22.905	0.123	23.813
1 <sup>5</sup> / <sub>16</sub> -20 or 0.9375-20	UNEF	23.812	1.270	2A	0.036	23.776	23.572	...	22.951	22.838	0.113	22.266	2B	22.429	22.733	22.987	23.136	0.149	23.813
				3A	0.000	23.812	23.607	...	22.987	22.901	0.086	22.301	3B	22.429	22.636	22.987	23.098	0.111	23.813
1 <sup>5</sup> / <sub>16</sub> -28 or 0.9375-28	UN	23.812	0.907	2A	0.032	23.782	23.617	...	23.192	23.092	0.100	22.700	2B	22.835	23.037	23.224	23.355	0.131	23.813
				3A	0.000	23.812	23.648	...	23.223	23.148	0.095	22.730	3B	22.835	22.989	23.224	23.322	0.098	23.813
1 <sup>5</sup> / <sub>16</sub> -32 or 0.9375-32	UN	23.812	0.794	2A	0.029	23.784	23.633	...	23.268	23.173	0.095	22.840	2B	22.962	23.139	23.297	23.421	0.124	23.813
				3A	0.000	23.812	23.661	...	23.296	23.226	0.070	22.868	3B	22.962	23.098	23.297	23.390	0.093	23.813
1-8 or 1.000-8	UNC	25.400	3.175	1A	0.052	25.349	24.778	...	23.286	23.031	0.255	21.570	1B	21.971	22.606	23.338	23.672	0.334	25.400
				2A	0.052	25.349	24.969	24.778	23.286	23.114	0.172	21.570	2B	21.971	22.606	23.338	23.561	0.223	25.400
				3A	0.000	25.400	25.019	...	23.337	23.208	0.129	21.620	3B	21.971	22.344	23.338	23.505	0.167	25.400

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
		Diameter	Pitch			Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1-12 or 1.000-12	UNF	25.400	2.117	1A	0.046	25.354	24.918	...	23.980	23.757	0.223	22.835	1B	23.114	23.571	24.026	24.315	0.289	25.400
				2A	0.046	25.354	25.065	...	23.980	23.831	0.149	22.835	2B	23.114	23.571	24.026	24.218	0.192	25.400
				3A	0.000	25.400	25.111	...	24.025	23.915	0.110	22.880	3B	23.114	23.362	24.026	24.170	0.144	25.400
1-16 or 1.000-16	UN	25.400	1.588	2A	0.039	25.361	25.124	...	24.330	24.204	0.126	23.470	2B	23.673	24.028	24.369	24.533	0.164	25.400
				3A	0.000	25.400	25.162	...	24.368	24.275	0.093	23.508	3B	23.673	23.896	24.369	24.493	0.124	25.400
				2A	0.037	25.364	25.159	...	24.538	24.425	0.113	23.853	2B	24.029	24.307	24.575	24.724	0.149	25.400
1-20 or 1.000-20	UNEF	25.400	1.270	3A	0.000	25.400	25.195	...	24.574	24.489	0.085	23.889	3B	24.029	24.223	24.575	24.686	0.111	25.400
				2A	0.031	25.369	25.205	...	24.780	24.679	0.101	24.287	2B	24.410	24.638	24.811	24.942	0.131	25.400
				3A	0.000	25.400	25.235	...	24.810	24.735	0.075	24.318	3B	24.410	24.577	24.811	24.909	0.098	25.400
1-32 or 1.000-32	UN	25.400	0.794	2A	0.029	25.372	25.220	...	24.856	24.760	0.096	24.427	2B	24.537	24.739	24.885	25.008	0.123	25.400
				3A	0.000	25.400	25.248	...	24.884	24.814	0.070	24.455	3B	24.537	24.686	24.885	24.978	0.093	25.400
				2A	0.052	26.936	26.556	...	24.874	24.702	0.172	23.157	2B	23.546	24.180	24.926	25.151	0.225	26.988
1 1/16-8 or 1.0625-8	UN	26.987	3.175	3A	0.000	26.987	26.607	...	24.925	24.796	0.129	23.208	3B	23.546	23.931	24.926	25.095	0.169	26.988
				2A	0.044	26.944	26.655	...	25.570	25.426	0.144	24.425	2B	24.689	25.146	25.614	25.801	0.187	26.988
				3A	0.000	26.987	26.698	...	25.613	25.507	0.106	24.468	3B	24.689	24.950	25.614	25.753	0.139	26.988
1 1/16-16 or 1.0625-16	UN	26.987	1.588	2A	0.039	26.949	26.711	...	25.918	25.792	0.126	25.057	2B	25.273	25.628	25.957	26.121	0.164	26.988
				3A	0.000	26.987	26.749	...	25.956	25.863	0.093	25.092	3B	25.273	25.483	25.957	26.080	0.123	26.988
				2A	0.036	26.951	26.731	...	26.035	25.916	0.119	25.273	2B	25.451	25.781	26.071	26.228	0.157	26.988
1 1/16-18 or 1.0625-18	UNEF	26.987	1.411	3A	0.000	26.987	26.767	...	26.070	25.980	0.090	25.309	3B	25.451	25.666	26.071	26.187	0.116	26.988
				2A	0.036	26.951	26.747	...	26.126	26.013	0.113	25.441	2B	25.604	25.908	26.162	26.311	0.149	26.988
				3A	0.000	26.987	26.782	...	26.162	26.076	0.086	25.476	3B	25.604	25.811	26.162	26.273	0.111	26.988
1 1/16-20 or 1.0625-20	UN	26.987	1.270	2A	0.032	26.957	26.792	...	26.367	26.267	0.100	25.875	2B	26.010	26.212	26.399	26.530	0.131	26.988
				3A	0.000	26.987	26.823	...	26.398	26.323	0.075	25.905	3B	26.010	26.164	26.399	26.497	0.098	26.988
				1A	0.056	28.519	27.895	...	26.162	25.886	0.276	24.199	1B	24.638	25.349	26.218	26.576	0.358	28.575
1 1/8-7 or 1.125-7	UNC	28.575	3.629	2A	0.056	28.519	28.103	27.895	26.162	25.980	0.182	24.199	2B	24.638	25.349	26.218	26.456	0.238	28.575
				3A	0.000	28.575	28.159	...	26.217	26.081	0.136	24.254	3B	24.638	25.082	26.218	26.398	0.180	28.575
				2A	0.054	28.521	28.141	27.951	26.459	26.284	0.175	24.742	2B	25.146	25.781	26.513	26.741	0.228	28.575
1 1/8-8 or 1.125-8	UN	28.575	3.175	3A	0.000	28.575	28.194	...	26.512	26.381	0.131	24.795	3B	25.146	25.519	26.513	26.682	0.169	28.575
				2A	0.046	28.529	28.240	...	27.155	26.927	0.228	26.010	1B	26.289	26.746	27.201	27.498	0.297	28.575
				3A	0.000	28.575	28.286	...	27.200	27.003	0.152	26.010	2B	26.289	26.746	27.201	27.398	0.197	28.575
1 1/8-12 or 1.125-12	UNF	28.575	2.117	2A	0.039	28.536	28.299	...	27.505	27.379	0.126	26.645	2B	26.848	27.203	27.544	27.708	0.164	28.575
				3A	0.000	28.575	28.337	...	27.543	27.450	0.093	26.683	3B	26.848	27.071	27.544	27.668	0.124	28.575
				2A	0.037	28.539	28.319	...	27.622	27.504	0.118	26.860	2B	27.051	27.381	27.659	27.815	0.156	28.575
1 1/8-16 or 1.125-16	UN	28.575	1.588	3A	0.000	28.575	28.355	...	27.658	27.567	0.091	26.896	3B	27.051	27.254	27.659	27.774	0.115	28.575
				2A	0.037	28.539	28.334	...	27.713	27.600	0.113	27.028	2B	27.204	27.482	27.750	27.899	0.149	28.575
				3A	0.000	28.575	28.370	...	27.749	27.664	0.085	27.064	3B	27.204	27.398	27.750	27.861	0.111	28.575
1 1/8-18 or 1.125-18	UNEF	28.575	1.411	2A	0.037	28.539	28.319	...	27.955	27.854	0.101	27.462	2B	27.585	27.813	27.986	28.117	0.131	28.575
				3A	0.000	28.575	28.410	...	27.985	27.910	0.075	27.493	3B	27.585	27.752	27.986	28.084	0.098	28.575
				2A	0.031	28.544	28.380	...	27.955	27.854	0.101	27.462	2B	27.585	27.813	27.986	28.117	0.131	28.575
1 1/8-20 or 1.125-20	UN	28.575	0.907	3A	0.000	28.575	28.410	...	27.985	27.910	0.075	27.493	3B	27.585	27.752	27.986	28.084	0.098	28.575

(Notes follow at end of table)

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (In.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
						Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
1 <sup>3</sup> / <sub>16</sub> -8 or 1.1875-8	UN	30.162	3.175	2A	0.055	30.109	29.729	...	28.046	27.869	0.177	26.330	2B	26.721	27.355	28.101	28.331	0.230	30.163
				3A	0.000	30.162	29.782	...	28.100	27.968	0.132	26.383	3B	26.721	27.106	28.101	28.272	0.171	30.163
1 <sup>3</sup> / <sub>16</sub> -12 or 1.1875-12	UN	30.162	2.117	2A	0.044	30.119	29.830	...	28.745	28.598	0.147	27.600	2B	27.864	28.321	28.789	28.978	0.189	30.163
				3A	0.000	30.162	29.873	...	28.788	28.680	0.108	27.642	3B	27.864	28.125	28.789	28.930	0.141	30.163
1 <sup>3</sup> / <sub>16</sub> -16 or 1.1875-16	UN	30.162	1.588	2A	0.039	30.124	29.886	...	29.093	28.964	0.129	28.232	2B	28.448	28.808	29.132	29.298	0.166	30.163
				3A	0.000	30.162	29.924	...	29.131	29.035	0.096	28.270	3B	28.448	28.658	29.132	29.258	0.126	30.163
1 <sup>3</sup> / <sub>16</sub> -18 or 1.1875-18	UNEF	30.162	1.411	2A	0.039	30.124	29.904	...	29.207	29.083	0.124	28.445	2B	28.626	28.956	29.246	29.405	0.159	30.163
				3A	0.000	30.162	29.942	...	29.245	29.155	0.090	28.484	3B	28.626	28.841	29.246	29.364	0.118	30.163
1 <sup>3</sup> / <sub>16</sub> -20 or 1.1875-20	UN	30.162	1.270	2A	0.036	30.126	29.922	...	29.301	29.183	0.118	28.616	2B	28.779	29.083	29.337	29.491	0.154	30.163
				3A	0.000	30.162	29.957	...	29.337	29.249	0.088	28.651	3B	28.779	28.986	29.337	29.451	0.114	30.163
1 <sup>3</sup> / <sub>16</sub> -28 or 1.1875-28	UN	30.162	0.907	2A	0.032	30.132	29.967	...	29.542	29.439	0.103	29.050	2B	29.185	29.387	29.574	29.707	0.133	30.163
				3A	0.000	30.162	29.998	...	29.573	29.495	0.078	29.080	3B	29.185	29.339	29.574	29.674	0.100	30.163
1 <sup>1</sup> / <sub>4</sub> -7 or 1.250-7	UNC	31.750	3.629	1A	0.056	31.694	31.070	...	29.337	29.056	0.281	27.374	1B	27.813	28.524	29.393	29.758	0.365	31.750
				2A	0.056	31.694	31.278	31.070	29.337	29.150	0.187	27.374	2B	27.813	28.524	29.393	29.636	0.243	31.750
				3A	0.000	31.750	31.334	...	29.392	29.254	0.138	27.429	3B	27.813	28.257	29.393	29.575	0.182	31.750
1 <sup>1</sup> / <sub>4</sub> -8 or 1.250-8	UN	31.750	3.175	2A	0.054	31.696	31.316	31.126	29.634	29.457	0.177	27.917	2B	28.321	28.956	29.688	29.921	0.233	31.750
				3A	0.000	31.750	31.369	...	29.687	29.553	0.134	27.970	3B	28.321	28.694	29.688	29.862	0.174	31.750
1 <sup>1</sup> / <sub>4</sub> -12 or 1.250-12	UNF	31.750	2.117	1A	0.046	31.704	31.268	...	30.330	30.097	0.233	29.185	1B	29.464	29.921	30.376	30.680	0.304	31.750
				2A	0.046	31.704	31.415	...	30.330	30.173	0.157	29.185	2B	29.464	29.921	30.376	30.579	0.203	31.750
				3A	0.000	31.750	31.461	...	30.375	30.260	0.115	29.230	3B	29.464	29.712	30.376	30.528	0.152	31.750
1 <sup>1</sup> / <sub>4</sub> -16 or 1.250-16	UN	31.750	1.588	2A	0.039	31.711	31.474	...	30.680	30.552	0.128	29.820	2B	30.023	30.378	30.719	30.886	0.167	31.750
				3A	0.000	31.750	31.512	...	30.718	30.623	0.095	29.858	3B	30.023	30.246	30.719	30.845	0.126	31.750
1 <sup>1</sup> / <sub>4</sub> -18 or 1.250-18	UNEF	31.750	1.411	2A	0.040	31.711	31.491	...	30.794	30.671	0.123	30.033	2B	30.226	30.556	30.834	30.993	0.159	31.750
				3A	0.000	31.750	31.530	...	30.833	30.742	0.091	30.071	3B	30.226	30.429	30.834	30.952	0.118	31.750
1 <sup>1</sup> / <sub>4</sub> -20 or 1.250-20	UN	31.750	1.270	2A	0.037	31.714	31.509	...	30.888	30.770	0.118	30.203	2B	30.379	30.657	30.925	31.079	0.154	31.750
				3A	0.000	31.750	31.545	...	30.924	30.836	0.088	30.239	3B	30.379	30.573	30.925	31.038	0.113	31.750
1 <sup>1</sup> / <sub>4</sub> -28 or 1.250-28	UN	31.750	0.907	2A	0.031	31.719	31.555	...	31.130	31.027	0.103	30.637	2B	30.760	30.988	31.161	31.295	0.134	31.750
				3A	0.000	31.750	31.585	...	31.160	31.082	0.078	30.668	3B	30.760	30.927	31.161	31.262	0.101	31.750
1 <sup>5</sup> / <sub>16</sub> -8 or 1.3125-8	UN	33.337	3.175	2A	0.055	33.284	32.904	...	31.221	31.042	0.179	29.505	2B	29.896	30.530	31.276	31.508	0.232	33.338
				3A	0.000	33.337	32.957	...	31.275	31.141	0.134	29.558	3B	29.896	30.281	31.276	31.450	0.174	33.338
1 <sup>5</sup> / <sub>16</sub> -12 or 1.3125-12	UN	33.337	2.117	2A	0.044	33.294	33.005	...	31.920	31.773	0.147	30.775	2B	31.039	31.496	31.964	32.153	0.189	33.338
				3A	0.000	33.337	33.048	...	31.963	31.855	0.108	30.818	3B	31.039	31.300	31.964	32.105	0.141	33.338
1 <sup>5</sup> / <sub>16</sub> -16 or 1.3125-16	UN	33.337	1.588	2A	0.039	33.299	33.061	...	32.288	32.139	0.129	31.407	2B	31.623	31.978	32.307	32.473	0.166	33.338
				3A	0.000	33.337	33.099	...	32.306	32.210	0.096	31.445	3B	31.623	31.833	32.307	32.433	0.126	33.338
1 <sup>5</sup> / <sub>16</sub> -18 or 1.3125-18	UNEF	33.337	1.411	2A	0.039	33.299	33.079	...	32.382	32.258	0.124	31.620	2B	31.801	32.131	32.421	32.580	0.159	33.338
				3A	0.000	33.337	33.117	...	32.420	32.330	0.090	31.659	3B	31.801	32.016	32.421	32.539	0.118	33.338
1 <sup>5</sup> / <sub>16</sub> -20 or 1.3125-20	UN	33.337	1.270	2A	0.036	33.301	33.097	...	32.476	32.358	0.118	31.791	2B	31.954	32.258	32.512	32.666	0.154	33.338
				3A	0.000	33.337	33.132	...	32.512	32.424	0.088	31.826	3B	31.954	32.161	32.512	32.626	0.114	33.338
1 <sup>5</sup> / <sub>16</sub> -28 or 1.3125-28	UN	33.337	0.907	2A	0.032	33.307	33.142	...	32.717	32.614	0.103	32.225	2B	32.360	32.562	32.749	32.882	0.133	33.338
				3A	0.000	33.337	33.173	...	32.748	32.670	0.078	32.255	3B	32.360	32.514	32.749	32.849	0.100	33.338

