AN AMERICAN NATIONAL STANDARD

# Gages and Gaging for Unified Inch Screw Threads

ANSI/ASME B1.2-1983

(REVISION OF ANSI B1.2-1974)

**REAFFIRMED 2007**

FOR CURRENT COMMITTEE PERSONNEL
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THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

United Engineering Center 345 East 47th Street New York, N. Y. 10017

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NOTE: See FED-STD-H28/6: Screw-Thread Standards for Federal Services, Section 6, Gages and Gaging for Unified Screw Threads – UN and UNR Thread Forms

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# Gages and Gaging for Unified Inch Screw Threads

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Date of Issuance: June 15, 1984

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# FOREWORD

(This Foreword is not part of American National Standard ANSI/ASME B1.2-1983, Gages and Gaging for Unified Inch Screw Threads.)

American National Standards Committee B1 for the Standardization of screw threads was organized in 1920 as Sectional Committee B1 under the aegis of the American Engineering Standards Committee (later the American National Standards Association, then the United States of America Standards Institute and, as of October 6, 1969, the American National Standards Institute, Inc.), with the Society of Automotive Engineers and the American Society of Mechanical Engineers as joint sponsors.

In 1982, American National Standards Committee B1 was reorganized as the ASME Standards Committee B1, and since then it has operated under the American Society of Mechanical Engineers Procedures to produce and update standards which may become ANSI Standards after final approval by the American National Standards Institute.

A declaration of accord with respect to the unification of screw threads was signed on November 18, 1948, by representatives of the services and industry of the United States, the United Kingdom, and Canada. The ANSI Unified Screw Thread Standard B1.1, through the quadripartite standardization agreement (QST AG) 247, Unified Threads, is subject to an international standardization agreement through the instrumentality of the American-British-Canadian-Australian Army Standardization Program, which recognizes B1.1 as a standard for Unified Threads when it is required to effect the interchangeability of parts and equipment between the armies of the participating nations.

The first American National Standard for Screw Thread Gages and Gaging was published as ASA B1.2-1941 to supplement the parent Standard ASA B1.1-1935, Screw Threads for Bolts, Nuts, Machine Screws and Threaded Parts. That Standard was revised and republished as a Unified Standard ASA B1.1-1949 and again as ASA B1.1-1960. The Unified Gage Standard was republished as ASA B1.2-1951 and USA B1.2-1966.

On February 9, 1973, a meeting was held by the Department of Commerce at the National Bureau of Standards, Washington, D.C., attended by representatives of government and industry screw thread interests. With the goal of eliminating parallel standards, those at the meeting recommended that the NBS Handbook H-28 be converted into a coordinating document for government screw thread standards wherein sections of H-28 would be replaced by single page references to existing industry standards. It was further recommended that the chairman of American National Standards Committee B1 set up a group to clearly define and establish identified levels of acceptability for screw threads.

At an American National Standards Committee B1 meeting held on May 3, 1973, unanimous approval was given to the following motion: "The B1 Committee recognizing the needs of industry for different levels of acceptability for screw threads, establishes new scopes for Standards B1.1 and B1.2 and sets up a new standard, B1.3." References to conformance criteria were removed from ANSI B1.2-1974 and additional gages and gaging data were added to suit additional conformance requirements specified in ANSI B1.3 or other B1 thread documents.

This new publication, designated ANSI/ASME B1.2-1983, has had considerable new material added to cover the many options of gages and measuring equipment shown in ANSI B1.3, Screw Thread Gaging Systems for Dimensional Acceptability. It has also re-

applied HI and LO to function as NOT GO gages and has eliminated gages with pitch diameter outside product thread limits. ANSI B1.2 was approved by the ASME Standards Committee B1 on March 18, 1983.

The proposed standard was submitted by the ASME Board of Standardization to the American National Standards Institute. It was approved and formally designated an American National Standard on May 16, 1983.

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

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AN AMERICAN NATIONAL STANDARD

# GAGES AND GAGING FOR UNIFIED INCH SCREW THREADS

## 1 INTRODUCTION

This Standard provides essential specifications and dimensions for the gages used on Unified inch screw threads (UN and UNR thread form), and covers the specifications and dimensions for the thread gages and measuring equipment listed in Tables 1 and 2. The basic purpose and use of each gage are also described.

### 1.1 References

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

*American National Standards*

| | |
|---|---|
| ANSI B1.1 | Unified Inch Screw Threads (UN and UNR Thread Form |
| ANSI B1.3 | Screw Thread Gaging Systems for Dimensional Acceptability |
| ANSI B1.7 | Nomenclature, Definitions, and Letter Symbols for Screw Threads |
| ANSI B46.1 | Surface Texture: Surface Roughness, Waviness, and Lay |
| ANSI B47.1 | Gage Blanks |
| ANSI B89.1.6 | Measurement of Qualified Plain Internal Diameters for Use as Master Rings and Ring Gages |
| ANSI B89.1.9 | Precision Inch Gage Blocks for Length Measurement (Through 20 in.) |
| ANSI B89.3.1 | Measurement of Out-of-Roundness |

### 1.2 Classification

In this Standard, the term NOT GO, previously known as HI and LO, is used to identify functional diameter thread gages.

### 1.3 Federal Government Use

When this Standard is approved by the Department of Defense and federal agencies and is incorporated into FED-STD-H28/6, Screw Thread Standard for Federal Services, Section 6, the use of this Standard by the federal government will be subject to all requirements and limitations of FED-STD-H28/6.

## 2 BASIC PRINCIPLES

### 2.1 Accuracy in Gaging

Thread plug gages are controlled by direct measuring methods. Thread ring gages, thread snap limit gages, and indicating thread gages are controlled by reference to the appropriate setting gages or direct measuring methods or both.

### 2.2 Limitations of Gaging

**2.2.1** Product threads accepted by a gage of one type may be verified by other types. It is possible, however, that parts which are near a limit may be accepted by one type and rejected by another. Also, it is possible for two individual limit gages of the same type to be at opposite extremes of the gage tolerances permitted, and borderline product threads accepted by one gage could be rejected by another. For these reasons, a product screw thread is considered acceptable when it passes a test by any of the permissible gages in ANSI B1.3 for the gaging system specified, provided the gages being used are within the tolerances specified in this Standard.

**2.2.2** Gaging large product external and internal threads equal to or greater than 6.25 in. nominal size with plain and threaded plug and ring gages presents problems for technical and economic reasons. In these instances, verification may be based on use of modified snap or indicating gages or measurement of thread elements. Various types of gages or measuring devices in addition to those defined in this document are available and acceptable when properly correlated to this Standard. Producer and user should agree on the method and equipment used.

## TABLE 1 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREAD CHARACTERISTICS

| Thread Gages and Measuring Equipment | Unified Inch Threads | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Maximum Material | | NOT GO Functional Diameter | | Minimum Material | | | |
| | GO | | | | Pitch Diam. | | Thd. Groove Diam. | |
| | Func. Limit | Func. Size | Func. Limit | Func. Size | Limit | Size | Limit | Size |
| | $A_1$ | $A_2$ | $B_1$ | $B_2$ | $C_1$ | $C_2$ | $D_1$ | $D_2$ |
| 1 Split or Solid Threaded Rings (ANSI B47.1)<br>1.1 GO | ● | | | | | | | |
| 1.2 NOT GO (LO) | | | ● | | | | | |
| 2 Thread Snap Gages<br>2.1 GO segments | ● | | | | | | | |
| 2.2 NOT GO (LO) segments | | | ● | | | | | |
| 2.3 GO rolls | ● | | | | | | | |
| 2.4 NOT GO (LO) rolls | | | ● | | | | | |
| 2.5 Minimum material — pitch diameter type — cone and vee | | | | | ● | | | |
| 2.6 Minimum material — thread groove diameter type — cone only | | | | | | | ● | |
| 3 Plain Diameter Gages<br>3.1 Plain cylindrical ring for major diameter | | | | | | | | |
| 3.2 Major diameter snap type | | | | | | | | |
| 3.3 Minor diameter snap type | | | | | | | | |
| 3.4 Maximum and minimum major diameter snap type | | | | | | | | |
| 3.5 Maximum and minimum minor diameter snap type | | | | | | | | |
| 4 Indicating Thread Gages<br>Having either two contacts at 180 deg. or three contacts at 120 deg.<br>4.1 GO segments | ● | ● | ● | ● | | | | |
| 4.3 GO rolls | ● | ● | ● | ● | | | | |
| 4.5 Minimum material — pitch diameter type — cone and vee | | | | | ● | ● | | |
| 4.6 Minimum material — thread groove diameter type — cone only | | | | | | | ● | ● |
| 4.7 Major diameter and pitch diameter runout gage | | | | | | | | |

## TABLE 1 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREAD CHARACTERISTICS (CONT'D)

| Roundness of Pitch Cylinder | | | | Taper of Pitch Cylinder | | Lead Incl. Helix Variation | Flank Angle Variation | Major Diameter | | Minor Diameter | | Root Rad. | Diam. Runout Major to Pitch | Surface Texture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oval 180 deg. | | Multilobe 120 deg. | | | | | | | | | | | | |
| Limit | Size | Limit | Size | Limit | Size | | | Limit | Size | Limit | Size | | | |
| $E_1$ | $E_2$ | $F_1$ | $F_2$ | $G_1$ | $G_2$ | H | I | $J_1$ | $J_2$ | $K_1$ | $K_2$ | L | M | N |
| | | | | | | | | | | (Note 1) | | | | |
| | | | | | | | | | | | | | | |
| ● | | | | | | | | | | (Note 1) | | | | |
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## TABLE 1 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREAD CHARACTERISTICS (CONT'D)

| Thread Gages and Measuring Equipment | Unified Inch Threads | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Maximum Material | | NOT GO Functional Diameter | | Minimum Material | | | |
| | GO | | | | Pitch Diam. | | Thd. Groove Diam. | |
| | Func. Limit | Func. Size | Func. Limit | Func. Size | Limit | Size | Limit | Size |
| | $A_1$ | $A_2$ | $B_1$ | $B_2$ | $C_1$ | $C_2$ | $D_1$ | $D_2$ |
| 4.8 Differential segment or roll (GO profile for one pitch in length) used in combination with a GO indicating gage to yield a diameter equivalent for variation in lead (including uniformity of helix); and a minimum material indicating gage to yield a diameter equivalent for variation in flank angle | | | | | | | | |
| 5 Indicating Plain Diameter Gages 5.1 Major diameter type | | | | | | | | |
| 5.2 Minor diameter type | | | | | | | | |
| 6 Pitch Micrometer With Standard Contacts [Approximately NOT GO (LO) Profile] Cone and Vee | | | ● | ● | | | | |
| 7 Pitch Micrometer With Modified Contacts [Approximately Pitch Diameter Contact] Cone and Vee | | | | | ● | ● | | |
| 8 Thread-Measuring Wires With Suitable Measuring Means | | | | | | | ● | ● |
| 9 Optical Comparator and Toolmaker's Microscope With Suitable Fixturing | | | | | ● | ● | | |
| 10 Profile Tracing Equipment With Suitable Fixturing | | | | | | | | |
| 11 Lead Measuring Machine With Suitable Fixturing | | | | | | | | |
| 12 Helical Path Attachment Used With GO Type Indicating Gage | | | | | | | | |
| 13 Helical Path Analyzer | | | | | | | | |
| 14 Plain Micrometer and Calipers — Modified As Required | | | | | | | | |
| 15 Surface Measuring Equipment | | | | | | | | |
| 16 Roundness Equipment | | | | | | | | |

NOTE:
(1) Maximum minor diameter limit is acceptable when product passes GO gage on UN and UNR threads.