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance			
1 3/8-6 or 1.375-6	UNC	34.925	4.233	1A	0.062	34.864	34.171	...	32.113	31.809	0.304	29.825	1B	30.353	31.115	32.175	32.567	0.392	34.925
				2A	0.062	34.864	34.402	34.171	32.113	31.911	0.202	29.825	2B	30.353	31.115	32.175	32.438	0.263	34.925
				3A	0.000	34.925	34.463	...	32.174	32.022	0.152	29.886	3B	30.353	30.850	32.175	32.372	0.197	34.925
1 3/8-8 or 1.375-8	UN	34.925	3.175	2A	0.057	34.869	34.489	34.298	32.806	32.624	0.182	31.090	2B	31.496	32.131	32.863	33.098	0.235	34.925
				3A	0.000	34.925	34.544	...	32.862	32.726	0.136	31.145	3B	31.496	31.869	32.863	33.040	0.177	34.925
				1A	0.049	34.876	34.440	...	33.502	33.264	0.238	32.357	1B	32.639	33.096	33.551	33.863	0.312	34.925
1 3/8-12 or 1.375-12	UNF	34.925	2.117	2A	0.049	34.876	34.588	...	33.502	33.343	0.159	32.357	2B	32.639	33.096	33.551	33.759	0.208	34.925
				3A	0.000	34.925	34.636	...	33.550	33.432	0.118	32.405	3B	32.639	32.887	33.551	33.705	0.154	34.925
				2A	0.039	34.886	34.649	...	33.855	33.727	0.128	32.995	2B	33.198	33.553	33.894	34.061	0.167	34.925
1 3/8-16 or 1.375-16	UN	34.925	1.588	3A	0.000	34.925	34.687	...	33.893	33.798	0.095	33.033	3B	33.198	33.421	33.894	34.020	0.126	34.925
				2A	0.040	34.886	34.666	...	33.969	33.846	0.123	33.208	2B	33.401	33.731	34.009	34.168	0.159	34.925
				3A	0.000	34.925	34.705	...	34.008	33.917	0.091	33.246	3B	33.401	33.604	34.009	34.127	0.118	34.925
1 3/8-20 or 1.375-20	UN	34.925	1.270	2A	0.037	34.889	34.684	...	34.063	33.945	0.118	33.378	2B	33.554	33.832	34.100	34.254	0.154	34.925
				3A	0.000	34.925	34.720	...	34.099	34.011	0.088	33.414	3B	33.554	33.748	34.100	34.213	0.113	34.925
				2A	0.031	34.894	34.730	...	34.305	34.202	0.103	33.812	2B	33.935	34.163	34.336	34.470	0.134	34.925
1 3/8-28 or 1.375-28	UN	34.925	0.907	3A	0.000	34.925	34.760	...	34.335	34.257	0.078	33.843	3B	33.935	34.102	34.336	34.437	0.101	34.925
				2A	0.062	36.451	35.990	...	33.700	33.498	0.202	31.412	2B	31.928	32.715	33.762	34.025	0.263	36.513
				3A	0.000	36.512	36.051	...	33.761	33.610	0.151	31.473	3B	31.928	32.438	33.762	33.959	0.197	36.513
1 7/16-8 or 1.4375-8	UN	36.512	3.175	2A	0.057	36.456	36.076	...	34.394	34.212	0.182	32.677	2B	33.071	33.705	34.451	34.688	0.237	36.513
				3A	0.000	36.512	36.132	...	34.450	34.313	0.137	32.739	3B	33.071	33.456	34.451	34.630	0.179	36.513
				2A	0.047	36.466	36.178	...	35.092	34.943	0.149	33.947	2B	34.214	34.671	35.139	35.331	0.192	36.513
1 7/16-12 or 1.4375-12	UN	36.512	2.117	3A	0.000	36.512	36.223	...	35.138	35.027	0.111	33.993	3B	34.214	34.475	35.139	35.283	0.144	36.513
				2A	0.042	36.471	36.234	...	35.440	35.309	0.131	34.580	2B	34.798	35.153	35.482	35.653	0.171	36.513
				3A	0.000	36.512	36.274	...	35.481	35.383	0.098	34.620	3B	34.798	35.008	35.482	35.610	0.128	36.513
1 7/16-16 or 1.4375-16	UN	36.512	1.588	2A	0.039	36.474	36.254	...	35.557	35.431	0.126	34.795	2B	34.976	35.306	35.596	35.760	0.164	36.513
				3A	0.000	36.512	36.292	...	35.595	35.502	0.093	34.834	3B	34.976	35.191	35.596	35.717	0.121	36.513
				2A	0.036	36.476	36.272	...	35.651	35.530	0.121	34.966	2B	35.129	35.433	35.687	35.844	0.157	36.513
1 7/16-20 or 1.4375-20	UN	36.512	1.270	3A	0.000	36.512	36.307	...	35.687	35.596	0.091	35.001	3B	35.129	35.336	35.687	35.803	0.116	36.513
				2A	0.034	36.479	36.315	...	35.890	35.784	0.106	35.397	2B	35.535	35.737	35.924	36.062	0.138	36.513
				3A	0.000	36.512	36.348	...	35.923	35.845	0.078	35.430	3B	35.535	35.689	35.924	36.027	0.103	36.513
1 1/2-6 or 1.500-6	UNC	38.100	4.233	1A	0.062	38.039	37.346	...	35.288	34.981	0.307	33.000	1B	33.528	34.290	35.350	35.750	0.400	38.100
				2A	0.062	38.039	37.577	37.346	35.288	35.083	0.205	33.000	2B	33.528	34.290	35.350	35.615	0.265	38.100
				3A	0.000	38.100	37.638	...	35.349	35.195	0.154	33.061	3B	33.528	34.025	35.350	35.549	0.199	38.100
1 1/2-8 or 1.500-8	UN	38.100	3.175	2A	0.057	38.044	37.664	37.473	35.981	35.797	0.184	34.265	2B	34.671	35.306	36.038	36.278	0.240	38.100
				3A	0.000	38.100	37.719	...	36.037	35.898	0.139	34.320	3B	34.671	35.044	36.038	36.217	0.179	38.100
				1A	0.049	38.051	37.615	...	36.677	36.434	0.243	35.532	1B	35.814	36.271	36.726	37.043	0.317	38.100
1 1/2-12 or 1.500-12	UNF	38.100	2.117	2A	0.049	38.051	37.763	...	36.677	36.516	0.161	35.532	2B	35.814	36.271	36.726	36.936	0.210	38.100
				3A	0.000	38.100	37.811	...	36.725	36.604	0.121	35.580	3B	35.814	36.062	36.726	36.885	0.159	38.100
				2A	0.041	38.059	37.821	...	37.028	36.897	0.131	36.167	2B	36.373	36.728	37.069	37.241	0.172	38.100
1 1/2-16 or 1.500-16	UN	38.100	1.588	3A	0.000	38.100	37.862	...	37.068	36.970	0.098	36.208	3B	36.373	36.596	37.069	37.198	0.129	38.100

(Notes follow at end of table)

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance			
1 1/2-18 or 1.500-18	UNEF	38.100	1.411	2A	0.040	38.061	37.841	...	37.144	37.018	0.126	36.383	2B	36.576	36.880	37.184	37.348	0.164	38.100
				3A	0.000	38.100	37.880	...	37.183	37.090	0.093	36.421	3B	36.576	36.779	37.184	37.304	0.120	38.100
1 1/2-20 or 1.500-20	UN	38.100	1.270	2A	0.037	38.064	37.859	...	37.238	37.118	0.120	36.553	2B	36.729	37.007	37.275	37.431	0.156	38.100
				3A	0.000	38.100	37.895	...	37.274	37.184	0.090	36.589	3B	36.729	36.923	37.275	37.391	0.116	38.100
1 1/2-28 or 1.500-28	UN	38.100	0.907	2A	0.034	38.066	37.902	...	37.477	37.372	0.105	36.985	2B	37.110	37.338	37.511	37.650	0.139	38.100
				3A	0.000	38.100	37.935	...	37.510	37.432	0.078	37.018	3B	37.110	37.277	37.511	37.614	0.103	38.100
1 3/16-6 or 1.5625-6	UN	39.687	4.233	2A	0.062	39.626	39.165	...	36.875	36.668	0.207	34.587	2B	35.103	35.890	36.937	37.205	0.268	39.688
				3A	0.000	39.687	39.226	...	36.936	36.782	0.154	34.648	3B	35.103	35.613	36.937	37.139	0.202	39.688
1 3/16-8 or 1.5625-8	UN	39.687	3.175	2A	0.057	39.631	39.251	...	37.569	37.382	0.187	35.852	2B	36.246	36.880	37.626	37.868	0.242	39.688
				3A	0.000	39.687	39.307	...	37.625	37.486	0.139	35.908	3B	36.246	36.631	37.626	37.807	0.181	39.688
1 3/16-12 or 1.5625-12	UN	39.687	2.117	2A	0.047	39.641	39.353	...	38.267	38.118	0.149	37.122	2B	37.389	37.846	38.314	38.506	0.192	39.688
				3A	0.000	39.687	39.398	...	38.313	38.202	0.111	37.168	3B	37.389	37.650	38.314	38.458	0.144	39.688
1 3/16-16 or 1.5625-16	UN	39.687	1.588	2A	0.042	39.646	39.409	...	38.615	38.484	0.131	37.755	2B	37.973	38.328	38.657	38.828	0.171	39.688
				3A	0.000	39.687	39.449	...	38.656	38.558	0.098	37.795	3B	37.973	38.183	38.657	38.785	0.128	39.688
1 3/16-18 or 1.5625-18	UNEF	39.687	1.411	2A	0.039	39.649	39.429	...	38.732	38.606	0.126	37.970	2B	38.151	38.481	38.771	38.935	0.164	39.688
				3A	0.000	39.687	39.467	...	38.770	38.677	0.093	38.009	3B	38.151	38.366	38.771	38.892	0.121	39.688
1 3/16-20 or 1.5625-20	UN	39.687	1.270	2A	0.036	39.651	39.447	...	38.826	38.705	0.121	38.141	2B	38.304	38.608	38.862	39.019	0.157	39.688
				3A	0.000	39.687	39.482	...	38.862	38.771	0.091	38.176	3B	38.304	38.511	38.862	38.979	0.116	39.688
1 5/8-6 or 1.625-6	UN	41.275	4.233	2A	0.065	41.211	40.750	...	38.460	38.253	0.207	36.185	2B	36.703	37.465	38.525	38.795	0.270	41.275
				3A	0.000	41.275	40.813	...	38.524	38.367	0.157	36.248	3B	36.703	37.200	38.525	38.727	0.202	41.275
1 5/8-8 or 1.625-8	UN	41.275	3.175	2A	0.057	41.219	40.839	40.648	39.156	38.969	0.187	37.551	2B	37.846	38.481	39.213	39.458	0.245	41.275
				3A	0.000	41.275	40.894	...	39.212	39.071	0.141	37.607	3B	37.846	38.219	39.213	39.395	0.182	41.275
1 5/8-12 or 1.625-12	UN	41.275	2.117	2A	0.046	41.229	40.940	...	39.855	39.706	0.149	38.710	2B	38.989	39.446	39.901	40.093	0.192	41.275
				3A	0.000	41.275	40.986	...	39.900	39.790	0.110	38.755	3B	38.989	39.237	39.901	40.045	0.144	41.275
1 5/8-16 or 1.625-16	UN	41.275	1.588	2A	0.041	41.234	40.996	...	40.203	40.072	0.131	39.342	2B	39.548	39.903	40.244	40.416	0.172	41.275
				3A	0.000	41.275	41.037	...	40.243	40.145	0.098	39.383	3B	39.548	39.771	40.244	40.373	0.129	41.275
1 5/8-18 or 1.625-18	UNEF	41.275	1.411	2A	0.040	41.236	41.016	...	40.319	40.193	0.126	39.558	2B	39.751	40.081	40.359	40.523	0.164	41.275
				3A	0.000	41.275	41.055	...	40.358	40.265	0.093	39.596	3B	39.751	39.954	40.359	40.479	0.120	41.275
1 5/8-20 or 1.625-20	UN	41.275	1.270	2A	0.037	41.239	41.034	...	40.413	40.293	0.120	39.728	2B	39.904	40.182	40.450	40.606	0.156	41.275
				3A	0.000	41.275	41.070	...	40.449	40.359	0.090	39.764	3B	39.904	40.098	40.450	40.566	0.116	41.275
1 11/16-6 or 1.6875-6	UN	42.862	4.233	2A	0.064	42.799	42.337	...	40.048	39.838	0.210	37.760	2B	38.278	39.065	40.112	40.386	0.274	42.863
				3A	0.000	42.862	42.401	...	40.111	39.955	0.156	37.823	3B	38.278	38.788	40.112	40.317	0.205	42.863
1 11/16-8 or 1.6875-8	UN	42.862	3.175	2A	0.057	42.806	42.426	...	40.744	40.554	0.190	39.027	2B	39.421	40.055	40.801	41.046	0.245	42.863
				3A	0.000	42.862	42.482	...	40.800	40.658	0.142	39.083	3B	39.421	39.806	40.801	40.985	0.184	42.863
1 11/16-12 or 1.6875-12	UN	42.862	2.117	2A	0.047	42.816	42.528	...	41.442	41.291	0.151	40.297	2B	40.564	41.021	41.489	41.686	0.197	42.863
				3A	0.000	42.862	42.573	...	41.488	41.375	0.113	40.343	3B	40.564	40.825	41.489	41.635	0.146	42.863
1 11/16-16 or 1.6875-16	UN	42.862	1.588	2A	0.042	42.821	42.584	...	41.790	41.656	0.134	40.930	2B	41.148	41.503	41.832	42.006	0.174	42.863
				3A	0.000	42.862	42.624	...	41.831	41.730	0.101	40.970	3B	41.148	41.358	41.832	41.963	0.131	42.863
1 11/16-18 or 1.6875-18	UNEF	42.862	1.411	2A	0.039	42.824	42.604	...	41.907	41.778	0.129	41.145	2B	41.326	41.656	41.946	42.113	0.167	42.863
				3A	0.000	42.862	42.642	...	41.945	41.850	0.095	41.184	3B	41.326	41.541	41.946	42.070	0.124	42.863



TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/m.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance			
1 1/16-20 or 1.6875-20	UN	42.862	1.270	2A	0.039	42.824	42.619	...	41.998	41.877	0.121	41.313	2B	41.479	41.783	42.037	42.197	0.160	42.863
				3A	0.000	42.862	42.657	...	42.037	41.946	0.091	41.351	3B	41.479	41.686	42.037	42.156	0.119	42.863
1 3/4-5 or 1.750-5	UNC	44.450	5.080	1A	0.070	44.381	43.600	...	41.081	40.742	0.339	38.334	1B	38.964	39.827	41.151	41.592	0.441	44.450
				2A	0.070	44.381	43.861	43.600	41.081	40.856	0.225	38.334	2B	38.964	39.827	41.151	41.445	0.294	44.450
				3A	0.000	44.450	43.930	...	41.150	40.981	0.169	38.403	3B	38.964	39.560	41.151	41.371	0.220	44.450
1 3/4-6 or 1.750-6	UN	44.450	4.233	2A	0.065	44.386	43.925	...	41.635	41.425	0.210	39.347	2B	39.878	40.640	41.700	41.973	0.273	44.450
				3A	0.000	44.450	43.988	...	41.699	41.540	0.159	39.411	3B	39.878	40.375	41.700	41.904	0.204	44.450
1 3/4-8 or 1.750-8	UN	44.450	3.175	2A	0.059	44.391	44.011	43.821	42.329	42.139	0.190	40.612	2B	41.021	41.656	42.388	42.636	0.248	44.450
				3A	0.000	44.450	44.069	...	42.387	42.243	0.144	40.670	3B	41.021	41.394	42.388	42.575	0.187	44.450
1 3/4-12 or 1.750-12	UN	44.450	2.117	2A	0.046	44.404	44.115	...	43.030	42.878	0.152	41.885	2B	42.164	42.621	43.076	43.273	0.197	44.450
				3A	0.000	44.450	44.161	...	43.075	42.962	0.113	41.930	3B	42.164	42.412	43.076	43.223	0.147	44.450
1 3/4-16 or 1.750-16	UN	44.450	1.588	2A	0.041	44.409	44.171	...	43.378	43.244	0.134	42.517	2B	42.723	43.078	43.419	43.594	0.175	44.450
				3A	0.000	44.450	44.212	...	43.418	43.318	0.100	42.558	3B	42.723	42.946	43.419	43.550	0.131	44.450
1 3/4-20 or 1.750-20	UN	44.450	1.270	2A	0.039	44.411	44.207	...	43.586	43.465	0.121	42.901	2B	43.079	43.357	43.625	43.784	0.159	44.450
				3A	0.000	44.450	44.245	...	43.624	43.534	0.090	42.939	3B	43.079	43.273	43.625	43.743	0.118	44.450
1 1/8-6 or 1.8125-6	UN	46.037	4.233	2A	0.064	45.974	45.512	...	43.223	43.010	0.213	40.935	2B	41.453	42.240	43.287	43.563	0.276	46.038
				3A	0.000	46.037	45.576	...	43.286	43.127	0.159	40.998	3B	41.453	41.963	43.287	43.494	0.207	46.038
1 1/8-8 or 1.8125-8	UN	46.037	3.175	2A	0.060	45.979	45.599	...	43.916	43.724	0.192	42.200	2B	42.596	43.230	43.976	44.226	0.250	46.038
				3A	0.000	46.037	45.657	...	43.975	43.831	0.144	42.258	3B	42.596	42.981	43.976	44.162	0.186	46.038
1 1/8-12 or 1.8125-12	UN	46.037	2.117	2A	0.047	45.991	45.703	...	44.617	44.468	0.151	43.472	2B	43.739	44.196	44.664	44.861	0.197	46.038
				3A	0.000	46.037	45.748	...	44.663	44.550	0.113	43.518	3B	43.739	44.000	44.664	44.810	0.146	46.038
1 1/8-16 or 1.8125-16	UN	46.037	1.588	2A	0.042	45.996	45.759	...	44.965	44.831	0.134	44.105	2B	44.323	44.678	45.007	45.181	0.174	46.038
				3A	0.000	46.037	45.799	...	45.006	44.905	0.101	44.145	3B	44.323	44.533	45.007	45.138	0.131	46.038
1 1/8-20 or 1.8125-20	UN	46.037	1.270	2A	0.039	45.999	45.794	...	45.173	45.052	0.121	44.488	2B	44.654	44.958	45.212	45.372	0.160	46.038
				3A	0.000	46.037	45.832	...	45.212	45.121	0.091	44.526	3B	44.654	44.861	45.212	45.331	0.119	46.038
1 7/8-6 or 1.875-6	UN	47.625	4.233	2A	0.065	47.561	47.100	...	44.810	44.598	0.212	42.522	2B	43.053	43.815	44.875	45.153	0.278	47.625
				3A	0.000	47.625	47.163	...	44.874	44.715	0.159	42.586	3B	43.053	43.550	44.875	45.082	0.207	47.625
1 7/8-8 or 1.875-8	UN	47.625	3.175	2A	0.059	47.566	47.186	46.996	45.504	45.309	0.195	43.787	2B	44.196	44.831	45.563	45.816	0.253	47.625
				3A	0.000	47.625	47.244	...	45.562	45.418	0.144	43.845	3B	44.196	44.569	45.563	45.753	0.190	47.625
1 7/8-12 or 1.875-12	UN	47.625	2.117	2A	0.048	47.579	47.290	...	46.205	46.053	0.152	45.060	2B	45.339	45.796	46.251	46.448	0.197	47.625
				3A	0.000	47.625	47.336	...	46.250	46.137	0.113	45.105	3B	45.339	45.587	46.251	46.398	0.147	47.625
1 7/8-16 or 1.875-16	UN	47.625	1.588	2A	0.041	47.584	47.346	...	46.553	46.419	0.134	45.692	2B	45.898	46.253	46.594	46.769	0.175	47.625
				3A	0.000	47.625	47.387	...	46.593	46.493	0.100	45.733	3B	45.898	46.121	46.594	46.725	0.131	47.625
1 7/8-20 or 1.875-20	UN	47.625	1.270	2A	0.039	47.586	47.382	...	46.761	46.640	0.121	46.076	2B	46.254	46.532	46.800	46.959	0.159	47.625
				3A	0.000	47.625	47.420	...	46.799	46.709	0.090	46.114	3B	46.254	46.448	46.800	46.918	0.118	47.625
1 5/8-6 or 1.9375-6	UN	49.212	4.233	2A	0.067	49.146	48.685	...	46.395	46.180	0.215	44.107	2B	44.628	45.415	46.462	46.743	0.281	49.213
				3A	0.000	49.212	48.751	...	46.481	46.300	0.161	44.173	3B	44.628	45.138	46.462	46.672	0.210	49.213
1 5/8-8 or 1.9375-8	UN	49.212	3.175	2A	0.060	49.154	48.774	...	47.091	46.897	0.194	45.375	2B	45.771	46.405	47.151	47.404	0.253	49.213
				3A	0.000	49.212	48.832	...	47.150	47.003	0.147	45.433	3B	45.771	46.156	47.151	47.340	0.189	49.213

(Notes follow at end of table)

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance			
1 <sup>15</sup> / <sub>16</sub> -12 or 1.9375-12	UN	49.212	2.117	2A	0.047	49.166	48.878	...	47.792	47.638	0.154	46.647	2B	46.914	47.371	47.839	48.039	0.200	49.213
				3A	0.000	49.212	48.923	...	47.838	47.725	0.113	46.693	3B	46.914	47.175	47.839	47.988	0.149	49.213
1 <sup>15</sup> / <sub>16</sub> -16 or 1.9375-16	UN	49.212	1.588	2A	0.042	49.171	48.934	...	48.140	48.004	0.136	47.280	2B	47.498	47.853	48.182	48.359	0.177	49.213
				3A	0.000	49.212	48.974	...	48.181	48.080	0.101	47.320	3B	47.498	47.708	48.182	48.313	0.131	49.213
1 <sup>15</sup> / <sub>16</sub> -20 or 1.9375-20	UN	49.212	1.270	2A	0.039	49.174	48.969	...	48.348	48.225	0.123	47.663	2B	47.829	48.133	48.387	48.549	0.162	49.213
				3A	0.000	49.212	49.007	...	48.387	48.294	0.093	47.701	3B	47.829	48.036	48.387	48.508	0.121	49.213
2-4 <sup>1</sup> / <sub>2</sub> or 2.000-4.5	UNC	50.800	5.644	1A	0.074	50.726	49.889	...	47.061	46.698	0.363	44.003	1B	44.679	45.593	47.135	47.607	0.472	50.800
				2A	0.074	50.726	50.168	49.889	47.061	46.820	0.241	44.003	2B	44.679	45.593	47.135	47.449	0.314	50.800
				3A	0.000	50.800	50.242	...	47.134	46.955	0.179	44.077	3B	44.679	45.366	47.135	47.371	0.236	50.800
2-6 or 2.000-6	UN	50.800	4.233	2A	0.067	50.733	50.272	...	47.983	47.765	0.218	45.695	2B	46.228	46.990	48.050	48.331	0.281	50.800
				3A	0.000	50.800	50.338	...	48.049	47.887	0.162	45.761	3B	46.228	46.725	48.050	48.260	0.210	50.800
2-8 or 2.000-8	UN	50.800	3.175	2A	0.059	50.741	50.361	50.171	48.679	48.481	0.198	46.962	2B	47.371	48.006	48.738	48.994	0.256	50.800
				3A	0.000	50.800	50.419	...	48.737	48.591	0.146	47.020	3B	47.371	47.744	48.738	48.930	0.192	50.800
2-12 or 2.000-12	UN	50.800	2.117	2A	0.046	50.754	50.465	...	49.380	49.226	0.154	48.235	2B	48.514	48.971	49.426	49.626	0.200	50.800
				3A	0.000	50.800	50.511	...	49.425	49.312	0.113	48.280	3B	48.514	48.762	49.426	49.575	0.149	50.800
2-16 or 2.000-16	UN	50.800	1.588	2A	0.041	50.759	50.521	...	49.728	49.591	0.137	48.867	2B	49.073	49.428	49.769	49.946	0.177	50.800
				3A	0.000	50.800	50.562	...	49.768	49.668	0.100	48.908	3B	49.073	49.296	49.769	49.900	0.131	50.800
2-20 or 2.000-20	UN	50.800	1.270	2A	0.039	50.761	50.557	...	49.936	49.812	0.124	49.251	2B	49.429	49.707	49.975	50.137	0.162	50.800
				3A	0.000	50.800	50.595	...	49.974	49.881	0.093	49.289	3B	49.429	49.623	49.975	50.096	0.121	50.800
2 <sup>1</sup> / <sub>8</sub> -6 or 2.125-6	UN	53.975	4.233	2A	0.067	53.908	53.447	...	51.158	50.938	0.220	48.870	2B	49.403	50.165	51.225	51.511	0.286	53.975
				3A	0.000	53.975	53.513	...	51.224	51.060	0.164	48.936	3B	49.403	49.900	51.225	51.437	0.212	53.975
2 <sup>1</sup> / <sub>8</sub> -8 or 2.125-8	UN	53.975	3.175	2A	0.062	53.914	53.534	53.343	51.851	51.651	0.200	50.135	2B	50.546	51.181	51.913	52.171	0.258	53.975
				3A	0.000	53.975	53.594	...	51.912	51.763	0.149	50.195	3B	50.546	50.919	51.913	52.108	0.195	53.975
2 <sup>1</sup> / <sub>8</sub> -12 or 2.125-12	UN	53.975	2.117	2A	0.046	53.929	53.640	...	52.555	52.401	0.154	51.410	2B	51.689	52.146	52.601	52.801	0.200	53.975
				3A	0.000	53.975	53.686	...	52.600	52.487	0.113	51.455	3B	51.689	51.937	52.601	52.750	0.149	53.975
2 <sup>1</sup> / <sub>8</sub> -16 or 2.125-16	UN	53.975	1.588	2A	0.041	53.934	53.696	...	52.903	52.766	0.137	52.042	2B	52.248	52.603	52.944	53.121	0.177	53.975
				3A	0.000	53.975	53.737	...	52.943	52.843	0.100	52.083	3B	52.248	52.471	52.944	53.075	0.131	53.975
2 <sup>1</sup> / <sub>8</sub> -20 or 2.125-20	UN	53.975	1.270	2A	0.039	53.936	53.732	...	53.111	52.987	0.124	52.426	2B	52.604	52.882	53.150	53.312	0.162	53.975
				3A	0.000	53.975	53.770	...	53.149	53.056	0.093	52.464	3B	52.604	52.798	53.150	53.271	0.121	53.975
2 <sup>3</sup> / <sub>4</sub> -4 <sup>1</sup> / <sub>2</sub> or 2.250-4.5	UNC	57.150	5.644	1A	0.074	57.076	56.239	...	53.411	53.041	0.370	50.353	1B	51.029	51.943	53.485	53.967	0.482	57.150
				2A	0.074	57.076	56.518	56.239	53.411	53.165	0.246	50.353	2B	51.029	51.943	53.485	53.804	0.419	57.150
				3A	0.000	57.150	56.592	...	53.484	53.300	0.184	50.427	3B	51.029	51.716	53.485	53.726	0.241	57.150
2 <sup>3</sup> / <sub>4</sub> -6 or 2.250-6	UN	57.150	4.233	2A	0.067	57.083	56.622	...	54.333	54.110	0.223	52.045	2B	52.578	53.340	54.400	54.688	0.288	57.150
				3A	0.000	57.150	56.688	...	54.399	54.232	0.167	52.111	3B	52.578	53.075	54.400	54.615	0.215	57.150
2 <sup>3</sup> / <sub>4</sub> -8 or 2.250-8	UN	57.150	3.175	2A	0.062	57.089	56.709	56.518	55.026	54.824	0.202	53.310	2B	53.721	54.356	55.088	55.351	0.263	57.150
				3A	0.000	57.150	56.769	...	55.087	54.936	0.151	53.370	3B	53.721	54.094	55.088	55.285	0.197	57.150
2 <sup>3</sup> / <sub>4</sub> -12 or 2.250-12	UN	57.150	2.117	2A	0.046	57.104	56.815	...	55.730	55.576	0.154	54.585	2B	54.864	55.321	55.776	55.976	0.200	57.150
				3A	0.000	57.150	56.861	...	55.775	55.662	0.113	54.630	3B	54.864	55.112	55.776	55.925	0.149	57.150
2 <sup>3</sup> / <sub>4</sub> -16 or 2.250-16	UN	57.150	1.588	2A	0.041	57.109	56.871	...	56.078	55.941	0.137	55.217	2B	55.423	55.778	56.119	56.296	0.177	57.150
				3A	0.000	57.150	56.912	...	56.118	56.018	0.100	55.258	3B	55.423	55.646	56.119	56.250	0.131	57.150

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance			
2 1/4-20 or 2.250-20	UN	57.150	1.270	2A	0.039	57.111	56.907	...	56.286	56.162	0.124	55.601	2B	55.779	56.057	56.325	56.487	0.162	57.150
				3A	0.000	57.150	56.945	...	56.324	56.231	0.093	55.839	3B	55.779	55.973	56.325	56.446	0.121	57.150
2 3/8-6 or 2.375-6	UN	60.325	4.233	2A	0.070	60.256	59.795	...	57.505	57.280	0.225	55.217	2B	55.753	56.540	57.575	57.866	0.291	60.325
				3A	0.000	60.325	59.863	...	57.574	57.407	0.167	55.286	3B	55.753	56.250	57.575	57.792	0.217	60.325
2 3/8-8 or 2.375-8	UN	60.325	3.175	2A	0.062	60.264	59.884	...	58.201	57.996	0.205	56.485	2B	56.896	57.531	58.263	58.529	0.266	60.325
				3A	0.000	60.325	59.944	...	58.262	58.111	0.151	56.545	3B	56.896	57.269	58.263	58.463	0.200	60.325
2 3/8-12 or 2.375-12	UN	60.325	2.117	2A	0.049	60.276	59.988	...	58.902	58.746	0.156	57.757	2B	58.039	58.496	58.951	59.156	0.205	60.325
				3A	0.000	60.325	60.036	...	58.950	58.835	0.115	57.805	3B	58.039	58.287	58.951	59.103	0.152	60.325
2 3/8-16 or 2.375-16	UN	60.325	1.588	2A	0.044	60.281	60.044	...	59.250	59.111	0.139	58.390	2B	58.598	58.953	59.294	59.476	0.182	60.325
				3A	0.000	60.325	60.087	...	59.293	59.190	0.103	58.433	3B	58.598	58.821	59.294	59.430	0.138	60.325
2 3/8-20 or 2.375-20	UN	60.325	1.270	2A	0.039	60.286	60.082	...	59.461	59.332	0.129	58.776	2B	58.954	59.232	59.500	59.667	0.167	60.325
				3A	0.000	60.325	60.120	...	59.499	59.403	0.096	58.814	3B	58.954	59.148	59.500	59.626	0.126	60.325
2 1/2-4 or 2.500-4	UNC	63.500	6.350	1A	0.080	63.421	62.515	...	59.296	58.903	0.393	55.860	1B	56.617	57.581	59.376	59.888	0.512	63.500
				2A	0.080	63.421	62.817	62.515	59.296	59.033	0.263	55.880	2B	56.617	57.581	59.376	59.717	0.341	63.500
				3A	0.000	63.500	62.896	...	59.375	59.177	0.198	55.938	3B	56.617	57.388	59.376	59.631	0.255	63.500
2 1/2-6 or 2.500-6	UN	63.500	4.233	2A	0.070	63.431	62.970	...	60.680	60.452	0.228	58.392	2B	58.928	59.690	60.750	61.043	0.293	63.500
				3A	0.000	63.500	63.038	...	60.749	60.579	0.170	58.461	3B	58.928	59.425	60.750	60.970	0.220	63.500
2 1/2-8 or 2.500-8	UN	63.500	3.175	2A	0.062	63.439	63.059	62.868	61.376	61.169	0.207	59.660	2B	60.071	60.706	61.438	61.706	0.368	63.500
				3A	0.000	63.500	63.119	...	61.437	61.283	0.154	59.720	3B	60.071	60.444	61.438	61.640	0.202	63.500
2 1/2-12 or 2.500-12	UN	63.500	2.117	2A	0.049	63.451	63.163	...	62.077	61.921	0.156	60.932	2B	61.214	61.671	62.126	62.331	0.205	63.500
				3A	0.000	63.500	63.211	...	62.125	62.010	0.115	60.980	3B	61.214	61.462	62.126	62.278	0.152	63.500
2 1/2-16 or 2.500-16	UN	63.500	1.588	2A	0.044	63.456	63.219	...	62.425	62.286	0.139	61.565	2B	61.773	62.128	62.469	62.651	0.182	63.500
				3A	0.000	63.500	63.262	...	62.468	62.365	0.103	61.608	3B	61.773	61.996	62.469	62.605	0.136	63.500
2 1/2-20 or 2.500-20	UN	63.500	1.270	2A	0.039	63.461	63.257	...	62.636	62.507	0.129	61.951	2B	62.129	62.407	62.675	62.842	0.167	63.500
				3A	0.000	63.500	63.295	...	62.674	62.578	0.096	61.989	3B	62.129	62.323	62.675	62.801	0.126	63.500
2 5/8-6 or 2.625-6	UN	66.675	4.233	2A	0.070	66.606	66.145	...	63.855	63.627	0.228	61.567	2B	62.103	62.865	63.925	64.223	0.298	66.675
				3A	0.000	66.675	66.213	...	63.924	63.752	0.172	61.636	3B	62.103	62.600	63.925	64.147	0.222	66.675
2 5/8-8 or 2.625-8	UN	66.675	3.175	2A	0.064	66.611	66.231	...	64.549	64.341	0.208	62.832	2B	63.246	63.881	64.613	64.884	0.271	66.675
				3A	0.000	66.675	66.294	...	64.612	64.456	0.156	62.895	3B	63.246	63.619	64.613	64.815	0.202	66.675
2 5/8-12 or 2.625-12	UN	66.675	2.117	2A	0.049	66.626	66.338	...	65.252	65.096	0.156	64.107	2B	64.389	64.846	65.301	65.506	0.205	66.675
				3A	0.000	66.675	66.386	...	65.300	65.185	0.115	64.155	3B	64.389	64.637	65.301	65.453	0.152	66.675
2 5/8-16 or 2.625-16	UN	66.675	1.588	2A	0.044	66.631	66.394	...	65.600	65.461	0.139	64.740	2B	64.948	65.303	65.644	65.828	0.182	66.675
				3A	0.000	66.675	66.437	...	65.643	65.540	0.103	64.783	3B	64.948	65.171	65.644	65.780	0.136	66.675
2 5/8-20 or 2.625-20	UN	66.675	1.270	2A	0.039	66.636	66.432	...	65.811	65.682	0.129	65.126	2B	65.304	65.582	65.850	66.017	0.167	66.675
				3A	0.000	66.675	66.470	...	65.849	65.753	0.096	65.164	3B	65.304	65.498	65.850	65.976	0.126	66.675
2 3/4-4 or 2.750-4	UNC	69.850	6.350	1A	0.083	69.768	68.862	...	65.643	65.243	0.400	62.207	1B	62.967	63.931	65.726	66.248	0.522	69.850
				2A	0.083	69.768	69.165	68.862	65.643	65.378	0.265	62.207	2B	62.967	63.931	65.726	66.073	0.347	69.850
				3A	0.000	69.850	69.246	...	65.725	65.525	0.200	62.288	3B	62.967	63.738	65.726	65.986	0.260	69.850
2 3/4-6 or 2.750-6	UN	69.850	4.233	2A	0.070	69.781	69.320	...	67.030	66.800	0.230	64.742	2B	65.278	66.040	67.100	67.401	0.301	69.850
				3A	0.000	69.850	69.388	...	67.099	66.927	0.172	64.811	3B	65.278	65.775	67.100	67.325	0.225	69.850

(Notes follow at end of table)

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
		Diameter	Pitch	Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
						Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
2 <sup>3</sup> / <sub>4</sub> -8 or 2.750-8	UN	69.850	3.175	2A	0.064	69.786	69.406	69.215	67.724	67.514	0.210	66.007	2B	66.421	67.056	67.788	68.061	0.273	69.850
				3A	0.000	69.850	69.469	...	67.787	67.628	0.159	66.070	3B	66.421	66.794	67.788	67.993	0.205	69.850
2 <sup>3</sup> / <sub>4</sub> -12 or 2.750-12	UN	69.850	2.117	2A	0.049	69.801	69.513	...	68.427	68.271	0.156	67.282	2B	67.564	68.021	68.476	68.681	0.205	69.850
				3A	0.000	69.850	69.561	...	68.475	68.360	0.115	67.330	3B	67.564	67.812	68.476	68.628	0.152	69.850
2 <sup>3</sup> / <sub>4</sub> -16 or 2.750-16	UN	69.850	1.588	2A	0.044	69.806	69.569	...	68.775	68.636	0.139	67.915	2B	68.123	68.478	68.819	69.001	0.182	69.850
				3A	0.000	69.850	69.612	...	68.818	68.715	0.103	67.958	3B	68.123	68.346	68.819	68.955	0.136	69.850
2 <sup>3</sup> / <sub>4</sub> -20 or 2.750-20	UN	69.850	1.270	2A	0.039	69.811	69.607	...	68.986	68.857	0.129	68.301	2B	68.479	68.757	69.025	69.192	0.167	69.850
				3A	0.000	69.850	69.645	...	69.024	68.928	0.096	68.339	3B	68.479	68.673	69.025	69.151	0.126	69.850
2 <sup>7</sup> / <sub>8</sub> -6 or 2.875-6	UN	73.025	4.233	2A	0.072	72.953	72.492	...	70.203	69.970	0.233	67.915	2B	68.453	69.215	70.275	70.578	0.303	73.025
				3A	0.000	73.025	72.563	...	70.274	70.099	0.175	67.986	3B	68.453	68.950	70.275	70.502	0.227	73.025
2 <sup>7</sup> / <sub>8</sub> -8 or 2.875-8	UN	73.025	3.175	2A	0.064	72.961	72.581	...	70.899	70.886	0.213	69.182	2B	69.596	70.231	70.963	71.241	0.278	73.025
				3A	0.000	73.025	72.644	...	70.962	70.803	0.159	69.245	3B	69.596	69.969	70.963	71.170	0.207	73.025
2 <sup>7</sup> / <sub>8</sub> -12 or 2.875-12	UN	73.025	2.117	2A	0.049	72.976	72.688	...	71.602	71.443	0.159	70.457	2B	70.739	71.196	71.651	71.859	0.208	73.025
				3A	0.000	73.025	72.738	...	71.650	71.532	0.118	70.505	3B	70.739	70.987	71.651	71.808	0.157	73.025
2 <sup>7</sup> / <sub>8</sub> -16 or 2.875-16	UN	73.025	1.588	2A	0.044	72.981	72.744	...	71.950	71.809	0.141	71.090	2B	71.298	71.653	71.994	72.179	0.185	73.025
				3A	0.000	73.025	72.787	...	71.993	71.888	0.105	71.133	3B	71.298	71.521	71.994	72.133	0.139	73.025
2 <sup>7</sup> / <sub>8</sub> -20 or 2.875-20	UN	73.025	1.270	2A	0.042	72.984	72.779	...	72.158	72.027	0.131	71.473	2B	71.654	71.932	72.200	72.372	0.172	73.025
				3A	0.000	73.025	72.820	...	72.199	72.101	0.098	71.514	3B	71.654	71.848	72.200	72.329	0.129	73.025
3-4 or 3.000-4	UNC	76.200	6.350	1A	0.083	76.118	75.212	...	71.993	71.585	0.408	68.557	1B	69.317	70.281	72.076	72.605	0.529	76.200
				2A	0.083	76.118	75.515	75.212	71.993	71.722	0.271	68.557	2B	69.317	70.281	72.076	72.428	0.352	76.200
				3A	0.000	76.200	75.596	...	72.075	71.872	0.203	68.638	3B	69.317	70.088	72.076	72.339	0.263	76.200
3-6 or 3.000-6	UN	76.200	4.233	2A	0.072	76.128	75.667	...	73.378	73.142	0.236	71.090	2B	71.628	72.390	73.450	73.756	0.306	76.200
				3A	0.000	76.200	75.738	...	73.449	73.272	0.177	71.161	3B	71.628	72.125	73.450	73.680	0.230	76.200
3-8 or 3.000-8	UN	76.200	3.175	2A	0.067	76.133	75.753	75.563	74.071	73.856	0.215	72.354	2B	72.771	73.406	74.138	74.419	0.281	76.200
				3A	0.000	76.200	75.819	...	74.137	73.975	0.162	72.420	3B	72.771	73.144	74.138	74.348	0.210	76.200
3-12 or 3.000-12	UN	76.200	2.117	2A	0.049	76.151	75.863	...	74.777	74.618	0.159	73.632	2B	73.914	74.371	74.826	75.034	0.208	76.200
				3A	0.000	76.200	75.911	...	74.825	74.707	0.118	73.680	3B	73.914	74.162	74.826	74.983	0.157	76.200
3-16 or 3.000-16	UN	76.200	1.588	2A	0.044	76.156	75.919	...	75.125	74.984	0.141	74.265	2B	74.473	74.828	75.169	75.354	0.185	76.200
				3A	0.000	76.200	75.962	...	75.168	75.063	0.105	74.308	3B	74.473	74.696	75.169	75.308	0.139	76.200
3-20 or 3.000-20	UN	76.200	1.270	2A	0.042	76.159	75.954	...	75.333	75.202	0.131	74.648	2B	74.829	75.107	75.375	75.547	0.172	76.200
				3A	0.000	76.200	75.995	...	75.374	75.276	0.098	74.689	3B	74.829	75.023	75.375	75.504	0.129	76.200
3 <sup>1</sup> / <sub>8</sub> -6 or 3.125-6	UN	79.375	4.233	2A	0.072	79.303	78.842	...	76.553	76.315	0.238	74.265	2B	74.803	75.565	76.625	76.934	0.309	79.375
				3A	0.000	79.375	79.913	...	76.624	76.447	0.177	74.336	3B	74.803	75.300	76.625	76.857	0.232	79.375
3 <sup>1</sup> / <sub>8</sub> -8 or 3.125-8	UN	79.375	3.175	2A	0.067	79.308	78.928	...	77.246	77.029	0.217	75.529	2B	75.946	76.581	77.313	77.597	0.284	79.375
				3A	0.000	79.375	78.994	...	77.312	77.150	0.162	75.595	3B	75.946	76.319	77.313	77.525	0.212	79.375
3 <sup>1</sup> / <sub>8</sub> -12 or 3.125-12	UN	79.375	2.117	2A	0.049	79.326	79.038	...	77.952	77.793	0.159	76.807	2B	77.089	77.546	78.001	78.209	0.208	79.375
				3A	0.000	79.375	79.086	...	78.000	77.882	0.118	76.855	3B	77.089	77.337	78.001	78.158	0.157	79.375
3 <sup>1</sup> / <sub>8</sub> -16 or 3.125-16	UN	79.375	1.588	2A	0.044	79.331	79.094	...	78.300	78.159	0.141	77.440	2B	77.648	78.003	78.344	78.529	0.185	79.375
				3A	0.000	79.375	79.137	...	78.343	78.238	0.105	77.483	3B	77.648	77.871	78.344	78.483	0.139	79.375