## TABLE 1 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREAD CHARACTERISTICS (CONT'D)

| Roundness of Pitch Cylinder | | | | Taper of Pitch Cylinder | | Lead Incl. Helix Variation | Flank Angle Variation | Major Diameter | | Minor Diameter | | Root Rad. | Diam. Runout Major to Pitch | Surface Texture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oval 180 deg. | | Multilobe 120 deg. | | | | | | | | | | | | |
| Limit | Size | Limit | Size | Limit | Size | | | Limit | Size | Limit | Size | | | |
| $E_1$ | $E_2$ | $F_1$ | $F_2$ | $G_1$ | $G_2$ | H | I | $J_1$ | $J_2$ | $K_1$ | $K_2$ | L | M | N |
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## TABLE 2 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREAD CHARACTERISTICS

| Thread Gages and Measuring Equipment | Unified Inch Threads | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Maximum Material | | NOT GO Functional Diameter | | Minimum Material | | | |
| | GO | | | | Pitch Diam. | | Thd. Groove Diam. | |
| | Func. Limit | Func. Size | Func. Limit | Func. Size | Limit | Size | Limit | Size |
| | $A_1$ | $A_2$ | $B_1$ | $B_2$ | $C_1$ | $C_2$ | $D_1$ | $D_2$ |
| 1 Threaded Plugs (ANSI B47.1)<br>1.1 GO | ● | | | | | | | |
| 1.2 NOT GO (HI) | | | ● | | | | | |
| 2 Thread Snap Gages<br>2.1 GO segments | ● | | | | | | | |
| 2.2 NOT GO (HI) segments | | | ● | | | | | |
| 2.3 GO rolls | ● | | | | | | | |
| 2.4 NOT GO (HI) rolls | | | ● | | | | | |
| 2.5 Minimum material — pitch diameter type — cone and vee | | | | | ● | | | |
| 2.6 Minimum material — thread groove diameter type — cone only | | | | | | | ● | |
| 3 Plain Diameter Gages<br>3.1 Plain cylindrical plugs for minor diameter | | | | | | | | |
| 3.2 Major diameter snap type | | | | | | | | |
| 3.3 Minor diameter snap type | | | | | | | | |
| 3.4 Maximum and minimum major diameter snap type | | | | | | | | |
| 3.5 Maximum and minimum minor diameter snap type | | | | | | | | |
| 4 Indicating Thread Gages<br>Having either two contacts at 180 deg or three contacts at 120 deg.<br>4.1 GO segments | ● | ● | | | | | | |
| 4.3 GO rolls | ● | ● | | | | | | |

## TABLE 2 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREAD CHARACTERISTICS (CONT'D)

| Roundness of Pitch Cylinder | | | | Taper of Pitch Cylinder | | Lead Incl. Helix Variation | Flank Angle Variation | Major Diameter | | Minor Diameter | | Root Rad. | Diam. Runout Minor to Pitch | Surface Texture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oval 180 deg. | | Multilobe 120 deg. | | | | | | | | | | | | |
| Limit | Size | Limit | Size | Limit | Size | | | Limit | Size | Limit | Size | | | |
| $E_1$ | $E_2$ | $F_1$ | $F_2$ | $G_1$ | $G_2$ | H | I | $J_1$ | $J_2$ | $K_1$ | $K_2$ | L | M | N |
| | | | | | | | | (Note 1) | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | (Note 1) | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | (Note 1) | | | | | | |
| ● | | | | ● | | | | | | | | | | |
| ● | | | | ● | | | | | | | | | | |
| ● | | | | ● | | | | | | | | | | |
| | | | | | | | | | | ● | | | | |
| | | | | | | | | ● | | | | | | |
| | | | | | | | | | | ● | | | | |
| | | | | | | | | ● | | | | | | |
| | | | | | | | | | | ● | | | | |
| ● | ● | ● | ● | | | | | | (Note 1) | | | | | |
| ● | ● | ● | ● | | | | | | (Note 1) | | | | | |

## TABLE 2 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREAD CHARACTERISTICS (CONT'D)

| Thread Gages and Measuring Equipment | Unified Inch Threads | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Maximum Material | | NOT GO Functional Diameter | | Minimum Material | | | |
| | GO | | | | Pitch Diam. | | Thd. Groove Diam. | |
| | Func. Limit | Func. Size | Func. Limit | Func. Size | Limit | Size | Limit | Size |
| | $A_1$ | $A_2$ | $B_1$ | $B_2$ | $C_1$ | $C_2$ | $D_1$ | $D_2$ |
| 4.5 Minimum material — pitch diameter type — cone and vee | | | | | ● | ● | | |
| 4.6 Minimum material — thread groove diameter type — cone only | | | | | | | ● | ● |
| 4.7 Minor diameter and pitch diameter runout gage | | | | | | | | |
| 4.8 Differential segment or roll (GO profile for one pitch in length) used in combination with a GO indicating gage to yield a diameter equivalent for variation in lead (including uniformity of helix), and a minimum material indicating gage to yield a diameter equivalent for variation in flank angle | | | | | | | | |
| 5 Indicating Plain Diameter Gages 5.1 Major diameter type | | | | | | | | |
| 5.2 Minor diameter type | | | | | | | | |
| 6 Pitch Micrometer With Standard Contacts [Approximately NOT GO (HI) Profile] Cone and Vee | | | ● | ● | | | | |
| 7 Pitch Micrometer With Modified Contacts (Approximately Pitch Diameter Contact) Cone and Vee | | | | | ● | ● | | |
| 8 Thread-Measuring Balls With Suitable Measuring Means | | | | | | | ● | ● |
| 9 Optical Comparator and Toolmaker's Microscope With Suitable Fixturing and Cast Replica | | | | | ● | ● | | |
| 10 Profile Tracing Equipment With Suitable Fixturing | | | | | | | | |
| 14 Surface Measuring Equipment | | | | | | | | |
| 15 Roundness Equipment | | | | | | | | |

NOTE:
(1) Minimum major diameter limit is acceptable when product passes GO gage.

## TABLE 2 SCREW THREAD GAGES AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREAD CHARACTERISTICS (CONT'D)

| Roundness of Pitch Cylinder | | | | Taper of Pitch Cylinder | | Lead Incl. Helix Variation | Flank Angle Variation | Major Diameter | | Minor Diameter | | Root Rad. | Diam. Runout Minor to Pitch | Surface Texture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oval 180 deg. | | Multilobe 120 deg. | | | | | | | | | | | | |
| Limit | Size | Limit | Size | Limit | Size | | | Limit | Size | Limit | Size | | | |
| $E_1$ | $E_2$ | $F_1$ | $F_2$ | $G_1$ | $G_2$ | H | I | $J_1$ | $J_2$ | $K_1$ | $K_2$ | L | M | N |
| ● | ● | ● | ● | ● | ● | | | | | | | | | |
| ● | ● | ● | ● | ● | ● | | | | | | | | | |
| | | | | | | | | | | | | | ● | |
| ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| | | | | | | | | ● | ● | | | | | |
| | | | | | | | | | | ● | ● | | | |
| ● | ● | | | ● | ● | | | | | | | | | |
| ● | ● | | | ● | ● | | | | | | | | | |
| ● | ● | | | ● | ● | | | | | | | | | |
| | | | | | | ● | ● | ● | ● | | | ● | | |
| | | | | | | | ● | | | | | ● | | ● |
| | | | | | | | | | | | | | | ● |
| ● | ● | ● | ● | | | | | | | | | | | |

**2.2.3** Indicating gages for internal threads smaller than 3/16 in. are not available.

### 2.3 Determining Size of Gages

**2.3.1 Measuring Pitch Diameter.** The three-wire method of determining pitch diameter size of thread plug gages is standard for gages in this Standard. Refer to Appendix B.

**2.3.2** Size limit adjustments of thread ring and external thread snap gages are determined by their fit on their respective calibrated setting plugs. Indicating gages and thread gages for product external threads are controlled by reference to appropriate calibrated setting plugs.

**2.3.3** Size limit adjustments of internal thread snap gages are determined by their fit on their respective calibrated setting rings. Indicating gages and other adjustable thread gages for product internal threads are controlled by reference to appropriate calibrated setting rings or by direct measuring methods.

### 2.4 Standard Temperature

**2.4.1** A temperature of 68°F (20°C) is the standard temperature used internationally for linear measurements. Nominal dimensions of gages and product as specified and actual dimensions as measured shall be within specified limits at this temperature. For screw thread gaging, the acceptable tolerance on the standard temperature is ±2°F (±1°C).

**2.4.2** As product threads are frequently checked at temperatures which are not controlled, it is desirable that the coefficient of the thermal expansion of gages be the same as that of the product on which they are used. Inasmuch as the majority of threaded product consists of iron or steel, and screw thread gages are ordinarily made of hardened steel, this condition is usually fulfilled without special attention, provided thread gages and product have stabilized to the same temperature. When the materials of the product thread and the gage are dissimilar, the differing thermal coefficients can cause serious complications and must be taken into account, unless both product and gage at the time of gaging are at a temperature of:

(*a*) 68°F ±4°F (20°C ±2°C) for 1 in. and smaller

(*b*) 68°F ±2°F (20°C ±1°C) for sizes above 1 in. to 3 in.

(*c*) 68°F ±1°F (20°C ±0.5°C) for sizes above 3 in. to 6 in.

## 3 GENERAL PRACTICE

### 3.1 General Design

The design of gages is specified only to the extent that it affects the results obtained in the gaging of product threads. Moreover, to serve their intended purposes satisfactorily, thread gages should be produced by the latest and best manufacturing techniques. The type of steel or wear-resistant material selected, together with the heat-treating and stabilization processes, should provide wear life and dimensional stability. Thread gaging elements should be precisely manufactured to assure adequate refinement of surface texture, prevention or elimination of amorphous or smear metal, and uniformity of thread form over the entire length of the gaging member.

### 3.2 Types of Gages

For GO thread gages, check either the maximum-material limit or size to assure interchangeable assembly. For NOT GO (HI and LO) thread gages, inspect the NOT GO functional diameter limit.

For GO and NOT GO plain cylindrical plug or ring gages and snap or indicating gages, check the limit or size of the minor diameter of product internal threads and the major diameter of product external threads, respectively.

### 3.3 Interpretation of Tolerances

Tolerances on lead, half-angle, and pitch diameter are variations which may be taken independently for each of these elements and may be taken to the extent allowed by respective tabulated dimensional limits. The tabulated tolerance on any one element must not be exceeded, even though variations in the other two elements are smaller than the respective tabulated tolerances.

### 3.4 Direction of Tolerances on Gages

At the maximum-material limit (GO), the dimensions of all gages used for final conformance gaging are to be within the limits of size of the product thread. At the functional diameter limit, using NOT GO (HI and LO) thread gages, the standard practice is to have the gage tolerance within the limits of size of the product thread. Specifications for gage limits are listed in Tables 4 and 5.

### 3.5 Standard Thread Gage Tolerances

Standard tolerances for thread-working gages, thread-setting plugs, and setting rings are as follows:

(*a*) W tolerance, shown in Table 7, represent the highest commercial grade of accuracy and workmanship and are specified for thread-setting gages;

(*b*) X tolerances, shown in Table 6, are larger than W tolerances and are used for product inspection gages.

Unless otherwise specified, all thread gages and gaging contacts which directly check the product thread shall be X tolerance.

### 3.6 Tolerance on Lead

Cumulative effect of progressive or erratic helix variation and thick or thin end thread variations is specified as an allowable variation between any two threads not farther apart than the length of the standard taperlock or trilock gage, shown in ANSI B47.1. In the case of setting plugs, the specified tolerance shall be applicable to the thread length in the mating ring gage or nine pitches, whichever is smaller. For setting rings, the tolerance applies to a thread length of three pitches. The tolerance on lead establishes the width of a zone, measured parallel to the axis of the thread, within which the actual helical path must lie for the specified length of the thread. Measurements will be taken from a fixed reference point located at the start of the first full thread to a sufficient number of positions along the entire helix to detect all types of lead variations. The amounts that these positions vary from their basic (theoretical) positions will be recorded with due respect to sign. The greatest variation in each direction [plus and minus (±)] will be selected and the sum of their values, *disregarding sign*, shall not exceed the specified tolerance. If the variations are all in one direction, the maximum value governs conformance. In the case of truncated setting plugs, the lead variations present on the full-form portion and the truncated portion of an individual gage shall not differ from each other by more than 0.0001 in. over any portion equivalent to the length of the thread ring gage, or nine pitches, whichever is less. (When linear lead and drunkenness are measured as individual elements and the sum of these does not exceed the tolerance specified, the gage is well within tolerance.)

### 3.7 Tolerances on Half-Angle

Tolerances are specified for the half-angles rather than the included angle to assure that the bisector of the included angle will be perpendicular to the axis of the thread within proper limits. The equivalent of the variation from the true thread form caused by such irregularities as convex, concave or wavy flanks, rounded crests, or slight projections on the thread form shall not exceed the tolerance permitted on half-angle.

### 3.8 Check of Effect of Lead and Flank Angle Variations on Product Thread

When this check is specified, there are two general methods available for the inspection procedures involved.

(*a*) *Direct Measurement of Lead and Half-Angle of Flanks.* The lead and flank angles of the product thread may be measured by means of available measuring equipment, such as thread indicating gages, projection comparators, measuring microscopes, graduated cone points, lead measuring machines, helix variation measuring machines, thread flank charting equipment, etc. Diameter equivalents of such variations from nominal may be calculated: each 0.0001 in. variation in lead amounts to 0.00017 in. ($1.732 \times .00001$) increase in functional pitch diameter on external threads or a decrease in functional pitch diameter on internal threads for 60 deg. screw threads. The tangent of half-angle variation times $1.5p$ equals the approximate maximum change in functional pitch diameter, based on a height of thread engagement of $0.625H$ and equal half-angle variations.

(*b*) *Differential Gaging Utilizing Indicating Thread Gages.* See Sections 4 and 5 for explanation and illustration of differential gaging for internal and external threads.

### 3.9 Calibration Requirements and Standards

Calibration requirements and standards for X tolerance thread gages, snap gages, and indicating gages; Z tolerance plain gages and measuring instruments are given in Table 12 for external product threads, in Table 13 for internal product threads, and in Table 14 for setting gages. See Appendix A for methods of calibrating and inspecting gages.

## 4 TYPES OF GAGES FOR PRODUCT INTERNAL THREAD

### 4.1 GO Working Thread Plug Gages (Table 2 — Gage 1.1)

**4.1.1 Purpose and Use.** The GO thread plug gage inspects the maximum-material GO functional limit, $A_1$, of product internal thread. The GO thread

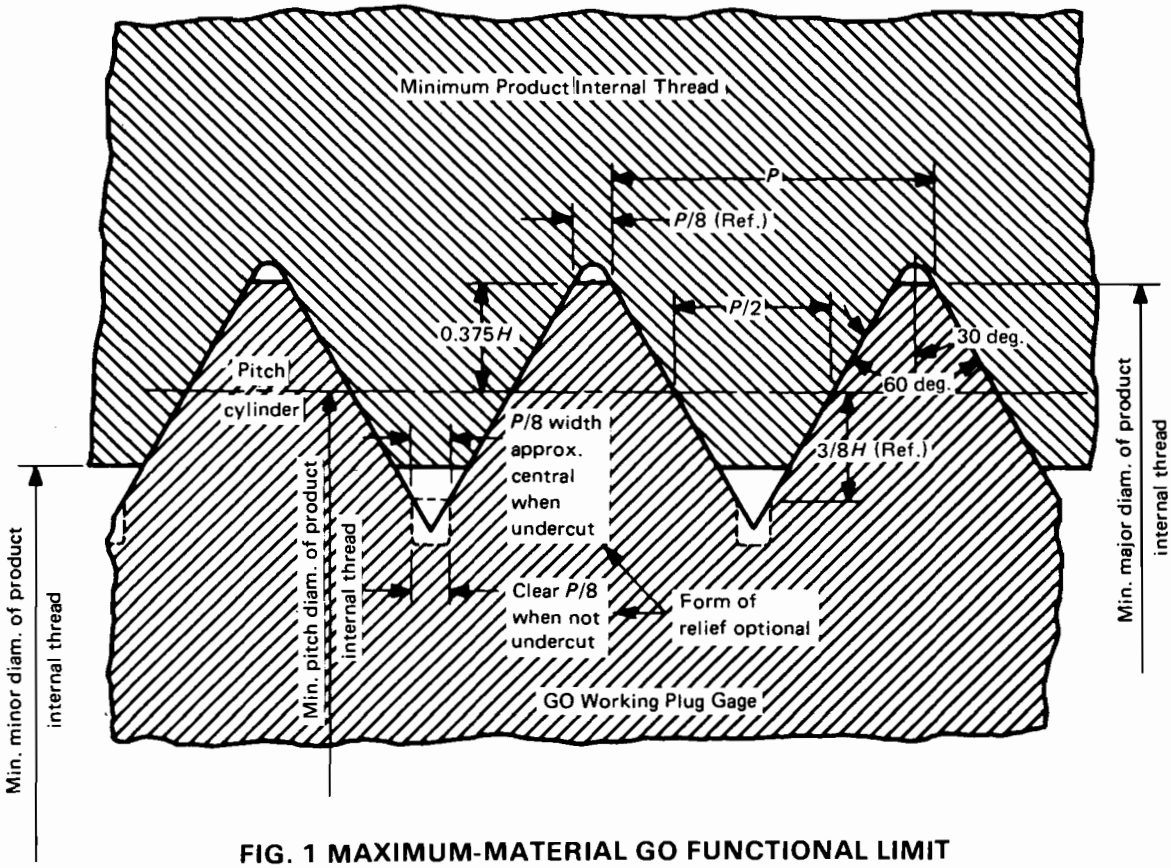



**FIG. 1 MAXIMUM-MATERIAL GO FUNCTIONAL LIMIT**

gage represents the maximum-material GO functional limit of the product internal thread, and its purpose is to assure interchangeable assembly of maximum-material mating parts. GO thread plug gages must enter and pass through the full-threaded length of the product freely. The GO thread plug gage is a cumulative check of all thread elements except the minor diameter.

**4.1.2 Basic Design.** The maximum-material limit on GO thread plus gages is made to the prescribed maximum-material limit of the product internal thread, and the gaging length is equal to the length of the gaging plug.

**4.1.3 Gage Blanks.** For practical and economical reasons, the design and lengths of the gaging plug members have been standardized for various size ranges and pitches (see ANSI B47.1 or Table A3).

**4.1.4 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 1.

**4.1.5 Thread Crests.** The major diameter of the GO thread plug gage shall be the same as the minimum major diameter of the product internal thread with a plus gage tolerance. The thread crests shall be flat in an axial section and parallel to the axis.

**4.1.6 Thread Roots.** The minor diameter of the GO thread plug gage shall be cleared beyond a $p/8$ width of flat either by an extension of the sides of the thread toward a sharp vee or by an undercut no greater than $p/8$ maximum width and approximately central.

**4.1.7 Runout of Pitch and Major Cylinders.** On thread plug gages an eccentric condition produces an oversize effective major diameter having a width of flat less than $p/8$, which may encroach on the minimum permissible limit for the root profile of the product internal thread. The permissible maximum effective major diameter, as determined by adding measurement of runout (full-indicator movement) with respect to the pitch cylinder to the measured

major diameter, shall not exceed the maximum major diameter specified.

**4.1.8 Pitch Cylinder.** The pitch cylinder shall be round and straight within the gage pitch diameter limits specified.

**4.1.9 Lead and Half-Angle Variations.** Lead and half-angle variations shall be within the limits specified. See Table 6.

**4.1.10 Incomplete Thread.** The feather edge at both ends of the threaded section of the gaging member shall be removed. On pitches coarser than 28 threads/in., not more than one complete turn of the end threads shall be removed to obtain a full-thread form blunt start. See Fig. 2. On pitches 28 threads/in. and finer, a 60 deg. chamfer from the axis of the gage is acceptable in lieu of the blunt start.

**4.1.11 Chip Grooves.** Each GO thread plug gage, except in sizes No. 8 (0.164 in.) and smaller, shall be provided with a chip groove at the entering end. On reversible gages, a chip groove shall be provided at each end. Chip grooves that are in accordance with commercial practice are acceptable, such as a groove cut at an angle with the axis or a longitudinal groove cut parallel with the axis and extending the complete length of the gaging member. The groove shall be located circumferentially at the start of the full thread, and in all cases the depth shall extend below the root of the first full thread. The distance from the major diameter of the thread plug to the crest of the convolution rise in front of the chip groove, due to the radius of the convoluting tool, shall be a minimum of $H/2$ as shown in Fig. 2. The beginning of the first thread shall be full form. The recommended widths for chip grooves are as shown in Table 3.

**4.1.12 Identification.** The GO thread plugs should be identified by the nominal size, threads/in., thread series, GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC GO PD.2175

## 4.2 NOT GO (HI) Thread Plug Gages (Table 2 — Gage 1.2)

**4.2.1 Purpose and Use.** The NOT GO (HI) thread plug gage inspects the NOT GO (HI) functional diameter limit, $B_1$, of product internal thread. The NOT GO (HI) thread plug gage represents the

**TABLE 3 RECOMMENDED WIDTHS FOR CHIP GROOVES**

| Nominal Diameter, in. | Chip Groove Width, in. Max. | Min. |
|---|---|---|
| No. 8 (0.164) and smaller | No chip groove required | |
| Above No. 8 (0.164) to and including No. 12 (0.216) | 0.036 | 0.026 |
| Above No. 12 (0.216) to and including 3/8 (0.375) | 0.052 | 0.042 |
| Above 3/8 (0.375) to and including 1/2 (0.500) | 0.067 | 0.057 |
| Above 1/2 (0.500) to and including 1 (1.000) | 0.083 | 0.067 |
| Above 1 (1.000) to and including 1-3/4 (1.750) | 0.130 | 0.067 |
| Above 1-3/4 (1.750) | 0.193 | 0.067 |

NOT GO (HI) functional diameter limit of the product internal thread.

Thread plug gages when applied to the product internal thread may engage only the end threads (which may not be representative of the complete thread). Entering threads on product are incomplete and permit gage to start. Starting threads on NOT GO (HI) plugs are subject to greater wear than the remaining threads. Such wear in combination with the incomplete product threads permits further entry of the gage. NOT GO (HI) functional diameter is acceptable when the NOT GO (HI) thread plug gage applied to the product internal thread does not enter more than three complete turns. The gage should not be forced. Special requirements such as exceptionally thin or ductile material, small number of threads, etc., may necessitate modification of this practice.

**4.2.2 Basic Design.** To better check the maximum functional diameter limit, the flank contact is reduced by truncating the major diameter, and the length of the gaging element, where practical, is less than that of the GO gage.

**4.2.3 Gage Blanks.** For practical and economic reasons, the designs and lengths of the gaging elements have been standardized for various size ranges and pitches (see ANSI B47.1 or Table A3).

**4.2.4 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 3.

**4.2.5 Thread Crests.** The maximum major diameter of the NOT GO (HI) thread plug gage shall

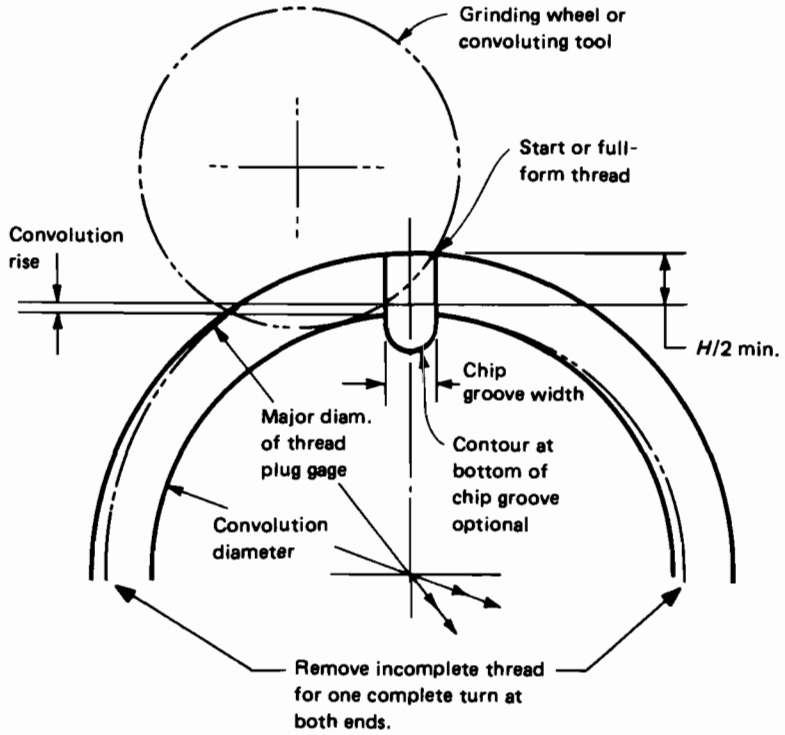



**FIG. 2 PARTIAL END THREADS AND CHIP GROOVES**

be equal to the maximum pitch diameter of the product internal thread plus $0.5H$ with the gage tolerance minus. This corresponds to a width of flat at the crest of the gage equal to $0.25p$. See Table 4.

**4.2.6 Thread Roots.** The minor diameter of the NOT GO (HI) thread plug gage shall be cleared beyond a $p/8$ width of flat by an extension toward a sharp vee of the sides of the thread from the position corresponding to this approximate width; or by an undercut to any dimension no wider than the width resulting from $p/8$ maximum width, either side of and approximately central with the center line of the thread groove.

**4.2.7 Runout of Pitch and Major Cylinders.** The permissible maximum effective diameter, as determined by adding measurements of runout (full-indicator movement) with respect to the pitch cylinder to the measured major diameter, shall not exceed the maximum major diameter specified.

**4.2.8 Pitch Cylinder.** The pitch cylinder shall be round and straight within the gage pitch diameter limits specified.

**4.2.9 Lead and Half-Angle Variations.** Lead and half-angle variations shall be within the limits specified. See Table 6.