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance	Min.		
3/4-4 or 3.250-4	UNC	82.550	8.350	1A	0.085	82.466	81.560	...	78.341	77.928	0.413	74.905	1B	75.667	76.631	78.426	78.963	0.537	82.550
				2A	0.085	82.466	81.862	81.560	78.341	78.065	0.276	74.905	2B	75.667	76.631	78.426	78.783	0.357	82.550
				3A	0.000	82.550	81.946	...	78.425	78.217	0.208	74.988	3B	75.667	76.438	78.426	78.694	0.268	82.550
3/4-6 or 3.250-6	UN	82.550	4.233	2A	0.072	82.478	82.017	...	79.728	79.487	0.241	77.440	2B	77.978	78.740	79.800	80.111	0.311	82.550
				3A	0.000	82.550	82.088	...	79.799	79.619	0.180	77.511	3B	77.978	78.475	79.800	80.032	0.232	82.550
				2A	0.067	82.483	82.103	81.913	80.421	80.201	0.220	78.704	2B	79.121	79.756	80.488	80.774	0.286	82.550
3/4-8 or 3.250-8	UN	82.550	3.175	3A	0.000	82.550	82.169	...	80.487	80.323	0.164	78.770	3B	79.121	79.494	80.488	80.703	0.215	82.550
				2A	0.049	82.501	82.213	...	81.127	80.968	0.159	79.982	2B	80.264	80.721	81.176	81.384	0.208	82.550
				3A	0.000	82.550	82.261	...	81.175	81.057	0.118	80.030	3B	80.264	80.512	81.176	81.333	0.157	82.550
3/4-12 or 3.250-12	UN	82.550	2.117	2A	0.044	82.506	82.269	...	81.475	81.334	0.141	80.615	2B	80.823	81.178	81.519	81.704	0.185	82.550
				3A	0.000	82.550	82.312	...	81.518	81.413	0.105	80.658	3B	80.823	81.046	81.519	81.658	0.139	82.550
				2A	0.075	85.651	85.190	...	82.900	82.660	0.240	80.612	2B	81.153	81.915	82.975	83.289	0.314	85.725
3/8-6 or 3.375-6	UN	85.725	4.233	3A	0.000	85.725	85.263	...	82.974	82.792	0.182	80.686	3B	81.153	81.650	82.975	83.210	0.235	85.725
				2A	0.067	85.658	85.278	...	83.596	83.373	0.223	81.879	2B	82.296	82.931	83.663	83.952	0.289	85.725
				3A	0.000	85.725	85.344	...	83.662	83.495	0.167	81.945	3B	82.296	82.669	83.663	83.878	0.215	85.725
3/8-8 or 3.375-8	UN	85.725	3.175	2A	0.049	85.676	85.388	...	84.302	84.141	0.161	83.157	2B	83.439	83.896	84.351	84.564	0.213	85.725
				3A	0.000	85.725	85.436	...	84.350	84.229	0.121	83.205	3B	83.439	83.687	84.351	84.510	0.159	85.725
				2A	0.044	85.681	85.444	...	84.650	84.504	0.146	83.790	2B	83.998	84.353	84.694	84.884	0.190	85.725
3/8-12 or 3.375-12	UN	85.725	1.588	3A	0.000	85.725	85.487	...	84.693	84.585	0.108	83.833	3B	83.998	84.221	84.694	84.836	0.142	85.725
				1A	0.085	88.816	87.910	...	84.691	84.270	0.421	81.255	1B	82.017	82.981	84.776	85.321	0.545	88.900
				2A	0.085	88.816	88.212	87.910	84.691	84.412	0.279	81.255	2B	82.017	82.981	84.776	85.138	0.362	88.900
3/2-4 or 3.500-4	UNC	88.900	6.350	3A	0.000	88.900	88.296	...	84.775	84.565	0.210	81.338	3B	82.017	82.788	84.776	85.049	0.273	88.900
				2A	0.075	88.826	88.365	...	86.075	85.832	0.243	83.787	2B	84.328	85.090	86.150	86.466	0.316	88.900
				3A	0.000	88.900	88.438	...	86.149	85.967	0.182	83.861	3B	84.328	84.825	86.150	86.387	0.237	88.900
3/2-6 or 3.500-6	UN	88.900	4.233	2A	0.067	88.833	88.453	88.263	86.771	86.548	0.223	85.054	2B	85.471	86.106	86.838	87.129	0.291	88.900
				3A	0.000	88.900	88.519	...	86.837	86.670	0.167	85.120	3B	85.471	85.844	86.838	87.055	0.217	88.900
				2A	0.049	88.851	88.563	...	87.477	87.316	0.161	86.332	2B	86.614	87.071	87.526	87.739	0.213	88.900
3/2-8 or 3.500-8	UN	88.900	3.175	3A	0.000	88.900	88.611	...	87.525	87.404	0.124	86.380	3B	86.614	86.862	87.526	87.685	0.159	88.900
				2A	0.044	88.856	88.619	...	87.825	87.679	0.146	86.965	2B	87.173	87.528	87.869	88.059	0.190	88.900
				3A	0.000	88.900	88.662	...	87.868	87.760	0.108	87.008	3B	87.173	87.396	87.869	88.011	0.142	88.900
3/2-12 or 3.500-12	UN	88.900	2.117	2A	0.075	92.001	91.540	...	89.250	89.005	0.245	86.962	2B	87.503	88.265	89.325	89.644	0.319	92.075
				3A	0.000	92.075	91.613	...	89.324	89.139	0.185	87.036	3B	87.503	88.000	89.325	89.565	0.240	92.075
				2A	0.070	92.006	91.626	...	89.943	89.718	0.225	88.227	2B	88.646	89.281	90.013	90.307	0.294	92.075
3/8-6 or 3.625-6	UN	92.075	4.233	3A	0.000	92.075	91.694	...	90.012	89.843	0.169	88.295	3B	88.646	89.019	90.013	90.233	0.220	92.075
				2A	0.049	92.026	91.738	...	90.652	90.491	0.161	89.507	2B	89.789	90.246	90.701	90.914	0.213	92.075
				3A	0.000	92.075	91.786	...	90.700	90.579	0.121	89.555	3B	89.789	90.037	90.701	90.860	0.159	92.075
3/8-8 or 3.625-8	UN	92.075	3.175	2A	0.044	92.031	91.794	...	91.000	90.854	0.146	90.140	2B	90.348	90.703	91.044	91.234	0.190	92.075
				3A	0.000	92.075	91.837	...	91.043	90.935	0.108	90.183	3B	90.348	90.571	91.044	91.186	0.142	92.075

(Notes follow at end of table)

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
		Diameter	Pitch	Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
						Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
3 3/4-4 or 3.750-4	UNC	95.250	6.350	1A	0.088	95.163	94.257	...	91.038	90.612	0.426	87.602	1B	88.367	89.331	91.126	91.678	0.552	95.250
				2A	0.088	95.163	94.560	94.257	91.038	90.755	0.283	87.602	2B	88.367	89.331	91.126	91.493	0.367	95.250
				3A	0.000	95.250	94.646	...	91.125	90.912	0.213	87.688	3B	88.367	89.138	91.126	91.401	0.275	95.250
3 3/4-6 or 3.750-6	UN	95.250	4.233	2A	0.075	95.176	94.715	...	92.425	92.177	0.248	90.137	2B	90.678	91.440	92.500	92.821	0.321	95.250
				3A	0.000	95.250	94.788	...	92.499	92.314	0.185	90.211	3B	90.678	91.175	92.500	92.740	0.240	95.250
				2A	0.070	95.181	94.801	94.610	93.118	92.891	0.227	91.402	2B	91.821	92.456	93.188	93.484	0.296	95.250
3 3/4-8 or 3.750-8	UN	95.250	3.175	3A	0.000	95.250	94.869	...	93.187	93.018	0.169	91.470	3B	91.821	92.194	93.188	93.411	0.223	95.250
				2A	0.049	95.201	94.913	...	93.827	93.666	0.161	92.682	2B	92.964	93.421	93.876	94.089	0.213	95.250
				3A	0.000	95.250	94.981	...	93.875	93.754	0.121	92.730	3B	92.964	93.212	93.876	94.035	0.159	95.250
3 3/4-12 or 3.750-12	UN	95.250	2.117	2A	0.044	95.206	94.969	...	94.175	94.029	0.146	93.315	2B	93.523	93.878	94.219	94.409	0.190	95.250
				3A	0.000	95.250	95.012	...	94.218	94.110	0.108	93.358	3B	93.523	93.746	94.219	94.361	0.142	95.250
				2A	0.078	98.348	97.887	...	95.597	95.347	0.250	93.309	2B	93.853	94.615	95.675	95.999	0.324	98.425
3 3/4-16 or 3.750-16	UN	95.250	1.588	3A	0.000	98.425	97.963	...	95.674	95.487	0.187	93.386	3B	93.853	94.350	95.675	95.918	0.243	98.425
				2A	0.070	98.356	97.976	...	96.293	96.063	0.230	94.577	2B	94.996	95.631	96.363	96.662	0.299	98.425
				3A	0.000	98.425	98.044	...	96.362	96.190	0.172	94.645	3B	94.996	95.369	96.363	96.586	0.223	98.425
3 3/4-8 or 3.875-8	UN	98.425	3.175	2A	0.051	98.374	98.085	...	97.000	96.835	0.165	95.855	2B	96.139	96.596	97.051	97.266	0.215	98.425
				3A	0.000	98.425	98.136	...	97.050	96.927	0.123	95.905	3B	96.139	96.387	97.051	97.213	0.162	98.425
				2A	0.046	98.379	98.141	...	97.348	97.199	0.149	96.487	2B	96.698	97.053	97.394	97.586	0.192	98.425
3 3/4-16 or 3.875-16	UN	98.425	1.588	3A	0.000	98.425	98.187	...	97.393	97.282	0.111	96.533	3B	96.698	96.921	97.394	97.538	0.144	98.425
				2A	0.088	101.513	100.607	...	97.388	96.957	0.431	93.952	1B	94.717	95.681	97.476	98.036	0.560	101.600
				3A	0.000	101.600	100.996	...	97.475	97.260	0.215	94.038	3B	94.717	95.681	97.476	97.848	0.372	101.600
4-4 or 4.000-4	UNC	101.600	6.350	2A	0.088	101.513	100.910	100.607	97.388	97.102	0.286	93.952	2B	94.717	95.681	97.476	97.848	0.372	101.600
				3A	0.000	101.600	100.996	...	97.475	97.260	0.215	94.038	3B	94.717	95.488	97.476	97.756	0.280	101.600
				2A	0.078	101.523	101.062	...	98.772	98.522	0.250	96.484	2B	97.028	97.790	98.850	99.176	0.326	101.600
4-6 or 4.000-6	UN	101.600	4.233	3A	0.000	101.600	101.138	...	98.849	98.662	0.187	96.561	3B	97.028	97.525	98.850	99.095	0.245	101.600
				2A	0.070	101.531	101.151	100.960	99.468	99.238	0.230	97.752	2B	98.171	98.806	99.538	99.839	0.301	101.600
				3A	0.000	101.600	101.219	...	99.537	99.365	0.172	97.820	3B	98.171	98.544	99.538	99.763	0.225	101.600
4-8 or 4.000-8	UN	101.600	3.175	2A	0.051	101.549	101.260	...	100.175	100.010	0.165	99.030	2B	99.314	99.771	100.226	100.441	0.215	101.600
				3A	0.000	101.600	101.311	...	100.225	100.102	0.123	99.080	3B	99.314	99.562	100.226	100.388	0.162	101.600
				2A	0.046	101.554	101.316	...	100.523	100.374	0.149	99.662	2B	99.873	100.228	100.569	100.761	0.192	101.600
4-12 or 4.000-12	UN	101.600	2.117	3A	0.000	101.600	101.362	...	100.568	100.457	0.111	99.708	3B	99.873	100.096	100.569	100.713	0.144	101.600
				2A	0.078	104.698	104.237	...	101.947	101.694	0.253	99.659	2B	100.203	100.965	102.025	102.354	0.329	104.775
				3A	0.000	104.775	104.313	...	102.024	101.834	0.190	99.736	3B	100.203	100.700	102.025	102.270	0.245	104.775
4 1/8-6 or 4.125-6	UN	104.775	4.233	2A	0.051	104.724	104.435	...	103.350	103.185	0.165	102.205	2B	102.489	102.946	103.401	103.616	0.215	104.775
				3A	0.000	104.775	104.486	...	103.400	103.277	0.123	102.255	3B	102.489	102.737	103.401	103.563	0.162	104.775
				2A	0.046	104.729	104.491	...	103.698	103.549	0.149	102.837	2B	103.048	103.403	103.744	103.936	0.192	104.775
4 1/8-12 or 4.125-12	UN	104.775	2.117	3A	0.000	104.775	104.537	...	103.743	103.632	0.111	102.883	3B	103.048	103.271	103.744	103.888	0.144	104.775
				2A	0.088	107.863	107.260	...	103.738	103.447	0.291	100.302	2B	101.067	102.031	103.826	104.203	0.377	107.950
				3A	0.000	107.950	107.346	...	103.825	103.607	0.218	100.388	3B	101.067	101.838	103.826	104.109	0.283	107.950
4 1/8-16 or 4.125-16	UN	104.775	1.588	2A	0.078	107.873	107.412	...	105.122	104.867	0.255	102.834	2B	103.378	104.140	105.200	105.531	0.331	107.950
				3A	0.000	107.950	107.488	...	105.199	105.009	0.190	102.911	3B	103.378	103.875	105.200	105.448	0.248	107.950
				2A	0.088	107.863	107.260	...	103.738	103.447	0.291	100.302	2B	101.067	102.031	103.826	104.203	0.377	107.950
4 1/4-4 or 4.250-4	UN	107.950	6.350	3A	0.000	107.950	107.346	...	103.825	103.607	0.218	100.388	3B	101.067	101.838	103.826	104.109	0.283	107.950
				2A	0.078	107.873	107.412	...	105.122	104.867	0.255	102.834	2B	103.378	104.140	105.200	105.531	0.331	107.950
				3A	0.000	107.950	107.488	...	105.199	105.009	0.190	102.911	3B	103.378	103.875	105.200	105.448	0.248	107.950

TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (In.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance	Min.		
		Diameter	Pitch																
4 1/4-12 or 4.250-12	UN	107.950	2.117	2A	0.051	107.899	107.610	...	106.525	106.360	0.165	105.380	2B	105.664	106.121	106.576	106.791	0.215	107.950
				3A	0.000	107.950	107.661	...	106.575	106.452	0.123	105.430	3B	105.664	105.912	106.576	106.738	0.162	107.950
4 1/4-16 or 4.250-16	UN	107.950	1.588	2A	0.046	107.904	107.666	...	106.873	106.724	0.149	106.012	2B	106.223	106.578	106.919	107.111	0.192	107.950
				3A	0.000	107.950	107.712	...	106.918	106.807	0.111	106.058	3B	106.223	106.446	106.919	107.063	0.144	107.950
4 3/8-6 or 4.375-6	UN	111.125	4.233	2A	0.078	111.048	110.587	...	108.297	108.042	0.255	106.009	2B	106.553	107.315	108.375	108.709	0.334	111.125
				3A	0.000	111.125	110.663	...	108.374	108.182	0.192	106.086	3B	106.553	107.050	108.375	108.625	0.250	111.125
4 3/8-12 or 4.375-12	UN	111.125	2.117	2A	0.051	111.074	110.785	...	109.700	109.535	0.165	108.555	2B	108.839	109.296	109.751	109.966	0.215	111.125
				3A	0.000	111.125	110.836	...	109.750	109.627	0.123	108.605	3B	108.839	109.087	109.751	109.913	0.162	111.125
4 3/8-16 or 4.375-16	UN	111.125	1.588	2A	0.046	111.079	110.841	...	110.048	109.899	0.149	109.187	2B	109.398	109.753	110.094	110.286	0.192	111.125
				3A	0.000	111.125	110.887	...	110.093	109.982	0.111	109.233	3B	109.398	109.621	110.094	110.238	0.144	111.125
4 1/2-4 or 4.500-4	UN	114.300	6.350	2A	0.090	114.211	113.607	...	110.086	109.792	0.294	106.650	2B	107.417	108.381	110.176	110.558	0.382	114.300
				3A	0.000	114.300	113.696	...	110.175	109.955	0.220	106.738	3B	107.417	108.188	110.176	110.462	0.286	114.300
4 1/2-6 or 4.500-6	UN	114.300	4.233	2A	0.080	114.221	113.759	...	111.470	111.212	0.258	109.182	2B	109.728	110.490	111.550	111.887	0.337	114.300
				3A	0.000	114.300	113.838	...	111.549	111.354	0.195	109.261	3B	109.728	110.225	111.550	111.800	0.250	114.300
4 1/2-12 or 4.500-12	UN	114.300	2.117	2A	0.051	114.249	113.960	...	112.875	112.710	0.165	111.730	2B	112.014	112.471	112.926	113.141	0.215	114.300
				3A	0.000	114.300	114.011	...	112.925	112.802	0.123	111.780	3B	112.014	112.262	112.926	113.088	0.162	114.300
4 1/2-16 or 4.500-16	UN	114.300	1.588	2A	0.046	114.254	114.016	...	113.223	113.074	0.149	112.362	2B	112.573	112.928	113.269	113.461	0.192	114.300
				3A	0.000	114.300	114.062	...	113.268	113.157	0.111	112.408	3B	112.573	112.796	113.269	113.413	0.144	114.300
4 3/4-6 or 4.625-6	UN	117.475	4.233	2A	0.080	117.396	116.934	...	114.645	114.384	0.261	112.357	2B	112.903	113.665	114.725	115.062	0.337	117.475
				3A	0.000	117.475	117.013	...	114.724	114.529	0.195	112.436	3B	112.903	113.400	114.725	114.978	0.253	117.475
4 3/4-12 or 4.625-12	UN	117.475	2.117	2A	0.051	117.424	117.135	...	116.050	115.880	0.170	114.905	2B	115.189	115.646	116.101	116.321	0.220	117.475
				3A	0.000	117.475	117.186	...	116.100	115.974	0.126	114.955	3B	115.189	115.437	116.101	116.268	0.167	117.475
4 3/4-16 or 4.625-16	UN	117.475	1.588	2A	0.046	117.429	117.191	...	116.398	116.244	0.154	115.537	2B	115.748	116.103	116.444	116.644	0.200	117.475
				3A	0.000	117.475	117.237	...	116.443	116.330	0.113	115.583	3B	115.748	115.971	116.444	116.593	0.149	117.475
4 3/4-4 or 4.750-4	UN	120.650	6.350	2A	0.090	120.561	119.957	...	116.436	116.139	0.297	113.000	2B	113.767	114.731	116.526	116.913	0.387	120.650
				3A	0.000	120.650	120.046	...	116.525	116.302	0.223	113.088	3B	113.767	114.538	116.526	116.814	0.288	120.650
4 3/4-6 or 4.750-6	UN	120.650	4.233	2A	0.080	120.571	120.109	...	117.820	117.559	0.261	115.532	2B	116.078	116.840	117.900	118.239	0.339	120.650
				3A	0.000	120.650	120.188	...	117.899	117.704	0.195	115.611	3B	116.078	116.575	117.900	118.155	0.255	120.650
4 3/4-12 or 4.750-12	UN	120.650	2.117	2A	0.051	120.599	120.310	...	119.225	119.055	0.170	118.080	2B	118.364	118.821	119.276	119.496	0.220	120.650
				3A	0.000	120.650	120.361	...	119.275	119.149	0.126	118.130	3B	118.364	118.612	119.276	119.443	0.167	120.650
4 3/4-16 or 4.750-16	UN	120.650	1.588	2A	0.046	120.604	120.366	...	119.573	119.419	0.154	118.712	2B	118.923	119.278	119.619	119.819	0.200	120.650
				3A	0.000	120.650	120.412	...	119.618	119.505	0.113	118.758	3B	118.923	119.146	119.619	119.768	0.149	120.650
4 7/8-6 or 4.875-6	UN	123.825	4.233	2A	0.080	123.746	123.284	...	120.995	120.732	0.263	118.707	2B	119.253	120.015	121.075	121.417	0.342	123.825
				3A	0.000	123.825	123.363	...	121.074	120.877	0.197	118.786	3B	119.253	119.750	121.075	121.330	0.255	123.825
4 7/8-12 or 4.875-12	UN	123.825	2.117	2A	0.051	123.774	123.485	...	122.400	122.230	0.170	121.255	2B	121.539	121.996	122.451	122.671	0.220	123.825
				3A	0.000	123.825	123.536	...	122.450	122.324	0.126	121.305	3B	121.539	121.787	122.451	122.618	0.167	123.825
4 7/8-16 or 4.875-16	UN	123.825	1.588	2A	0.046	123.779	123.541	...	122.748	122.594	0.154	121.887	2B	122.098	122.453	122.794	122.994	0.200	123.825
				3A	0.000	123.825	123.587	...	122.793	122.680	0.113	121.933	3B	122.098	122.321	122.794	122.943	0.149	123.825