**4.2.10 Incomplete Thread.** The feather edge at both ends of the threaded section of the gaging member shall be removed. On pitches coarser than 28 threads/in., not more than one complete turn of the end threads shall be removed to obtain a full-thread blunt start. See Fig. 2. On pitches 28 threads/in. and finer, a 60 deg. chamfer from the axis of the gage is acceptable in lieu of the blunt start.

**4.2.11 Identification.** The NOT GO (HI) thread plug gage should be marked with the nominal size, threads/in., thread series, class, NOT GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B NOT GO PD.2224

### 4.3 Thread Snap Gages — GO Segments or Rolls (Table 2 — Gages 2.1 and 2.3)

**4.3.1 Purpose and Use.** The thread snap gage with two GO threaded segments or two GO zero lead

**TABLE 4 SPECIFICATIONS AND FORMAT FOR TABLES 10 AND 11 — LIMITS OF SIZE OF THREADED AND PLAIN GAGES FOR UNIFIED EXTERNAL AND INTERNAL THREADS**

| | | | | | |
|---|---|---|---|---|---|
| Nominal Size and Threads/in. | | | | 1 | (To be specified) |
| Series Designation and Tolerance Class | | | | 2 | Of external thread to be checked |
| Gages for External Threads | Thread gages | GO | Pitch diameter | 3 | Max. pitch diameter of external thread; gage tolerance minus |
| | | | Minor diameter | 4 | Max. pitch diameter of external thread; minus $H/2$; gage tolerance minus |
| | | NOT GO (LO) | Pitch diameter | 5 | Min. pitch diameter of external thread; gage tolerance plus |
| | | | Minor diameter | 6 | Min. pitch diameter of external thread minus $0.25H$; gage tolerance plus |
| | Plain gages for major diameter | GO | | 7 | Max. major diameter of external thread; gage tolerance minus |
| | | NOT GO | | 8 | Min. major diameter of external thread; gage tolerance plus |
| Gages for Internal Threads | Thread gages | GO | Major diameter | 9 | Min. major diameter of internal thread; gage tolerance plus |
| | | | Pitch diameter | 10 | Min. pitch diameter of internal thread; gage tolerance plus |
| | | NOT GO (HI) | Major diameter | 11 | Max. pitch diameter of internal thread plus $H/2$; gage tolerance minus |
| | | | Pitch diameter | 12 | Max. pitch diameter of internal thread; gage tolerance minus |
| | Plain gages for minor diameter | GO | | 13 | Min. minor diameter of internal thread; gage tolerance plus |
| | | NOT GO | | 14 | Max. minor diameter of internal thread; gage tolerance minus |
| Series Designation and Tolerance Class | | | | 15 | Of internal thread to be checked |

rolls inspects the maximum-material GO functional limit, $A_1$, of product internal thread. The setting of the GO segments or rolls represents the maximum-material GO functional limit of the product internal thread, and its purpose is to assure interchangeable assembly of maximum-material mating parts. The segments or rolls theoretically engage over the full-threaded length of the product. The segments or rolls have a cumulative check of all thread elements except the minor diameter.

Internal thread snap gages by design must have an outside diameter of gaging elements below minor diameter of internal thread in order to enter. The gage checks all thread elements by sensing the resistance of contact after being set to a master.

The GO thread snap gage can also indicate out-of-roundness of pitch cylinder for 180 deg. ovality by using the gage at different internal diametral locations on the product thread.

**4.3.2 Basic Design.** The GO segments and rolls assembled into gage frames are the design of the individual gage manufacturer. The lengths of the two threaded segments and the two thread rolls spaced 180 deg. apart are equivalent to the standard gage blank lengths for practical and economic reasons. See Table A3 and Fig. 4. Internal product threads less than 3/16 in. in diameter are not practical to check with snap gages. GO thread segments shall engage 25% or more of the product circumference. Product shall be

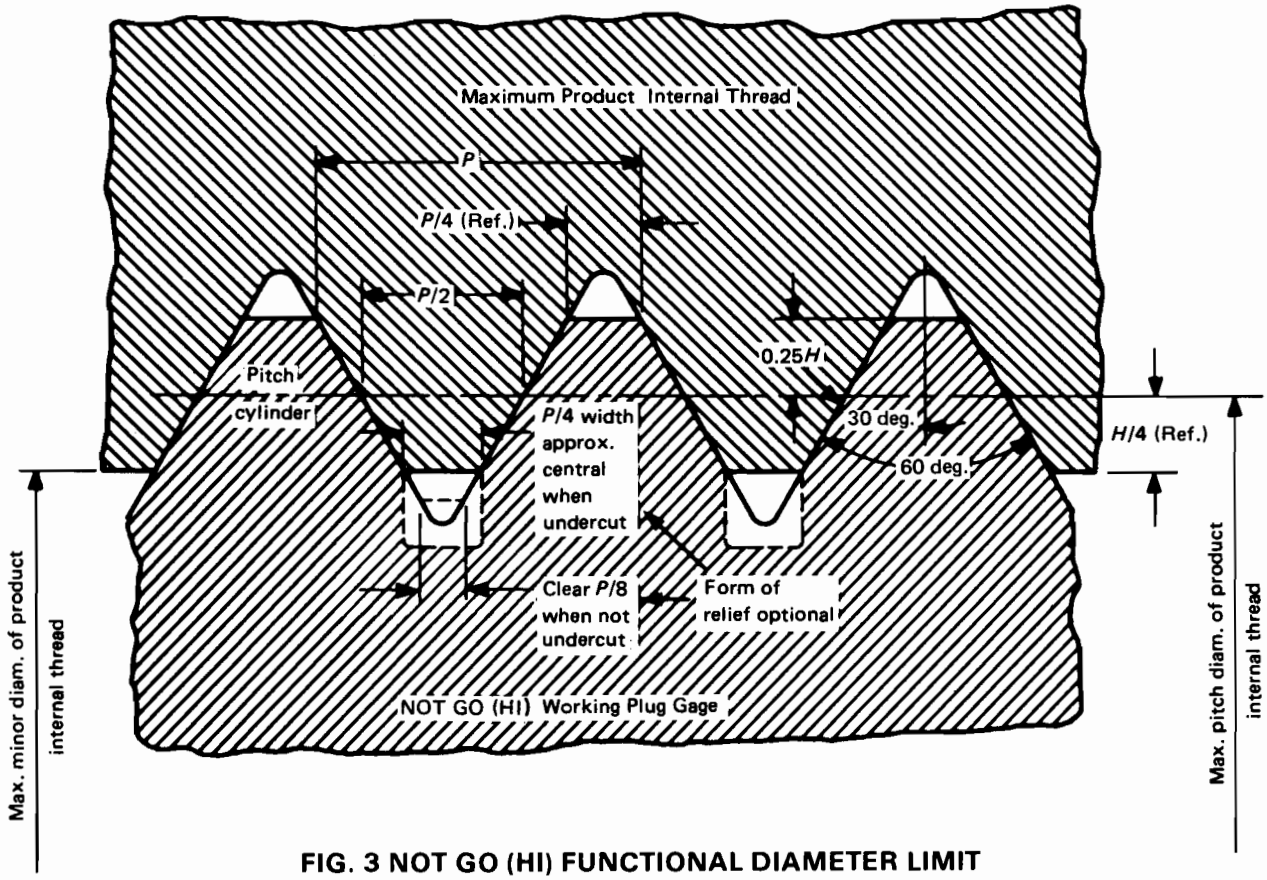



**FIG. 3 NOT GO (HI) FUNCTIONAL DIAMETER LIMIT**

checked around circumference of thread at sufficient axial positions to check the full-thread length. Thread rolls shall be applied at several locations (three if possible) axially over the full-thread length of product. The circumference shall be checked at each position.

**4.3.3 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 4.

**4.3.4 Thread Crests.** The outside diameter of the threaded portion of the GO segments or rolls has the equivalent of a $P/8$ flat on the thread with a plus gage tolerance. The thread crest shall be flat in an axial section and parallel to the axis of the gaging member.

**4.3.5 Thread Roots.** The minor diameter of the threaded portion of the GO segments or rolls shall be cleared beyond a $P/8$ flat either by an extension of the flanks of the thread toward a sharp vee or by an undercut no greater than $P/8$ maximum width and approximately central.

**4.3.6 Runout.** The pitch and major cylinders of the threaded portion of the GO segments or rolls shall not exceed the runout as determined by measurements of runout (full-indicator movement) on each gaging member, with respect to the pitch cylinder. Runout shall not exceed one-half the X gage major diameter tolerance.

**4.3.7 Pitch Cylinder.** The pitch cylinder of the threaded portion of the GO segments or rolls shall be straight and round within the X gage pitch diameter limits specified.

**4.3.8 Lead, Pitch, and Half-Angle Variations.** Lead, pitch, and half-angle variations shall be within the limits specified. See Table 6.

**4.3.9 Identification.** The assembled gage should be marked by the nominal size, threads/in., thread series, GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC GO PD.2175

## TABLE 5 SPECIFICATIONS AND FORMAT FOR TABLES 10 AND 11 — LIMITS OF SIZE OF THREAD-SETTING GAGES FOR UNIFIED THREAD WORKING GAGES

| | | | | | |
|---|---|---|---|---|---|
| Nominal Size and Threads/in. | | | | 1 | (To be specified) |
| Series Designation and Tolerance Class | | | | 2 | Of external thread to be checked by gage set with plug |
| Full-Form and Truncated Setting Plugs | Plug for GO | Major diameter | Truncated* | 3 | Max. major diam. of external thread (equals min. major diam. of full portion of GO setting plug) minus $(0.060\sqrt[3]{p^2} + 0.017p)$; gage tolerance minus |
| | | | Full-form | 4 | Max. major diameter of external thread; gage tolerance plus |
| | | Pitch diameter | | 5 | Max. pitch diameter of external thread; gage tolerance minus |
| | Plug for NOT GO (LO) | Major diameter | Truncated* (Note 1) | 6 | Min. pitch diameter of external thread plus $H/2$; gage tolerance minus |
| | | | Full-form | 7 | Max. major diameter of external thread provided major diameter crest width shall not be less than 0.001 in. (0.0009 in. truncation). Apply W tolerance plus for max. size except that for 0.001 in. crest width apply tolerance minus. For the 0.001 in. crest width, major diameter is equal to maximum major diameter of external thread plus $0.216506p$ minus the sum of external thread pitch diameter tolerance and 0.0017 in. |
| | | Pitch diameter | | 8 | Min. pitch diameter of external thread; gage tolerance plus |
| Solid Thread-Setting Rings for Snap and Indicating Gages | | Ring for GO | Pitch diameter (Note 2) | 9 | Min. pitch diameter of internal thread; W gage tolerance plus |
| | | | Minor diameter | 10 | Min. minor diameter of internal thread; W gage tolerance minus |
| | | Ring for NOT GO (HI) | Pitch diameter (Note 2) | 11 | Max. pitch diameter of internal thread; W gage tolerance minus |
| | | | Minor diameter | 12 | Max. minor diameter of internal thread; W gage tolerance minus |
| Series Designation and Tolerance Class | | | | 13 | Of internal thread to be checked by gage set with ring |

* Indicated rows apply to truncated setting plugs only.

NOTES:

(1) Truncated portion is required when optional sharp root profile in Figs. 18, 19, 20, 21, and 26 is used.

(2) Tolerances greater than W tolerance for pitch diameter are acceptable when internal indicating or snap gage can accomodate a greater tolerance and when agreed upon by supplier and user.

## TABLE 6 X GAGE TOLERANCES FOR THREAD GAGES

| Threads/in. | Tolerance on Lead, in. (Notes 1, 3) | Tolerance on Half-Angle of Thread, deg. ± min. | Tolerance on Major or Minor Diameters (Note 4) | | Tolerance on Pitch Diameter (Notes 2, 4) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | To and Including 4 in. Diam. | Above 4 in. Diam. | To and Including 1½ in. Diam. | Above 1½ in. to 4 in. Diam. | Above 4 in. to 8 in. Diam. | Above 8 in. to 12 in. Diam. (Note 2) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 80 | 0.0002 | 0 30 | 0.0003 | . . . | 0.0002 | . . . | . . . | . . . |
| 72 | .0002 | 0 30 | .0003 | . . . | .0002 | . . . | . . . | . . . |
| 64 | .0002 | 0 30 | .0004 | . . . | .0002 | . . . | . . . | . . . |
| 56 | .0002 | 0 30 | .0004 | . . . | .0002 | 0.0003 | . . . | . . . |
| 48 | .0002 | 0 30 | .0004 | . . . | .0002 | .0003 | . . . | . . . |
| 44 | .0002 | 0 20 | .0004 | . . . | .0002 | .0003 | . . . | . . . |
| 40 | .0002 | 0 20 | .0004 | . . . | .0002 | .0003 | . . . | . . . |
| 36 | .0002 | 0 20 | .0004 | . . . | .0002 | .0003 | . . . | . . . |
| 32 | .0003 | 0 15 | .0005 | 0.0007 | .0003 | .0004 | 0.0005 | 0.0006 |
| 28 | .0003 | 0 15 | .0005 | .0007 | .0003 | .0004 | .0005 | .0006 |
| 27 | .0003 | 0 15 | .0005 | .0007 | .0003 | .0004 | .0005 | .0006 |
| 24 | .0003 | 0 15 | .0005 | .0007 | .0003 | .0004 | .0005 | .0006 |
| 20 | .0003 | 0 15 | .0005 | .0007 | .0003 | .0004 | .0005 | .0006 |
| 18 | .0003 | 0 10 | .0005 | .0007 | .0003 | .0004 | .0005 | .0006 |
| 16 | .0003 | 0 10 | .0006 | .0009 | .0003 | .0004 | .0006 | .0008 |
| 14 | .0003 | 0 10 | .0006 | .0009 | .0003 | .0004 | .0006 | .0008 |
| 13 | .0003 | 0 10 | .0006 | .0009 | .0003 | .0004 | .0006 | .0008 |
| 12 | .0003 | 0 10 | .0006 | .0009 | .0003 | .0004 | .0006 | .0008 |
| 11½ | .0003 | 0 10 | .0006 | .0009 | .0003 | .0004 | .0006 | .0008 |
| 11 | .0003 | 0 10 | .0006 | .0009 | .0003 | .0004 | .0006 | .0008 |
| 10 | .0003 | 0 10 | .0006 | .0009 | .0003 | .0004 | .0006 | .0008 |
| 9 | .0003 | 0 10 | .0007 | .0011 | .0003 | .0004 | .0006 | .0008 |
| 8 | .0004 | 0 5 | .0007 | .0011 | .0004 | .0005 | .0006 | .0008 |
| 7 | .0004 | 0 5 | .0007 | .0011 | .0004 | .0005 | .0006 | .0008 |
| 6 | .0004 | 0 5 | .0008 | .0013 | .0004 | .0005 | .0006 | .0008 |
| 5 | .0004 | 0 5 | .0008 | .0013 | . . . | .0005 | .0006 | .0008 |
| 4½ | .0004 | 0 5 | .0008 | .0013 | . . . | .0005 | .0006 | .0008 |
| 4 | .0004 | 0 5 | .0009 | .0015 | . . . | .0005 | .0006 | .0008 |

NOTES:
(1) Allowable variation in lead between any two threads shall not be farther apart than the length of the standard gage that is shown in ANSI B47.1.
(2) Above 12 in., the tolerance is directly proportional to the tolerance in col. 9, in the ratio of the diameter to 12 in.
(3) See 5.13.9.
(4) Tolerances apply to designated size of thread. Apply tolerances in accordance with Table 4.

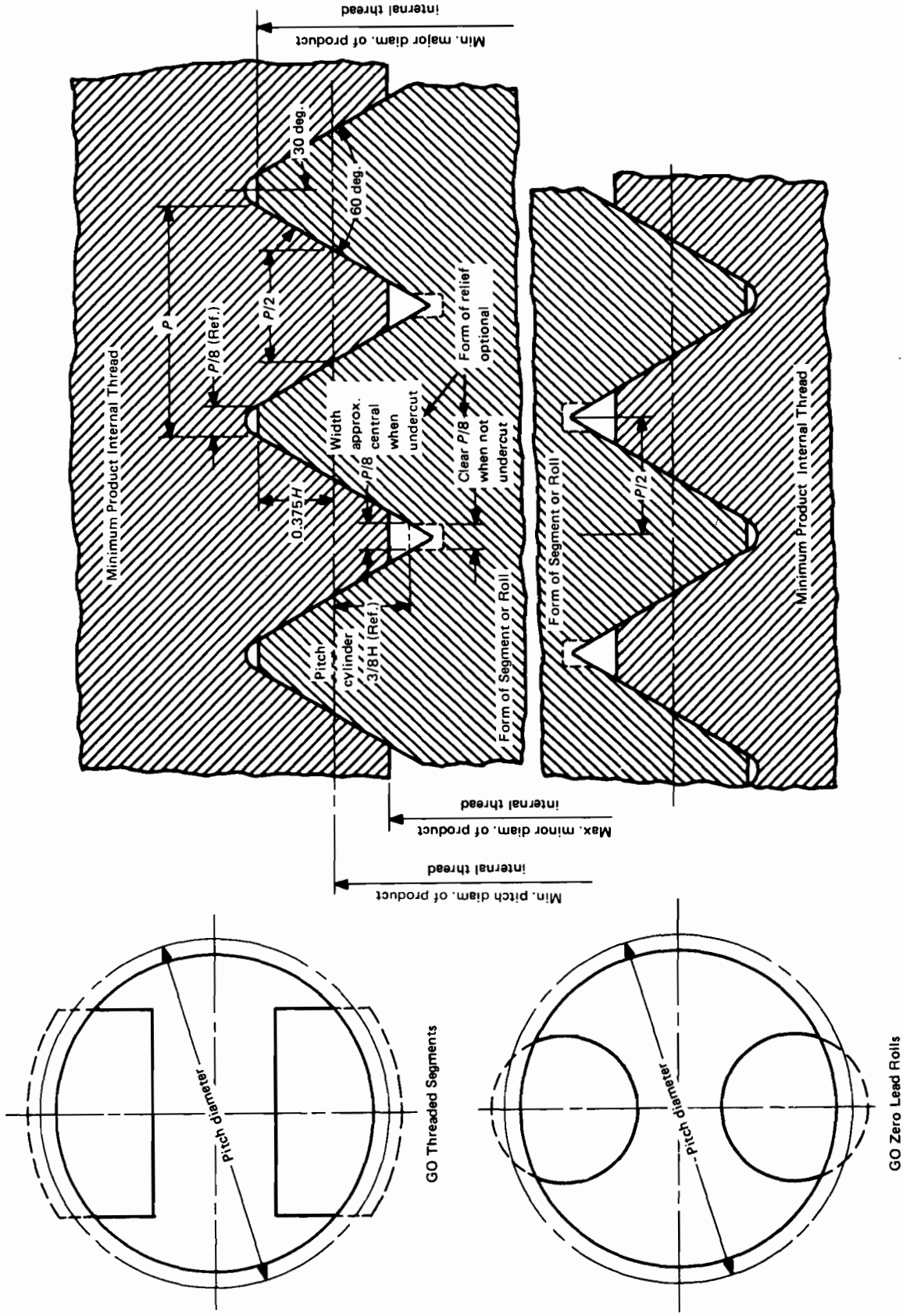



**FIG. 4 THREAD SNAP GAGES — MAXIMUM-MATERIAL GO FUNCTIONAL LIMIT**

### 4.4 Thread Snap Gages — NOT GO (HI) Segments or Rolls (Table 2 — Gages 2.2 and 2.4)

**4.4.1 Purpose and Use.** The thread snap gage with two NOT GO (HI) segments or two NOT GO (HI) rolls inspects the NOT GO (HI) functional diameter limit, $B_1$, of product internal thread. The setting of the NOT GO (HI) segments or rolls represents the maximum functional diameter limit of the product internal thread. In applying the thread snap limit gage, the NOT GO (HI) functional diameter is acceptable when gaging elements do not pass the product thread.

Internal thread snap gages by design must have an outside diameter of gaging elements below minor diameter of internal thread in order to enter. The gage checks the NOT GO functional diameter limit by sensing the resistance to contact after being set to master.

The NOT GO (HI) thread snap gage will also indicate out-of-roundness of the pitch cylinder for 180 deg. ovality by using the gage at different diametral locations on internal thread. The NOT GO (HI) thread snap gage will also check for taper of pitch cylinder by using the gage at different locations axially on internal thread.

**4.4.2 Basic Design.** In order that the NOT GO (HI) thread snap gage may effectively check the NOT GO (HI) functional diameter limit, the flank contact is reduced by truncating the thread on segments and rolls. As the design of the segments and rolls are different with each gage manufacturer, the number of threads engaged in product thread will vary. Usually, the number of pitches engaged is approximately two. Internal product threads less than 3/16 in. in diameter are not practical to check with snap gages.

**4.4.3 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 5.

**4.4.4 Thread Crests.** The maximum major diameter of the NOT GO (HI) segments and rolls shall be equal to the pitch diameter of segment or roll plus $0.5H$ with the gage tolerance minus. This corresponds to a width of flat at the crest equal to $0.25p$. See Table 4.

**4.4.5 Thread Roots.** The minor diameter of the NOT GO (HI) segments and rolls shall be cleared beyond a $P/8$ width of flat by an extension toward a sharp vee of the sides of the thread or by an undercut to any dimension no wider than $P/4$. Undercut is to be approximately central with the center line of the thread groove. See Fig. 5.

**4.4.6 Runout.** The pitch and major cylinders of the threaded portion of the NOT GO (HI) segments or rolls shall not exceed the runout as determined by measurements of runout (full-indicator reading) on each gaging member, with respect to the pitch cylinder. Runout shall not exceed one-half the X gage major diameter tolerance.

**4.4.7 Pitch Cylinder.** The pitch cylinder of the threaded portion of the NOT GO (HI) segments or rolls shall be round within the X gage pitch diameter limits specified.

**4.4.8 Lead, Pitch, and Half-Angle Variations.** Lead, pitch, and half-angle variations shall be within the limits specified. See Table 6.

**4.4.9 Identification.** The assembled gage should be marked by the nominal size, threads/in., thread series, class, NOT GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B NOT GO PD.2224

### 4.5 Thread Snap Gages — Minimum Material: Pitch Diameter Cone and Vee (Table 2 — Gage 2.5)

**4.5.1 Purpose and Use.** The thread snap gage with two segments or two rolls, both made to cone and vee design as shown in Fig. 6, inspects the minimum-material limit pitch diameter, $C_1$, of the product internal thread.

Internal thread snap gages by design must have an outside diameter of gaging elements below minor diameter of internal thread in order to enter. The gage checks the minimum-material pitch diameter limit by sensing the resistance of contact after being set to master.

The cone and vee snap gage can check roundness of pitch cylinder for 180 deg. ovality by using the gage at different diametral locations on internal thread.

The cone and vee snap gage can check taper of pitch cylinder by using the gage at different locations axially on internal thread.

**4.5.2 Basic Design.** The segments are usually made having a surface contact slightly above the pitch line near the center of the flank. The rolls are made with a point or line contact approximately at the pitch line, depending upon the angle variations of the