(Notes follow at end of table)

**TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)**

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Diameter	Pitch			Max. (2)	Min.	Min. (3)	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
5-4 or 5.000-4	UN	127.000	6.350	2A	0.093	126.908	126.305	...	122.783	122.482	0.301	119.347	2B	120.117	121.081	122.876	123.266	0.390	127.000
				3A	0.000	127.000	126.396	...	122.875	122.649	0.226	119.438		3B	120.117	120.888	122.876	123.169	0.293
5-6 or 5.000-6	UN	127.000	4.233	2A	0.080	126.921	126.459	...	124.170	123.904	0.266	121.882	2B	122.428	123.190	124.250	124.594	0.344	127.000
				3A	0.000	127.000	126.538	...	124.249	124.052	0.197	121.961		3B	122.428	122.925	124.250	124.508	0.258
5-12 or 5.000-12	UN	127.000	2.117	2A	0.051	126.949	126.660	...	125.575	125.405	0.170	124.430	2B	124.714	125.171	125.626	125.846	0.220	127.000
				3A	0.000	127.000	126.711	...	125.625	125.499	0.126	124.480		3B	124.714	124.962	125.626	125.793	0.167
5-16 or 5.000-16	UN	127.000	1.588	2A	0.046	126.954	126.716	...	125.923	125.769	0.154	125.062	2B	125.273	125.628	125.969	126.169	0.200	127.000
				3A	0.000	127.000	126.762	...	125.968	125.855	0.113	125.108		3B	125.273	125.496	125.969	126.118	0.149
5 1/8-12 or 5.125-12	UN	130.175	2.117	2A	0.051	130.124	129.835	...	128.750	128.580	0.170	127.605	2B	127.889	128.346	128.801	129.021	0.220	130.175
				3A	0.000	130.175	129.886	...	128.800	128.674	0.126	127.655		3B	127.889	128.137	128.801	128.968	0.167
5 1/8-16 or 5.125-16	UN	130.175	1.588	2A	0.046	130.129	129.891	...	129.098	128.944	0.154	128.237	2B	128.448	128.803	129.144	129.344	0.200	130.175
				3A	0.000	130.175	129.937	...	129.143	129.030	0.113	128.283		3B	128.448	128.671	129.144	129.293	0.149
5 1/4-4 or 5.250-4	UN	133.350	6.350	2A	0.093	133.258	132.655	...	129.133	128.829	0.304	125.697	2B	126.467	127.431	129.226	129.621	0.395	133.350
				3A	0.000	133.350	132.746	...	129.225	128.997	0.228	125.788		3B	126.467	127.238	129.226	129.522	0.296
5 1/4-12 or 5.250-12	UN	133.350	2.117	2A	0.051	133.299	133.010	...	131.925	131.755	0.170	130.780	2B	131.064	131.521	131.976	132.196	0.220	133.350
				3A	0.000	133.350	133.061	...	131.975	131.849	0.126	130.830		3B	131.064	131.312	131.976	132.143	0.167
5 1/4-16 or 5.250-16	UN	133.350	1.588	2A	0.046	133.304	133.066	...	132.273	132.119	0.154	131.412	2B	131.623	131.978	132.319	132.519	0.200	133.350
				3A	0.000	133.350	133.112	...	132.318	132.205	0.113	131.458		3B	131.623	131.846	132.319	132.468	0.149
5 3/8-12 or 5.375-12	UN	136.525	2.117	2A	0.051	136.474	136.185	...	135.100	134.930	0.170	133.955	2B	134.239	134.696	135.151	135.371	0.220	136.525
				3A	0.000	136.525	136.236	...	135.150	135.024	0.126	134.005		3B	134.239	134.487	135.151	135.318	0.167
5 3/8-16 or 5.375-16	UN	136.525	1.588	2A	0.046	136.479	136.241	...	135.448	135.294	0.154	134.587	2B	134.798	135.153	135.494	135.694	0.200	136.525
				3A	0.000	136.525	136.287	...	135.493	135.380	0.113	134.633		3B	134.798	135.021	135.494	135.643	0.149
5 1/2-4 or 5.500-4	UN	139.700	6.350	2A	0.093	139.608	139.005	...	135.483	135.177	0.306	132.047	2B	132.817	133.781	135.576	135.978	0.400	139.700
				3A	0.000	139.700	139.096	...	135.575	135.344	0.231	132.138		3B	132.817	133.588	135.576	135.874	0.298
5 1/2-12 or 5.500-12	UN	139.700	2.117	2A	0.051	139.649	139.360	...	138.275	138.105	0.170	137.130	2B	137.414	137.871	138.326	138.546	0.220	139.700
				3A	0.000	139.700	139.411	...	138.325	138.199	0.126	137.180		3B	137.414	137.662	138.326	138.493	0.167
5 1/2-16 or 5.500-16	UN	139.700	1.588	2A	0.046	139.654	139.416	...	138.623	138.469	0.154	137.762	2B	137.973	138.328	138.669	138.869	0.200	139.700
				3A	0.000	139.700	139.462	...	138.668	138.555	0.113	137.808		3B	137.973	138.196	138.669	138.818	0.149
5 5/8-12 or 5.625-12	UN	142.875	2.117	2A	0.054	142.821	142.533	...	141.447	141.273	0.174	140.302	2B	140.589	141.046	141.501	141.729	0.228	142.875
				3A	0.000	142.875	142.586	...	141.500	141.369	0.131	140.355		3B	140.589	140.837	141.501	141.671	0.170
5 5/8-16 or 5.625-16	UN	142.875	1.588	2A	0.049	142.826	142.588	...	141.795	141.639	0.156	140.934	2B	141.148	141.503	141.844	142.049	0.205	142.875
				3A	0.000	142.875	142.637	...	141.843	141.725	0.118	140.983		3B	141.148	141.371	141.844	141.998	0.154
5 3/4-4 or 5.750-4	UN	146.050	6.350	2A	0.095	145.956	145.352	...	141.831	141.522	0.309	138.394	2B	139.167	140.131	141.926	142.328	0.402	146.050
				3A	0.000	146.050	145.446	...	141.925	141.692	0.233	138.488		3B	139.167	139.938	141.926	142.227	0.301
5 3/4-12 or 5.750-12	UN	146.050	2.117	2A	0.054	145.996	145.708	...	144.622	144.448	0.174	143.477	2B	143.764	144.221	144.676	144.904	0.228	146.050
				3A	0.000	146.050	145.761	...	144.675	144.544	0.131	143.530		3B	143.764	144.012	144.676	144.846	0.170
5 3/4-16 or 5.750-16	UN	146.050	1.588	2A	0.049	146.001	145.763	...	144.970	144.814	0.156	144.109	2B	144.323	144.678	145.019	145.224	0.205	146.050
				3A	0.000	146.050	145.812	...	145.018	144.900	0.118	144.158		3B	144.323	144.546	145.019	145.173	0.154



TABLE C1 LIMITS OF SIZE FOR STANDARD SERIES (UN/UNR) THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)									Internal (1)						
				Class	Allowance	Major Diameter			Pitch Diameter			UNR Minor Diam. Max. (4) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Max. (2)	Min.			Min. (3)	Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance	Min.		
5/8-12 or 5.875-12	UN	149.225	2.117	2A	0.054	149.171	148.883	...	147.797	147.623	0.174	146.652	2B	146.939	147.396	147.851	148.079	0.228	149.225
				3A	0.000	149.225	148.936	...	147.850	147.719	0.131	146.705	3B	146.939	147.187	147.851	148.021	0.170	149.225
5/8-16 or 5.875-16	UN	149.225	1.588	2A	0.049	149.176	148.938	...	148.145	147.989	0.156	147.284	2B	147.498	147.853	148.194	148.399	0.205	149.225
				3A	0.000	149.225	148.987	...	148.193	148.075	0.118	147.333	3B	147.498	147.721	148.194	148.348	0.154	149.225
6-4 or 6.000-4	UN	152.400	6.350	2A	0.095	152.306	151.702	...	148.181	147.867	0.314	144.744	2B	145.517	146.481	148.276	148.683	0.407	152.400
				3A	0.000	152.400	151.796	...	148.275	148.039	0.236	144.838	3B	145.517	146.288	148.276	148.579	0.303	152.400
6-12 or 6.000-12	UN	152.400	2.117	2A	0.054	152.346	152.058	...	150.972	150.798	0.174	149.827	2B	150.114	150.571	151.026	151.254	0.228	152.400
				3A	0.000	152.400	152.111	...	151.025	150.894	0.131	149.880	3B	150.114	150.362	151.026	151.196	0.170	152.400
6-16 or 6.000-16	UN	152.400	1.588	2A	0.049	152.351	152.113	...	151.320	151.164	0.156	150.459	2B	150.673	151.028	151.369	151.574	0.205	152.400
				3A	0.000	152.400	152.162	...	151.368	151.250	0.118	150.508	3B	150.673	150.896	151.369	151.523	0.154	152.400

GENERAL NOTE:

Series designation shown indicates the UN thread form; however, the UNR thread form may be specified by substituting UNR in place of UN in all designations for external use only.

NOTES:

- (1) Thread classes may be combined. See para. 4.2 of ASME B1.1.
- (2) For Class 2A threads having an additive finish, the maximum major and pitch diameters, after coating, may equal the basic sizes, whose values are the same as the maximum values shown for Class 3A in these columns. See paras. 4.1.1 and 4.1.3 of ASME B1.1.
- (3) For unfinished hot material, not including standard fasteners with rolled threads.
- (4) UN series external thread maximum minor diameter is basic ( $D_1$  in Section 11) for Class 3A and basic minus allowance for Classes 1A and 2A.