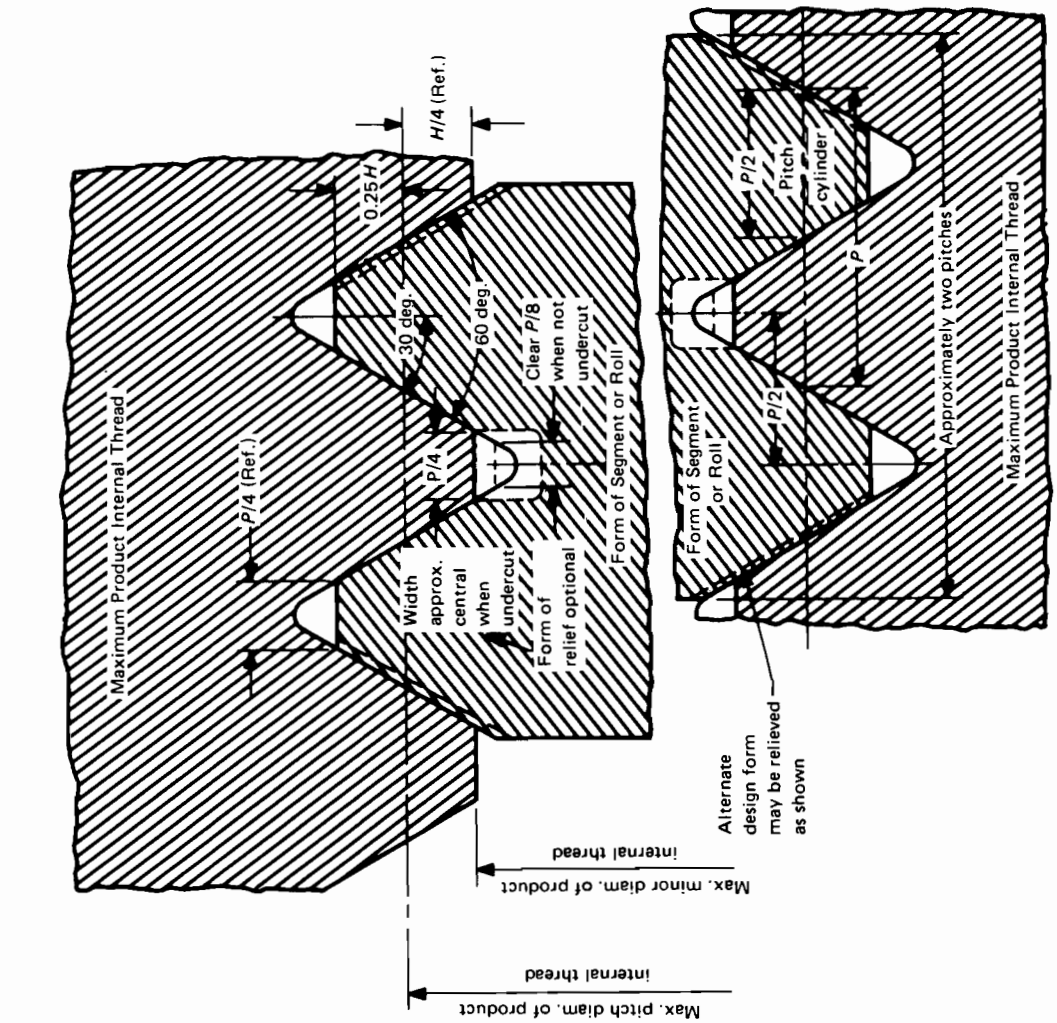
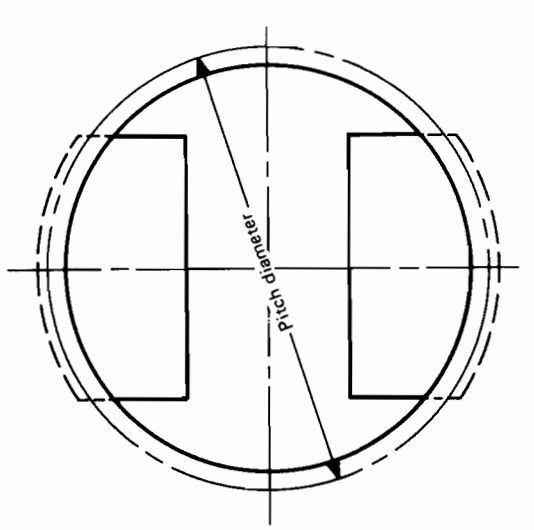
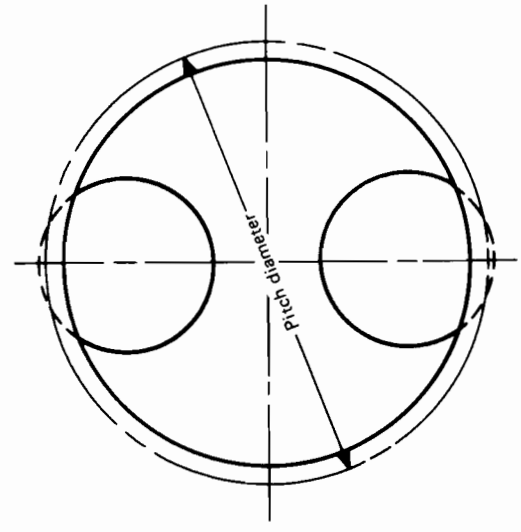



FIG. 5 THREAD SNAP GAGES — NOT GO (HI) FUNCTIONAL DIAMETER LIMIT




Not GO (HI) Threaded Segments




Not GO (HI) Zero Lead Rolls

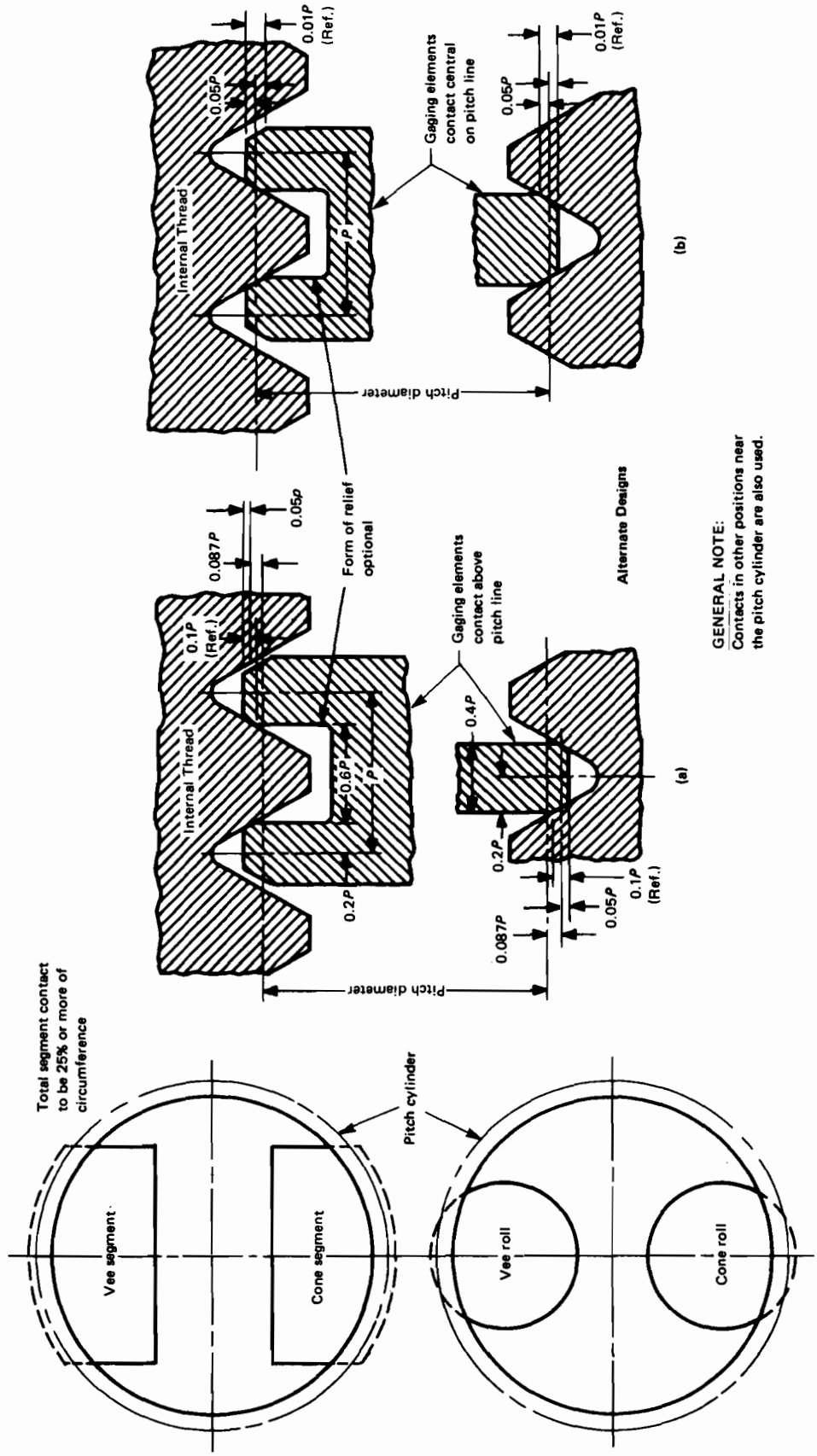



FIG. 6 THREAD SNAP GAGES — MINIMUM-MATERIAL PITCH DIAMETER LIMIT — CONE AND VEE

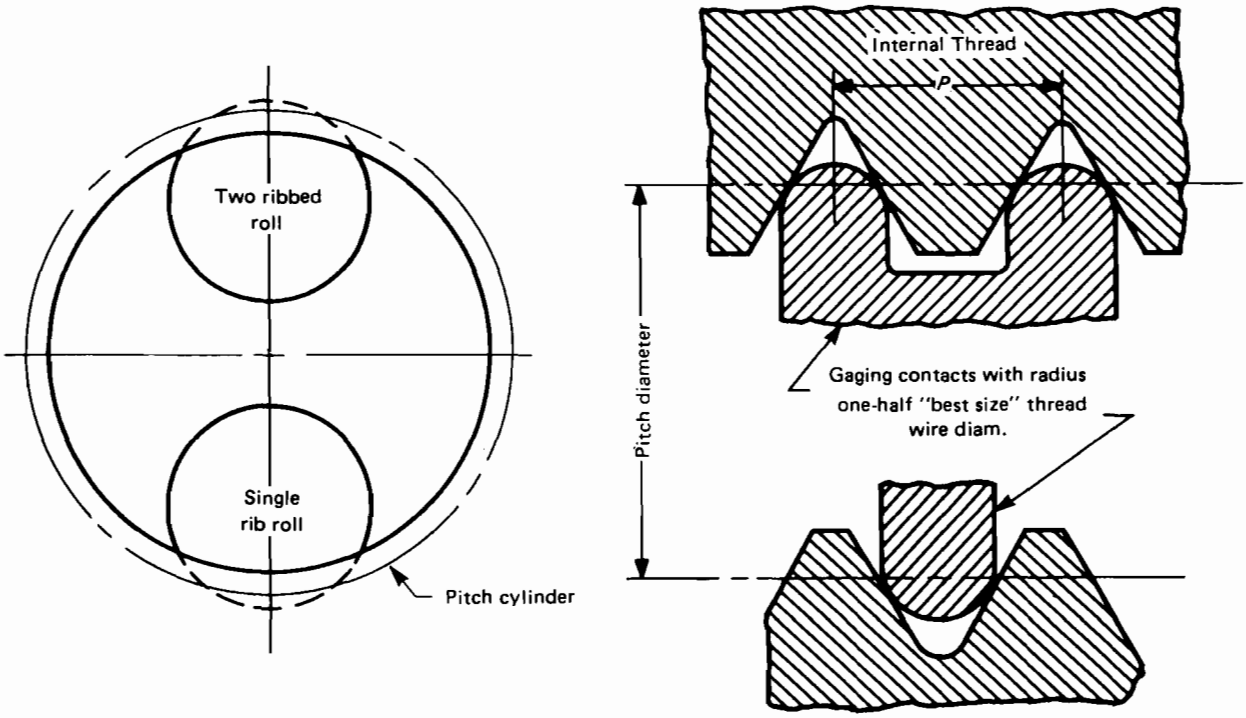



**FIG. 7 THREAD SNAP GAGES — MINIMUM-MATERIAL THREAD GROOVE DIAMETER LIMIT**

thread flanks. See Fig. 6 for details. Internal product threads less than 3/16 in. in diameter are not practical to check with snap gages.

**4.5.3 Thread Form.** The specifications for thread form, thread crests, and thread roots are summarized in Fig. 6.

**4.5.4 Identification.** The assembled gage should be marked by the nominal size, threads/in., thread series, class, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B PD.2224

## 4.6 Thread Snap Gages — Minimum Material: Thread Groove Diameter Type (Table 2 — Gage 2.6)

**4.6.1 Purpose and Use.** The thread snap gage with two rolls with "best size" thread wire radius contacts inspects the minimum-material limit pitch diameter, $D_1$, of the product internal thread.

Internal thread snap gages by design must have an outside diameter of gaging elements below minor diameter of internal thread in order to enter. The gage checks the minimum-material pitch diameter limit by sensing the resistance of contact after being set to master.

The roll thread snap gage will check roundness of the pitch cylinder for 180 deg. ovality by using the gage at different diametral locations.

Also, the roll thread snap gage will check taper of the pitch cylinder by using the gage at different locations axially.

**4.6.2 Basic Design.** The "best size" thread wire radius contacts on the rolls check the threads at the pitch cylinder. Ribs on roll contacts are made one pitch apart. Internal product threads less than 3/16 in. in diameter are not practical to check with snap gages.

**4.6.3 Thread Form.** The specifications for the form on gage rolls are summarized in Fig. 7.

**4.6.4 Identification.** The assembled gage with rolls should be marked with the nominal size, threads/in., thread series, class, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B PD.2224

## 4.7 Thread-Setting Solid Ring Gages

**4.7.1 Purpose and Use.** Thread-setting ring gages are used for setting internal thread indicating and snap gages. GO thread-setting ring gages are made to the maximum-material limit of the internal thread specification and NOT GO (HI) thread-setting rings to the minimum-material limit. Setting rings under 3/16 in. diameter are too small to be practical.

**4.7.2 Gage Blanks.** GO and NOT GO (HI) solid thread ring gage blanks have been standardized for various size ranges and pitches. (See ANSI B47.1.) Length of gage thread is a minimum of four pitches.

**4.7.3** The GO and NOT GO (HI) thread-setting gage threads are stated in detail below and are summarized in Tables 5, 7, and 11, and Fig. 8.