TABLE C2 LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS, mm

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)							Internal (1)							
				Class	Allow- ance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Diameter	Pitch			Max. (2)	Min.	Max. (2)	Min.	Toler- ance			Min.	Max.	Min.	Max.	Toler- ance	
10-28 or 0.1900-28	UNS	4.826	0.907	2A	0.026	4.800	4.636	4.211	4.128	0.083	3.719	2B	3.836	4.064	4.237	4.345	0.108	4.826
10-36 or 0.1900-36	UNS	4.826	0.706	2A	0.024	4.803	4.664	4.345	4.270	0.075	3.962	2B	4.064	4.216	4.369	4.467	0.098	4.826
10-40 or 0.1900-40	UNS	4.826	0.635	2A	0.024	4.803	4.674	4.391	4.318	0.073	4.044	2B	4.141	4.292	4.415	4.508	0.093	4.826
10-48 or 0.1900-48	UNS	4.826	0.529	2A	0.022	4.805	4.692	4.462	4.397	0.065	4.176	2B	4.242	4.368	4.484	4.569	0.085	4.826
10-56 or 0.1900-56	UNS	4.826	0.454	2A	0.019	4.808	4.705	4.513	4.451	0.062	4.270	2B	4.344	4.445	4.532	4.612	0.080	4.826
12-36 or 0.2160-36	UNS	5.486	0.706	2A	0.024	5.463	5.324	5.006	4.931	0.075	4.625	2B	4.725	4.876	5.030	5.128	0.098	5.487
12-40 or 0.2160-40	UNS	5.486	0.635	2A	0.023	5.463	5.334	5.052	4.979	0.073	4.661	2B	4.801	4.953	5.075	5.168	0.093	5.487
12-48 or 0.2160-48	UNS	5.486	0.529	2A	0.021	5.466	5.352	5.123	5.058	0.065	4.836	2B	4.903	5.029	5.144	5.229	0.085	5.487
12-56 or 0.2160-56	UNS	5.486	0.454	2A	0.019	5.468	5.365	5.173	5.111	0.062	4.930	2B	5.004	5.105	5.192	5.273	0.081	5.487
1/4-24 or 0.2500-24	UNS	6.350	1.058	2A	0.029	6.322	6.140	5.633	5.540	0.093	5.062	2B	5.207	5.461	5.662	5.783	0.121	6.350
1/4-27 or 0.2500-27	UNS	6.350	0.941	2A	0.026	6.324	6.155	5.712	5.624	0.088	5.204	2B	5.334	5.562	5.738	5.852	0.114	6.350
1/4-36 or 0.2500-36	UNS	6.350	0.706	2A	0.024	6.327	6.188	5.869	5.792	0.077	5.489	2B	5.588	5.740	5.893	5.994	0.101	6.350
1/4-40 or 0.2500-40	UNS	6.350	0.635	2A	0.024	6.327	6.198	5.915	5.842	0.073	5.570	2B	5.665	5.816	5.939	6.035	0.096	6.350
1/4-48 or 0.2500-48	UNS	6.350	0.529	2A	0.022	6.329	6.216	5.986	5.919	0.067	5.697	2B	5.766	5.892	6.008	6.098	0.090	6.350
1/4-56 or 0.2500-56	UNS	6.350	0.454	2A	0.021	6.329	6.226	6.035	5.969	0.066	5.791	2B	5.868	5.969	6.056	6.139	0.083	6.350
5/16-27 or 0.3125-27	UNS	7.937	0.941	2A	0.027	7.912	7.742	7.299	7.212	0.087	6.792	2B	6.909	7.137	7.326	7.439	0.113	7.938
5/16-36 or 0.3125-36	UNS	7.937	0.706	2A	0.024	7.914	7.775	7.457	7.379	0.078	7.074	2B	7.163	7.340	7.481	7.581	0.100	7.938
5/16-40 or 0.3125-40	UNS	7.937	0.635	2A	0.024	7.914	7.786	7.503	7.430	0.073	7.158	2B	7.239	7.391	7.527	7.622	0.095	7.938
5/16-48 or 0.3125-48	UNS	7.937	0.529	2A	0.021	7.917	7.803	7.574	7.506	0.068	7.287	2B	7.366	7.493	7.595	7.686	0.091	7.938
3/8-18 or 0.3750-18	UNS	9.525	1.411	2A	0.034	9.491	9.271	8.575	8.466	0.109	7.813	2B	8.001	8.331	8.609	8.750	0.141	9.525
3/8-27 or 0.3750-27	UNS	9.525	0.941	2A	0.029	9.497	9.327	8.884	8.794	0.090	8.377	2B	8.509	8.737	8.913	9.032	0.119	9.525
3/8-36 or 0.3750-36	UNS	9.525	0.706	2A	0.026	9.499	9.360	9.042	8.962	0.080	8.659	2B	8.763	8.940	9.068	9.174	0.106	9.525
3/8-40 or 0.3750-40	UNS	9.525	0.635	2A	0.024	9.502	9.373	9.090	9.012	0.078	8.745	2B	8.840	8.991	9.114	9.215	0.101	9.525
0.390-27	UNS	9.906	0.941	2A	0.029	9.878	9.708	9.265	9.175	0.090	8.758	2B	8.890	9.118	9.294	9.413	0.119	9.906
1/2-18 or 0.4375-18	UNS	11.112	1.411	2A	0.034	11.079	10.859	10.162	10.054	0.108	9.401	2B	9.576	9.906	10.196	10.337	0.141	11.113
1/2-24 or 0.4375-24	UNS	11.112	1.058	2A	0.029	11.084	10.902	10.396	10.300	0.096	9.825	2B	9.957	10.210	10.425	10.548	0.123	11.113
1/2-27 or 0.4375-27	UNS	11.112	0.941	2A	0.029	11.084	10.915	10.472	10.381	0.091	9.964	2B	10.084	10.312	10.501	10.619	0.118	11.113
1/2-12 or 0.5000-12	UNS	12.700	2.117	2A	0.041	12.659	12.370	11.285	11.149	0.136	10.140	2B	10.414	10.871	11.326	11.503	0.177	12.700
				3A	0.000	12.700	12.411	11.325	11.225	0.100	10.180	3B	10.414	10.726	11.326	11.457	0.131	12.700
1/2-14 or 0.5000-14	UNS	12.700	1.814	2A	0.039	12.661	12.401	11.483	11.357	0.126	10.503	2B	10.745	11.125	11.522	11.686	0.164	12.700
1/2-18 or 0.5000-18	UNS	12.700	1.411	2A	0.034	12.666	12.446	11.750	11.639	0.111	10.988	2B	11.176	11.506	11.784	11.930	0.146	12.700
1/2-24 or 0.5000-24	UNS	12.700	1.058	2A	0.031	12.669	12.487	11.981	11.883	0.098	11.410	2B	11.557	11.811	12.012	12.141	0.129	12.700
1/2-27 or 0.5000-27	UNS	12.700	0.941	2A	0.029	12.672	12.502	12.059	11.966	0.093	11.552	2B	11.684	11.912	12.088	12.209	0.121	12.700
5/8-14 or 0.5625-14	UNS	14.287	1.814	2A	0.039	14.249	13.988	13.070	12.944	0.126	12.090	2B	12.319	12.725	13.109	13.274	0.165	14.288
5/8-27 or 0.5625-27	UNS	14.287	0.941	2A	0.029	14.259	14.090	13.647	13.554	0.093	13.139	2B	13.259	13.487	13.676	13.797	0.121	14.288
5/8-14 or 0.6250-14	UNS	15.875	1.814	2A	0.039	15.836	15.576	14.658	14.529	0.129	13.678	2B	13.920	14.325	14.697	14.864	0.167	15.875
5/8-27 or 0.6250-27	UNS	15.875	0.941	2A	0.029	15.847	15.677	15.234	15.139	0.095	14.727	2B	14.859	15.087	15.263	15.389	0.126	15.875
3/4-14 or 0.7500-14	UNS	19.050	1.814	2A	0.039	19.011	18.751	17.833	17.704	0.129	16.853	2B	17.095	17.475	17.872	18.041	0.169	19.050
3/4-18 or 0.7500-18	UNS	19.050	1.411	2A	0.037	19.014	18.794	18.097	17.981	0.116	17.355	2B	17.526	17.856	18.134	18.285	0.151	19.050
3/4-24 or 0.7500-24	UNS	19.050	1.058	2A	0.031	19.019	18.837	18.331	18.228	0.103	17.760	2B	17.907	18.161	18.362	18.496	0.134	19.050
3/4-27 or 0.7500-27	UNS	19.050	0.941	2A	0.030	19.019	18.850	18.407	18.309	0.098	17.900	2B	18.034	18.262	18.438	18.567	0.129	19.050

TABLE C2 LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)								Internal (1)						
		Diameter	Pitch	Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter Min.
						Max. (2)	Min.	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
7/8-10 or 0.8750-10	UNS	22.225	2.540	2A	0.046	22.179	21.852	20.528	20.376	0.152	19.157	2B	19.482	20.015	20.574	20.772	0.198	22.225
7/8-18 or 0.8750-18	UNS	22.225	1.411	2A	0.037	22.189	21.969	21.272	21.156	0.116	20.511	2B	20.701	21.031	21.309	21.460	0.151	22.225
7/8-24 or 0.8750-24	UNS	22.225	1.058	2A	0.031	22.194	22.012	21.506	21.403	0.103	20.935	2B	21.082	21.336	21.537	21.671	0.134	22.225
7/8-27 or 0.8750-27	UNS	22.225	0.941	2A	0.031	22.194	22.025	21.582	21.484	0.098	21.074	2B	21.209	21.437	21.613	21.742	0.129	22.225
1-10 or 1.0000-10	UNS	25.400	2.540	2A	0.046	25.354	25.027	23.703	23.546	0.157	22.332	2B	22.657	23.190	23.749	23.952	0.203	25.400
1-14 or 1.0000-14	UNS	25.400	1.814	1A	0.044	25.356	24.964	24.178	23.965	0.213	23.195	1B	23.445	23.825	24.222	24.498	0.276	25.400
				2A	0.044	25.356	25.096	24.178	24.037	0.141	23.195	2B	23.445	23.825	24.222	24.498	0.184	25.400
				3A	0.000	25.400	25.139	24.221	24.115	0.106	23.238	3B	23.445	23.660	24.222	24.358	0.136	25.400
1-18 or 1.0000-18	UNS	25.400	1.411	2A	0.037	25.364	25.144	24.447	24.329	0.118	23.686	2B	23.876	24.206	24.484	24.640	0.156	25.400
1-24 or 1.0000-24	UNS	25.400	1.058	2A	0.034	25.366	25.185	24.678	24.572	0.106	24.107	2B	24.257	24.511	24.712	24.851	0.139	25.400
1-27 or 1.0000-27	UNS	25.400	0.941	2A	0.031	25.369	25.200	24.757	24.656	0.101	24.249	2B	24.384	24.612	24.788	24.919	0.131	25.400
1 1/8-10 or 1.1250-10	UNS	28.575	2.540	2A	0.046	28.529	28.202	26.878	26.721	0.157	25.507	2B	25.832	26.365	26.924	27.127	0.203	28.575
1 1/8-14 or 1.1250-14	UNS	28.575	1.814	2A	0.042	28.534	28.273	27.355	27.222	0.133	26.375	2B	26.620	27.025	27.397	27.571	0.174	28.575
1 1/8-24 or 1.1250-24	UNS	28.575	1.058	2A	0.034	28.541	28.360	27.853	27.747	0.106	27.285	2B	27.432	27.686	27.887	28.026	0.139	28.575
1 1/4-10 or 1.2500-10	UNS	31.750	2.540	2A	0.049	31.701	31.375	30.050	29.891	0.159	28.679	2B	29.007	29.540	30.099	30.307	0.208	31.750
1 1/4-14 or 1.2500-14	UNS	31.750	1.814	2A	0.042	31.709	31.448	30.530	30.394	0.136	29.550	2B	29.795	30.175	30.572	30.749	0.177	31.750
1 1/4-24 or 1.2500-24	UNS	31.750	1.058	2A	0.034	31.716	31.535	30.920	30.807	0.108	30.457	2B	30.607	30.861	31.062	31.203	0.141	31.750
1 3/8-10 or 1.3750-10	UNS	34.925	2.540	2A	0.049	34.876	34.550	33.225	33.066	0.159	31.854	2B	32.182	32.715	33.274	33.482	0.208	34.925
1 3/8-14 or 1.3750-14	UNS	34.925	1.814	2A	0.042	34.884	34.623	33.705	33.569	0.136	32.725	2B	32.970	33.375	33.747	33.924	0.177	34.925
1 3/8-24 or 1.3750-24	UNS	34.925	1.058	2A	0.034	34.891	34.710	34.203	34.095	0.208	33.632	2B	33.782	34.036	34.237	34.378	0.141	34.925
1 1/2-10 or 1.5000-10	UNS	38.100	2.540	2A	0.049	38.051	37.725	36.400	36.239	0.161	35.029	2B	35.357	35.890	36.449	36.659	0.210	38.100
1 1/2-14 or 1.5000-14	UNS	38.100	1.814	2A	0.044	38.056	37.796	36.878	36.739	0.139	35.898	2B	36.145	36.525	36.922	37.104	0.182	38.100
1 1/2-24 or 1.5000-24	UNS	38.100	1.058	2A	0.034	38.066	37.885	37.378	37.267	0.111	36.807	2B	36.957	37.211	37.412	37.558	0.146	38.100
1 5/8-10 or 1.6250-10	UNS	41.275	2.540	2A	0.049	41.226	40.900	39.575	39.414	0.161	38.204	2B	38.532	39.065	39.624	39.834	0.210	41.275
1 5/8-14 or 1.6250-14	UNS	41.275	1.814	2A	0.044	41.231	40.971	40.053	39.914	0.139	39.073	2B	39.320	39.725	40.097	40.279	0.182	41.275
1 5/8-24 or 1.6250-24	UNS	41.275	1.058	2A	0.034	41.241	41.060	40.553	40.442	0.111	39.982	2B	40.132	40.386	40.587	40.733	0.146	41.275
1 3/4-10 or 1.7500-10	UNS	44.450	2.540	2A	0.049	44.401	44.075	42.750	42.586	0.164	41.379	2B	41.707	42.240	42.799	43.012	0.213	44.450
1 3/4-14 or 1.7500-14	UNS	44.450	1.814	2A	0.044	44.406	44.146	43.228	43.087	0.141	42.245	2B	42.495	42.875	43.272	43.456	0.184	44.450
1 3/4-18 or 1.7500-18	UNS	44.450	1.411	2A	0.040	44.411	44.191	43.494	43.366	0.128	42.733	2B	42.926	43.256	43.534	43.700	0.166	44.450
1 7/8-10 or 1.8750-10	UNS	47.625	2.540	2A	0.049	47.576	47.250	45.925	45.761	0.164	44.554	2B	44.882	45.415	45.974	46.187	0.213	47.625
1 7/8-14 or 1.8750-14	UNS	47.625	1.814	2A	0.044	47.581	47.321	46.403	46.262	0.141	45.423	2B	45.670	46.075	46.447	46.631	0.184	47.625
1 7/8-18 or 1.8750-18	UNS	47.625	1.411	2A	0.040	47.586	47.366	46.669	46.541	0.128	45.908	2B	46.101	46.431	46.709	46.875	0.166	47.625
2-10 or 2.0000-10	UNS	50.800	2.540	2A	0.051	50.749	50.422	49.098	48.934	0.164	47.727	2B	48.057	48.590	49.149	49.364	0.215	50.800
2-14 or 2.0000-14	UNS	50.800	1.814	2A	0.044	50.756	50.496	49.578	49.434	0.144	48.598	2B	48.845	49.225	49.622	49.809	0.187	50.800
2-18 or 2.0000-18	UNS	50.800	1.411	2A	0.040	50.761	50.541	49.844	49.716	0.128	49.083	2B	49.276	49.606	49.884	50.053	0.169	50.800
2 1/16-16 or 2.0625-16	UNS	52.387	1.588	2A	0.042	52.346	52.109	51.315	51.179	0.136	50.455	2B	50.673	51.028	51.357	51.534	0.177	52.388
				3A	0.000	52.387	52.149	51.356	51.255	0.101	50.495	3B	50.673	50.883	51.357	51.488	0.131	52.388
2 3/16-16 or 2.1875-16	UNS	55.562	1.588	2A	0.042	55.521	55.284	54.490	54.354	0.136	53.630	2B	53.848	54.203	54.532	54.709	0.177	55.563
				3A	0.000	55.562	55.324	54.531	54.428	0.103	53.670	3B	53.848	54.058	54.532	54.663	0.131	55.563

(Notes follow at end of table)