### 4.7.4 Thread Crests

**4.7.4.1** The minor diameter of the GO setting ring gage is equal to the minimum minor diameter of the internal thread.

**4.7.4.2** The minor diameter of the NOT GO (HI) setting ring gage is equal to the maximum minor diameter of the internal thread.

### 4.7.5 Thread Roots

**4.7.5.1** The major diameter of the GO setting ring gage shall be cleared beyond $P/8$ width of flat by either an extension of the flanks toward a sharp vee or by a clearance cut of substantially $P/8$ width and approximately central.

**4.7.5.2** The major diameter of the NOT GO (HI) setting ring gage shall be cleared by a clearance cut of substantially $0.25p$ width and approximately central. The form is optional; it may clear a $P/8$ flat if not undercut.

**4.7.6 Runout of Pitch and Minor Diameter Cylinders for Sizes 3/16 in. and Larger.** The pitch and minor cylinders of setting ring gages shall not exceed the runout as stated hereinafter. The permissible minimum effective minor diameter as determined by runout (full-indicator movement) with respect to the pitch cylinder subtracted from measured minor diameter shall not be less than the specified minimum minor diameter minus the sum of the W gage tolerances for pitch and minor diameter for GO setting gages, and minus twice the sum for NOT GO (HI) setting gages.

**4.7.7 Pitch Cylinder.** Conformance of these elements is normally determined by the manufacturing of the setting ring gages to the applicable setting plug gage.

**4.7.8 Pitch Diameter Limitation of Taper.** The taper shall be within gage pitch diameter limits.

**4.7.9 Lead and Half-Angle.** Lead and half-angle variations shall be within limits specified in Table 7.

**4.7.10 Incomplete Threads.** The feather edge at both ends of the thread ring gage shall be removed. On gages larger than 1/2 in. nominal size, or having pitches coarser than 20 threads/in., not more than one complete turn of the end threads shall be removed to obtain a full-thread blunt start. On gages 1/2 in. nominal size and smaller, or having pitches of 20 threads/in. or finer, a 60 deg. chamfer from the axis of the gage is acceptable in lieu of the blunt start.

**4.7.11 Identification.** The GO and NOT GO (HI) thread-setting ring gages should be identified by nominal size, threads/in., thread series, GO or NOT GO, class on NOT GO; SETTING, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC GO SETTING PD.2175
1/4-20 (or .250-20) UNC-2B NOT GO SETTING PD.2224

## 4.8 Plain Plug, Snap, and Indicating Gages to Check Minor Diameter of Internal Thread

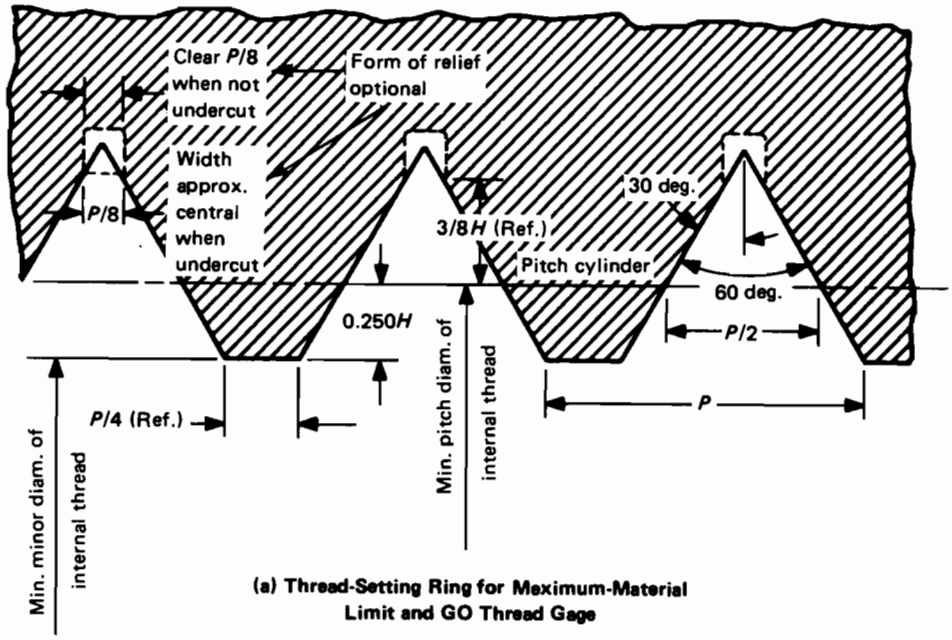
**4.8.1 Purpose and Use.** The GO and NOT GO (HI) thread gages of all designs are cleared at the root but do not check the minor diameter of the product internal thread. Accordingly, the following paragraphs (4.8.1 through 4.8.6) describe types of plain diameter gage or precision instruments used to check the maximum- and minimum-material limits of the minor diameter.

**4.8.2 GO and NOT GO Plain Cylindrical Plug Gages (Table 2 — Gage 3.1).** Plug gages shall be made to Z tolerances and as shown in Fig. 9. GO shall be made to plus tolerance; NOT GO shall be made to minus tolerance. GO cylindrical plug gage must enter and pass through the length of the product without force. NOT GO cylindrical plug must not enter. See Table 8 for gage tolerances.

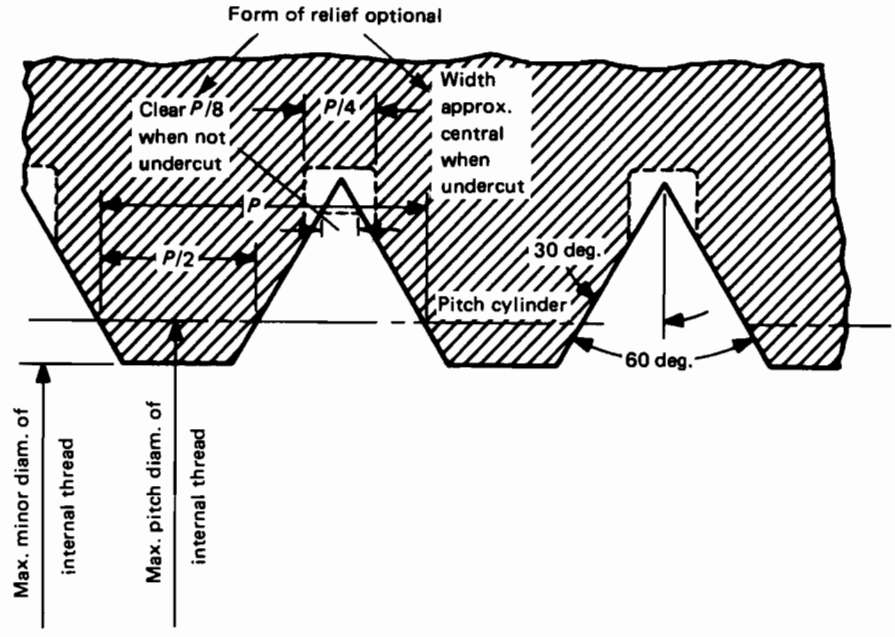
## TABLE 7 W GAGE TOLERANCES FOR THREAD GAGES

| Threads/in. | Tolerance on Lead[1,3] | | Tolerance on Half-Angle of Thread, deg. ± min. | Tolerance on Major or Minor Diameters[4] | | | Tolerance on Pitch Diameter[2, 4] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | To and Including ½ in. Diam. | Above ½ in. Diam. | | To and Including ½ in. Diam. | Above ½ in. to 4 in. Diam. | Above 4 in. Diam. | To and Including ½ in. Diam. | Above ½ in. to 1½ in. Diam. | Above 1½ in. to 4 in. Diam. | Above 4 in. to 8 in. Diam. | Above 8 in. to 12 in. Diam.[2] |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 80 | 0.0001 | 0.00015 | 0 20 | 0.0003 | 0.0003 | . . . | 0.0001 | 0.00015 | . . . | . . . | . . . |
| 72 | .0001 | .00015 | 0 20 | .0003 | .0003 | . . . | .0001 | .00015 | . . . | . . . | . . . |
| 64 | .0001 | .00015 | 0 20 | .0003 | .0004 | . . . | .0001 | .00015 | . . . | . . . | . . . |
| 56 | .0001 | .00015 | 0 20 | .0003 | .0004 | . . . | .0001 | .00015 | 0.0002 | . . . | . . . |
| 48 | .0001 | .00015 | 0 18 | .0003 | .0004 | . . . | .0001 | .00015 | .0002 | . . . | . . . |
| 44 | .0001 | .00015 | 0 15 | .0003 | .0004 | . . . | .0001 | .00015 | .0002 | . . . | . . . |
| 40 | .0001 | .00015 | 0 15 | .0003 | .0004 | . . . | .0001 | .00015 | .0002 | . . . | . . . |
| 36 | .0001 | .00015 | 0 12 | .0003 | .0004 | . . . | .0001 | .00015 | .0002 | . . . | . . . |
| 32 | .0001 | .00015 | 0 12 | .0003 | .0005 | 0.0007 | .0001 | .00015 | .0002 | 0.00025 | 0.0003 |
| 28 | .00015 | .00015 | 0 8 | .0005 | .0005 | .0007 | .0001 | .00015 | .0002 | .00025 | .0003 |
| 27 | .00015 | .00015 | 0 8 | .0005 | .0005 | .0007 | .0001 | .00015 | .0002 | .00025 | .0003 |
| 24 | .00015 | .00015 | 0 8 | .0005 | .0005 | .0007 | .0001 | .00015 | .0002 | .00025 | .0003 |
| 20 | .00015 | .00015 | 0 8 | .0005 | .0005 | .0007 | .0001 | .00015 | .0002 | .00025 | .0003 |
| 18 | .00015 | .00015 | 0 8 | .0005 | .0005 | .0007 | .0001 | .00015 | .0002 | .00025 | .0003 |
| 16 | .00015 | .00015 | 0 8 | .0006 | .0006 | .0009 | .0001 | .0002 | .00025 | .0003 | .0004 |
| 14 | .0002 | .0002 | 0 6 | .0006 | .0006 | .0009 | .0015 | .0002 | .00025 | .0003 | .0004 |
| 13 | .0002 | .0002 | 0 6 | .0006 | .0006 | .0009 | .0015 | .0002 | .00025 | .0003 | .0004 |
| 12 | .0002 | .0002 | 0 6 | .0006 | .0006 | .0009 | .0015 | .0002 | .00025 | .0003 | .0004 |
| 11½ | .0002 | .0002 | 0 6 | .0006 | .0006 | .0009 | .0015 | .0002 | .00025 | .0003 | .0004 |
| 11 | .0002 | .0002 | 0 6 | .0006 | .0006 | .0009 | .0015 | .0002 | .00025 | .0003 | .0004 |
| 10 | . . . | .00025 | 0 6 | . . . | .0006 | .0009 | . . . | .0002 | .00025 | .0003 | .0004 |
| 9 | . . . | .00025 | 0 6 | . . . | .0007 | .0011 | . . . | .0002 | .00025 | .0003 | .0004 |
| 8 | . . . | .00025 | 0 5 | . . . | .0007 | .0011 | . . . | .0002 | .00025 | .0003 | .0004 |
| 7 | . . . | .0003 | 0 5 | . . . | .0007 | .0011 | . . . | .0002 | .00025 | .0003 | .0004 |
| 6 | . . . | .0003 | 0 5 | . . . | .0008 | .0013 | . . . | .0002 | .00025 | .0003 | .0004 |
| 5 | . . . | .0003 | 0 4 | . . . | .0008 | .0013 | . . . | . . . | .00025 | .0003 | .0004 |
| 4½ | . . . | .0003 | 0 4 | . . . | .0008 | .0013 | . . . | . . . | .00025 | .0003 | .0004 |
| 4 | . . . | .0003 | 0 4 | . . . | .0009 | .0015 | . . . | . . . | .00025 | .0003 | .0004 |

NOTES:
(1) Allowable variation in lead between any two threads shall not be farther apart than the length of the standard gage that is shown in ANSI B47.1.
(2) Above 12 in., the tolerance is directly proportional to the tolerance in col. 12, in the ratio of the diameter to 12 in.
(3) See 5.13.9.
(4) Tolerances apply to designated size of thread. Apply tolerance in accordance with Table 5.