TABLE C2 LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)							Internal (1)							
				Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Diameter	Pitch			Max. (2)	Min.	Max. (2)	Min.	Tolerance			Min.	Max.	Min.	Max.	Tolerance	
2 <sup>1</sup> / <sub>4</sub> -10 or 2.2500-10	UNS	57.150	2.540	2A	0.051	57.099	56.772	55.448	55.284	0.164	54.077	2B	54.407	54.940	55.499	55.714	0.215	57.150
2 <sup>1</sup> / <sub>4</sub> -14 or 2.2500-14	UNS	57.150	1.814	2A	0.044	57.106	56.846	55.928	55.784	0.144	54.948	2B	55.195	55.575	55.972	56.159	0.187	57.150
2 <sup>1</sup> / <sub>4</sub> -18 or 2.2500-18	UNS	57.150	1.411	2A	0.040	57.111	56.891	56.194	56.066	0.128	55.433	2B	55.626	55.956	56.234	56.403	0.169	57.150
2 <sup>5</sup> / <sub>16</sub> -16 or 2.3125-16	UNS	58.737	1.588	2A	0.044	58.694	58.456	57.663	57.524	0.139	56.802	2B	57.023	57.378	57.707	57.889	0.182	58.738
				3A	0.000	58.737	58.499	57.706	57.603	0.103	56.845	3B	57.023	57.233	57.707	57.843	0.136	58.738
2 <sup>7</sup> / <sub>16</sub> -16 or 2.4375-16	UNS	61.912	1.588	2A	0.044	61.869	61.631	60.838	60.699	0.139	59.977	2B	60.198	60.553	60.882	61.064	0.182	61.913
				3A	0.000	61.912	61.674	60.881	60.778	0.103	60.020	3B	60.198	60.408	60.882	61.018	0.136	61.913
2 <sup>1</sup> / <sub>2</sub> -10 or 2.5000-10	UNS	63.500	2.540	2A	0.051	63.449	63.122	61.798	61.629	0.169	60.427	2B	60.757	61.290	61.849	62.069	0.220	63.500
2 <sup>1</sup> / <sub>2</sub> -14 or 2.5000-14	UNS	63.500	1.814	2A	0.044	63.456	63.196	62.278	62.131	0.147	61.298	2B	61.545	61.925	62.322	62.514	0.192	63.500
2 <sup>1</sup> / <sub>2</sub> -18 or 2.5000-18	UNS	63.500	1.411	2A	0.042	63.459	63.239	62.542	62.408	0.134	61.780	2B	61.976	62.306	62.584	62.758	0.174	63.500
2 <sup>3</sup> / <sub>4</sub> -10 or 2.7500-10	UNS	69.850	2.540	2A	0.051	69.799	69.472	68.148	67.979	0.169	66.777	2B	67.107	67.640	68.199	68.419	0.220	69.850
2 <sup>3</sup> / <sub>4</sub> -14 or 2.7500-14	UNS	69.850	1.814	2A	0.044	69.806	69.546	68.628	68.481	0.147	67.648	2B	67.895	68.275	68.672	68.864	0.192	69.850
2 <sup>3</sup> / <sub>4</sub> -18 or 2.7500-18	UNS	69.850	1.411	2A	0.042	69.809	69.589	68.892	68.758	0.134	68.130	2B	68.326	68.656	68.934	69.108	0.174	69.850
3-10 or 3.0000-10	UNS	76.200	2.540	2A	0.051	76.149	75.822	74.498	74.326	0.172	73.127	2B	73.457	73.990	74.549	74.775	0.226	76.200
				2A	0.047	76.154	75.893	74.975	74.826	0.149	73.995	2B	74.245	74.625	75.022	75.217	0.195	76.200
				2A	0.042	76.159	75.939	75.242	75.106	0.136	74.480	2B	74.676	75.006	75.284	75.460	0.176	76.200
3 <sup>1</sup> / <sub>4</sub> -10 or 3.2500-10	UNS	82.550	2.540	2A	0.051	82.499	82.172	80.848	80.676	0.172	79.477	2B	79.807	80.340	80.899	81.125	0.226	82.550
				2A	0.047	82.504	82.243	81.325	81.176	0.149	80.345	2B	80.595	80.975	81.372	81.567	0.195	82.550
				2A	0.042	82.509	82.289	81.592	81.456	0.136	80.830	2B	81.026	81.356	81.634	81.810	0.176	82.550
3 <sup>1</sup> / <sub>2</sub> -10 or 3.5000-10	UNS	88.900	2.540	2A	0.054	88.846	88.519	87.195	87.021	0.174	85.824	2B	86.157	86.690	87.249	87.477	0.228	88.900
				2A	0.047	88.854	88.593	87.675	87.521	0.154	86.695	2B	86.945	87.325	87.722	87.922	0.200	88.900
				2A	0.045	88.856	88.636	87.939	87.801	0.138	87.178	2B	87.376	87.706	87.984	88.165	0.181	88.900
3 <sup>3</sup> / <sub>4</sub> -10 or 3.7500-10	UNS	95.250	2.540	2A	0.054	95.196	94.869	93.545	93.371	0.174	92.174	2B	92.507	93.040	93.599	93.827	0.228	95.250
				2A	0.047	95.204	94.943	94.025	93.871	0.154	93.045	2B	93.295	93.675	94.072	94.272	0.200	95.250
				2A	0.045	95.206	94.986	94.289	94.151	0.138	93.528	2B	93.726	94.056	94.334	94.515	0.181	95.250
4-10 or 4.0000-10	UNS	101.600	2.540	2A	0.054	101.546	101.219	99.895	99.718	0.177	98.471	2B	98.857	99.390	99.949	100.180	0.231	101.600
				2A	0.047	101.554	101.293	100.375	100.219	0.156	99.395	2B	99.645	100.025	100.422	100.624	0.202	101.600
4 <sup>1</sup> / <sub>4</sub> -10 or 4.2500-10	UNS	107.950	2.540	2A	0.054	107.896	107.569	106.245	106.068	0.177	104.874	2B	105.207	105.740	106.299	106.530	0.231	107.950
				2A	0.047	107.904	107.643	106.725	106.569	0.156	105.745	2B	105.995	106.375	106.772	106.974	0.202	107.950
4 <sup>1</sup> / <sub>2</sub> -10 or 4.5000-10	UNS	114.300	2.540	2A	0.054	114.246	113.919	112.595	112.418	0.177	111.224	2B	111.557	112.090	112.649	112.880	0.231	114.300
				2A	0.047	114.254	113.993	113.075	112.919	0.156	112.095	2B	112.345	112.725	113.122	113.324	0.202	114.300
4 <sup>3</sup> / <sub>4</sub> -10 or 4.7500-10	UNS	120.650	2.540	2A	0.056	120.594	120.267	118.943	118.761	0.182	117.572	2B	117.907	118.440	118.999	119.237	0.238	120.650
				2A	0.049	120.601	120.341	119.423	119.261	0.162	118.443	2B	118.695	119.075	119.472	119.662	0.210	120.650
5-10 or 5.0000-10	UNS	127.000	2.540	2A	0.056	126.944	126.617	125.293	125.111	0.182	123.922	2B	124.257	124.790	125.349	125.587	0.238	127.000
				2A	0.049	126.951	126.691	125.773	125.611	0.162	124.793	2B	125.045	125.425	125.822	126.032	0.210	127.000
5 <sup>1</sup> / <sub>4</sub> -10 or 5.2500-10	UNS	133.350	2.540	2A	0.056	133.294	132.967	131.643	131.461	0.182	130.272	2B	130.607	131.140	131.699	131.937	0.238	133.350
				2A	0.049	133.301	133.041	132.123	131.961	0.162	131.143	2B	131.395	131.775	132.172	132.382	0.210	133.350
5 <sup>1</sup> / <sub>2</sub> -10 or 5.5000-10	UNS	139.700	2.540	2A	0.056	139.644	139.317	137.993	137.811	0.182	136.622	2B	136.957	137.490	138.049	138.287	0.238	139.700
				2A	0.049	139.651	139.391	138.473	138.311	0.162	137.493	2B	137.745	138.125	138.522	138.732	0.210	139.700

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TABLE C2 LIMITS OF SIZE FOR SELECTED COMBINATIONS OF UNS/UNRS SERIES THREADS, mm (CONT'D)

Nominal Size (in.) and Threads/in.	Series Designation	Metric Equivalents		External (1)								Internal (1)						
				Class	Allowance	Major Diameter		Pitch Diameter			UNR Minor Diam. Max. (3) (Ref.)	Class	Minor Diameter		Pitch Diameter			Major Diameter
		Max. (2)	Min.			Max. (2)	Min.	Tolerance	Min.	Max.			Min.	Max.	Tolerance	Min.		
5 <sup>3</sup> / <sub>4</sub> -10 or 5.7500-10	UNS	146.050	2.540	2A	0.056	145.994	145.667	144.343	144.156	0.187	142.972	2B	143.307	143.840	144.399	144.642	0.243	146.050
5 <sup>3</sup> / <sub>4</sub> -14 or 5.7500-14	UNS	146.050	1.814	2A	0.052	145.999	145.738	144.820	144.656	0.164	143.840	2B	144.095	144.475	144.872	145.087	0.215	146.050
6-10 or 6.0000-10	UNS	152.400	2.540	2A	0.056	152.344	152.017	150.693	150.506	0.187	149.322	2B	149.657	150.190	150.749	150.992	0.243	152.400
6-14 or 6.0000-14	UNS	152.400	1.814	2A	0.052	152.349	152.088	151.170	151.006	0.164	150.190	2B	150.445	150.825	151.222	151.437	0.215	152.400

GENERAL NOTE:

Series designation shown indicates the UN thread form; however, the UNR thread form may be specified by substituting UNR in place of UN in all designations for external use only.

NOTES:

- (1) Thread classes may be combined. See para. 4.2 of ASME B1.1.
- (2) For Class 2A threads having an additive finish, the maximum major and pitch diameters, after coating, may equal the basic sizes, whose values are the same as the maximum values shown for Class 3A in these columns. See paras. 4.1.1 and 4.1.3.
- (3) UN series external thread maximum minor diameter is basic ( $D_1$  in Section 11) for Class 3A and basic minus allowance for Classes 1A and 2A.

TABLE C3 THREAD FORM DATA, mm

Threads/in. <i>n</i>	Pitch <i>P</i> = 25.4/ <i>n</i>	Basic Flat at Internal Thread Crest and External UN Thread Root, $F_{rs} =$ $F_{cn} =$ $P/4 =$ 0.25 <i>P</i>	Flat at Internal Thread Root and External Thread Crest, $F_{rn} =$ $F_{cs} =$ $P/8 =$ 0.125 <i>P</i>	Height of Sharp V-Thread, <i>H</i> = 0.866025 <i>P</i>	Truncation of Internal Thread Root and External Thread Crest, $f_{rn} =$ $f_{cs} =$ 0.125 <i>H</i> = 0.10825 <i>P</i> (1)	External Thread Root Radius Max., $r_{rs} =$ 0.166667 <i>H</i> = 0.14434 <i>P</i>	Truncation of UNR Design Profile External Thread Root and Half Addendum of External Thread, $S_{rs} =$ 0.1875 <i>H</i> = 0.16238 <i>P</i>	External Thread Root and Truncation of Internal Thread Crest, $f_{rs} = f_{cn} =$ 0.250 <i>H</i> = 0.21651 <i>P</i> (2)
1	2	3	4	5	6	7	8	9
80	0.31750	0.0794	0.0397	0.2750	0.0344	0.0458	0.0516	0.0687
72	0.35278	0.0882	0.0441	0.3055	0.0382	0.0509	0.0573	0.0764
64	0.39688	0.0992	0.0496	0.3437	0.0430	0.0573	0.0644	0.0859
56	0.45357	0.1134	0.0567	0.3928	0.0491	0.0655	0.0736	0.0982
48	0.52916	0.1323	0.0661	0.4583	0.0573	0.0764	0.0859	0.1146
44	0.57727	0.1443	0.0722	0.4999	0.0625	0.0833	0.0937	0.1250
40	0.63500	0.1588	0.0794	0.5499	0.0687	0.0917	0.1031	0.1375
36	0.70556	0.1764	0.0882	0.6110	0.0764	0.1018	0.1146	0.1528
32	0.79375	0.1984	0.0992	0.6874	0.0859	0.1146	0.1289	0.1719
28	0.90714	0.2268	0.1134	0.7856	0.0982	0.1309	0.1473	0.1964
27	0.94074	0.2352	0.1176	0.8147	0.1018	0.1358	0.1528	0.2037
24	1.05834	0.2646	0.1323	0.9166	0.1146	0.1528	0.1719	0.2291
20	1.27000	0.3175	0.1588	1.0999	0.1375	0.1833	0.2062	0.2750
18	1.41112	0.3528	0.1764	1.2221	0.1528	0.2037	0.2291	0.3055
16	1.58750	0.3969	0.1984	1.3748	0.1718	0.2291	0.2578	0.3437
14	1.81430	0.4536	0.2268	1.5712	0.1964	0.2619	0.2946	0.3928
13	1.95384	0.4885	0.2442	1.6921	0.2115	0.2820	0.3173	0.4230
12	2.11666	0.5292	0.2646	1.8331	0.2291	0.3055	0.3437	0.4583
11½	2.20871	0.5522	0.2761	1.9128	0.2391	0.3188	0.3586	0.4782
11	2.30909	0.5773	0.2886	1.9997	0.2500	0.3333	0.3749	0.4999
10	2.54000	0.6350	0.3175	2.1997	0.2750	0.3666	0.4124	0.5499
9	2.82222	0.7056	0.3528	2.4441	0.3055	0.4074	0.4583	0.6110
8	3.17500	0.7938	0.3969	2.7496	0.3437	0.4583	0.5156	0.6874
7	3.62857	0.9071	0.4536	3.1424	0.3928	0.5237	0.5892	0.7856
6	4.23334	1.0583	0.5292	3.6662	0.4583	0.6110	0.6874	0.9166
5	5.08000	1.2700	0.6350	4.3994	0.5499	0.7332	0.8249	1.0999
4½	5.64444	1.4111	0.7056	4.8882	0.6110	0.8147	0.9165	1.2221
4	6.35000	1.5875	0.7938	5.4993	0.6874	0.9166	1.0311	1.3748

TABLE C3 THREAD FORM DATA, mm

Addendum of External Thread, $h_{as} = 0.375H = 0.32476P$ (3)	Height of Internal Thread, UN External Thread, and Depth of Thread Engagement, $h_s = h_n = h_o = 0.625H = 0.54127P$	Height of UNR External Thread, $h_x = 0.6875H = 0.59539P$	Twice the External Thread Addendum, $h_b = 2h_{as} = 0.750H = 0.649519P$	Difference Between Max. Major and Pitch Diameters of Internal Thread, $0.916667H = 0.79386P$	Double Height of Internal Thread and External UN Thread, $2h_n = 1.250H = 1.08253P$	Double Height of External UNR Thread, $2h_s = 1.375H = 1.19078P$	$H/2 = 0.43301P$	Threads/in. $n$
10	11	12	13	14	15	16	17	1
0.1031	0.1719	0.1890	0.2062	0.2520	0.3437	0.3782	0.1374	80
0.1146	0.1909	0.2101	0.2291	0.2801	0.3819	0.4201	0.1527	72
0.1289	0.2148	0.2362	0.2578	0.3151	0.4296	0.4727	0.1720	64
0.1473	0.2455	0.2700	0.2946	0.3601	0.4910	0.5400	0.1963	56
0.1718	0.2864	0.3150	0.3437	0.4201	0.5728	0.6302	0.2291	48
0.1875	0.3125	0.3437	0.3749	0.4583	0.6249	0.6873	0.2499	44
0.2062	0.3437	0.3780	0.4124	0.5041	0.6874	0.7562	0.2751	40
0.2291	0.3819	0.4201	0.4583	0.5601	0.7638	0.8402	0.3056	36
0.2578	0.4296	0.4727	0.5156	0.6301	0.8593	0.9451	0.3437	32
0.2946	0.4910	0.5400	0.5892	0.7201	0.9820	1.0803	0.3927	28
0.3055	0.5092	0.5601	0.6110	0.7468	1.0184	1.1201	0.4074	27
0.3437	0.5728	0.6302	0.6874	0.8402	1.1457	1.2603	0.4582	24
0.4124	0.6874	0.7562	0.8249	1.0082	1.3748	1.5123	0.5499	20
0.4583	0.7638	0.8402	0.9166	1.1202	1.5276	1.6802	0.6111	18
0.5156	0.8593	0.9451	1.0311	1.2603	1.7185	1.8903	0.6873	16
0.5892	0.9820	1.0803	1.1784	1.4403	1.9640	2.1605	0.7856	14
0.6345	1.0576	1.1633	1.2691	1.5511	2.1151	2.3266	0.8461	13
0.6874	1.1457	1.2603	1.3748	1.6803	2.2913	2.5204	0.9164	12
0.7173	1.1955	1.3150	1.4346	1.7534	2.3910	2.6302	0.9563	11½
0.7499	1.2498	1.3749	1.4998	1.8331	2.4997	2.7500	0.9997	11
0.8249	1.3748	1.5123	1.6498	2.0164	2.7496	3.0246	1.0998	10
0.9165	1.5276	1.6802	1.8331	2.2404	3.0551	3.3607	1.2220	9
1.0311	1.7185	1.8903	2.0622	2.5205	3.4370	3.7808	1.3749	8
1.1784	1.9640	2.1605	2.3568	2.8806	3.9280	4.3208	1.5712	7
1.3748	2.2914	2.5204	2.7496	3.3607	4.5827	5.0409	1.8331	6
1.6498	2.7497	3.0246	3.2996	4.0328	5.4993	6.0493	2.1885	5
1.8331	3.0552	3.3607	3.6662	4.4809	6.1103	6.7213	2.4442	4½
2.0622	3.4371	3.7808	4.1245	5.0410	6.8741	7.5616	2.7496	4

GENERAL NOTE:  
Metric conversion given for comparative reference only.

NOTES:

- (1) The values tabulated in column 6 also pertain to the minimum root radius of UNR screw threads. See paras. 2.3.1 and 2.3.1 (a) of ASME B1.1.
- (2)  $h_{an} = f_{cn} = 0.25H$ .
- (3)  $h_{dn} = h_{as} = 0.375H$ .

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