(a) Thread-Setting Ring for Meximum-Material Limit and GO Thread Gage




(b) Thread-Setting Ring for Minimum-Material Limit and NOT GO (HI) Thread Gage

**FIG. 8 THREAD FORM OF SOLID THREAD-SETTING RING GAGES**

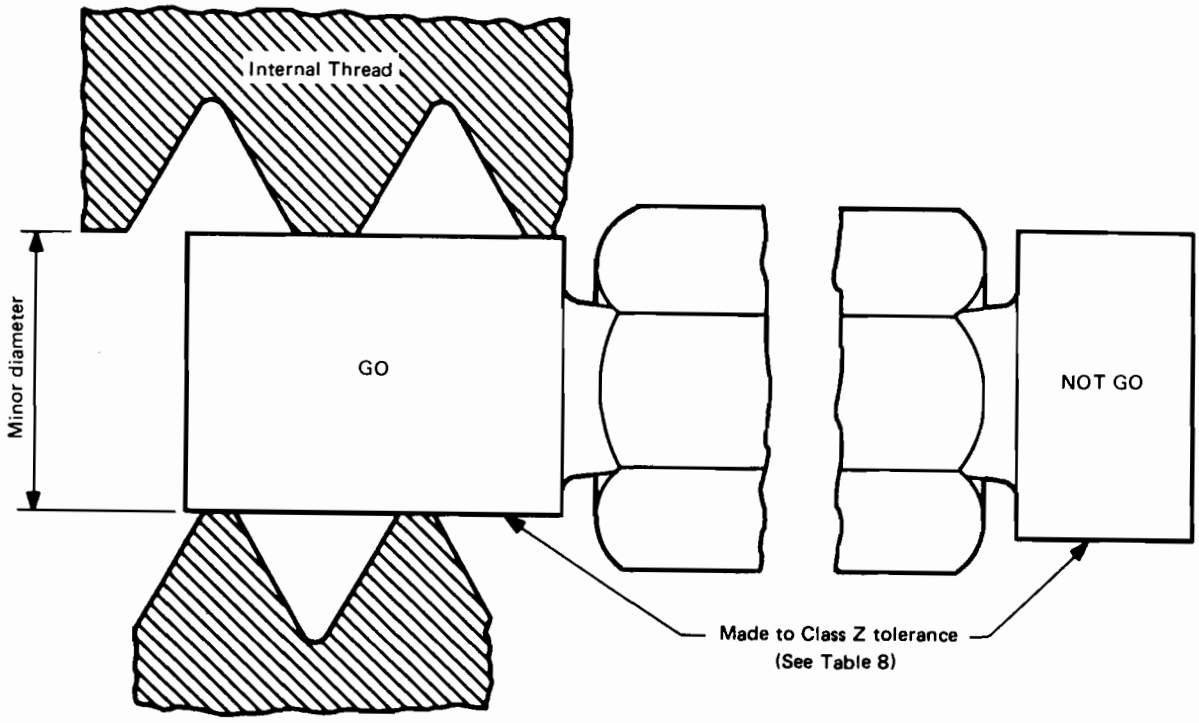



**FIG. 9 MINOR DIAMETER LIMIT — CYLINDRICAL PLUG GAGES**

The design of the GO and NOT GO cylindrical plain plug members has been standardized for various sizes, ranges, and pitches. See ANSI B47.1.

**4.8.3 Identification.** The cylindrical gage shall be marked with the nominal size, threads/in., thread series, GO or NOT GO, class on NOT GO, and minor diameter limits.

EXAMPLE:
1/4-20 (or .250-20) UNC GO.1960
1/4-20 (or .250-20) UNC-2B NOT GO.2070

**4.8.4 Precision Instruments (Table 2 — Gage 13).** Precision instruments such as dial calipers, inside micrometer calipers, pocket slide calipers, and vernier inside calipers can also be used to measure the minor diameter of product internal thread.

**4.8.5 Snap (Table 2 — Gages 3.3 and 3.5) and Indicating Gages (Table 2 — Gages 3.3, 3.5, and 5.2): Plain Diameter Gages for Checking Minor Diameter of Internal Thread.** Gages are made to the individual gage manufacturer's standard with gaging contacts (segments or rolls) at 120 deg. or 180 deg. Size range for segment type is approximately 3/16 in. to 2-1/2 in. in diameter. Above 2-1/2 in., gage contacts are plain diameter rolls. Another design is the use of prism fingers for 3/16 in. size and larger with contacts at 180 deg. See Fig. 10 for details. In each design, the gages are set with cylindrical ring gages, outside micrometers, vernier calipers, or a gap made with gage blocks and jaw accessories. Gage contacts are collapsed into tapped hole and released to contact product minor diameter. Dial indicator gages give the size of the product between minimum and maximum tolerance. Snap gages check the minor diameter limits by sensing the resistance at contact after being set to master.

**4.8.6 Identification.** After contacts have been assembled in the snap or indicating gage, the assembled gage should be tagged with the nominal size, threads/in., thread series, class, and minor diameter limits.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B.1960 — .2070

**TABLE 8 GAGE TOLERANCES FOR PLAIN CYLINDRICAL GAGES**

| Size Range, in. | | Tolerances, in. (Note 1) | | | | |
|---|---|---|---|---|---|---|
| Above | To and Including | XX | X | Y | Z (Note 2) | ZZ |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 0.020 | 0.825 | 0.00002 | 0.00004 | 0.00007 | 0.00010 | 0.00020 |
| .825 | 1.510 | 0.00003 | 0.00006 | 0.00009 | 0.00012 | 0.00024 |
| 1.510 | 2.510 | 0.00004 | 0.00008 | 0.00012 | 0.00016 | 0.00032 |
| 2.510 | 4.510 | 0.00005 | 0.00010 | 0.00015 | 0.00020 | 0.00040 |
| 4.510 | 6.510 | 0.000065 | 0.00013 | 0.00019 | 0.00025 | 0.00050 |
| 6.510 | 9.010 | 0.00008 | 0.00016 | 0.00024 | 0.00032 | 0.00064 |
| 9.010 | 12.010 | 0.00010 | 0.00020 | 0.00030 | 0.00040 | 0.00080 |

NOTES:
(1) Tolerances apply to actual diameter of plug or ring. Apply tolerances in accordance with Table 4. Symbols XX, X, Y, Z, and ZZ are standard gage tolerance classes.
(2) Used as tolerance on plain cylindrical plug and ring gages to check minor diameter for internal threads and outside diameter for external threads. Also used for masters for setting indicating thread gages where design permits.

### 4.9 Snap (Table 2 — Gage 3.4) and Indicating (Table 2 — Gage 5.1) Gages to Check Major Diameter of Internal Thread

**4.9.1 Purpose and Use.** The minimum major diameter limit of the product internal thread is considered acceptable when the product thread accepts GO gages. If further gaging is required, 4.9.2 describes the types of gages used to check the maximum- and minimum-material limits of the major diameter.

**4.9.2 Snap and Indicating Major Diameter Gages.** Gages are made to manufacturer's standard with 55 deg. maximum gage contacts at 180 deg. in the form of relieved thread contacts. See Fig. 11, sketch (a) for segment type. Size ranges from approximately 3/16 in. to 2-1/2 in. Above 2-1/2 in., gage contacts are thread relieved rolls at 120 deg. See Fig. 11, sketch (b). Another design is the use of conical contact on one finger and two "best size" thread balls on other contact as shown in Fig. 11, sketch (c). In each design, the indicating gages are set with cylindrical ring gages, outside micrometers, vernier calipers, or gap made with gage blocks and jaw accessories. Gage contacts are collapsed into tapped hole and released to contact product major diameter. Dial indicator gages give the size of the product between minimum and maximum tolerances. Snap gage checks the major diameter limit by sensing the resistance at contact after being set to master.

**4.9.3 Identification.** After contacts have been assembled in the snap or indicating gage, the assembled gage should be tagged with the nominal size, threads/in., thread series major diameter limits, and MAJOR DIAMETER INTERNAL.

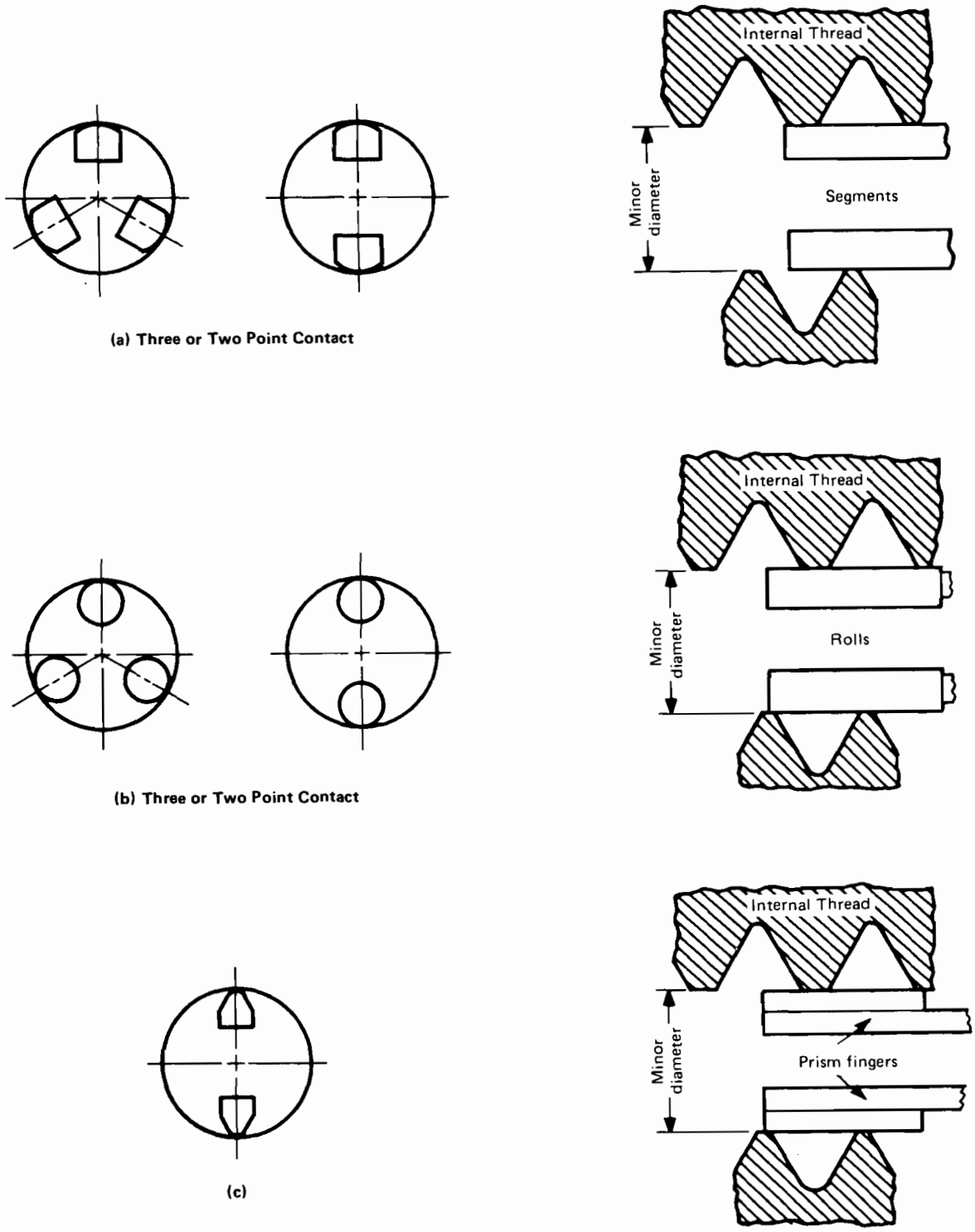
EXAMPLE:
1/4-20 (or .250-20) UNC
GO.250 NOT GO (Customer's Specifications)
MAJOR DIAMETER INTERNAL

### 4.10 Functional Indicating Thread Gages for Internal Thread (Table 2 — Gages 4.1 and 4.3)

**4.10.1 Purpose and Use.** The GO indicating thread gage (4.1 and 4.3) inspects the maximum-material GO functional limit and size, $A_1$ and $A_2$, and the NOT GO (HI) functional diameter limit and size, $B_1$ and $B_2$, of product internal thread. By the use of segments, rolls, or fingers, the gage is also used to check roundness of pitch cylinder. Some types of indicating gages are set by using thread-setting ring gages. See 4.7. Other types may be set with plain ring gages or with gage blocks and jaws. Readings indicate the position of product thread within the tolerance range.

**4.10.2 Basic Design.** Indicating gages have three contacts at 120 deg. or two contacts at 180 deg. Gages are made with segments, rolls, or fingers with the length of the functional GO gaging elements equal to the length of the standard GO thread plug gage. Internal product threads less than 3/16 in. in diameter are not practical to check with indicating gages.

**4.10.3 Thread Form.** The specifications for thread form on GO functional segments, rolls, or fingers are summarized in Table 4 and Fig. 12.




(a) Three or Two Point Contact

(b) Three or Two Point Contact

(c)

**FIG. 10 INDICATING PLAIN DIAMETER GAGES — MAX.-MIN. MINOR DIAMETER LIMIT AND SIZE**

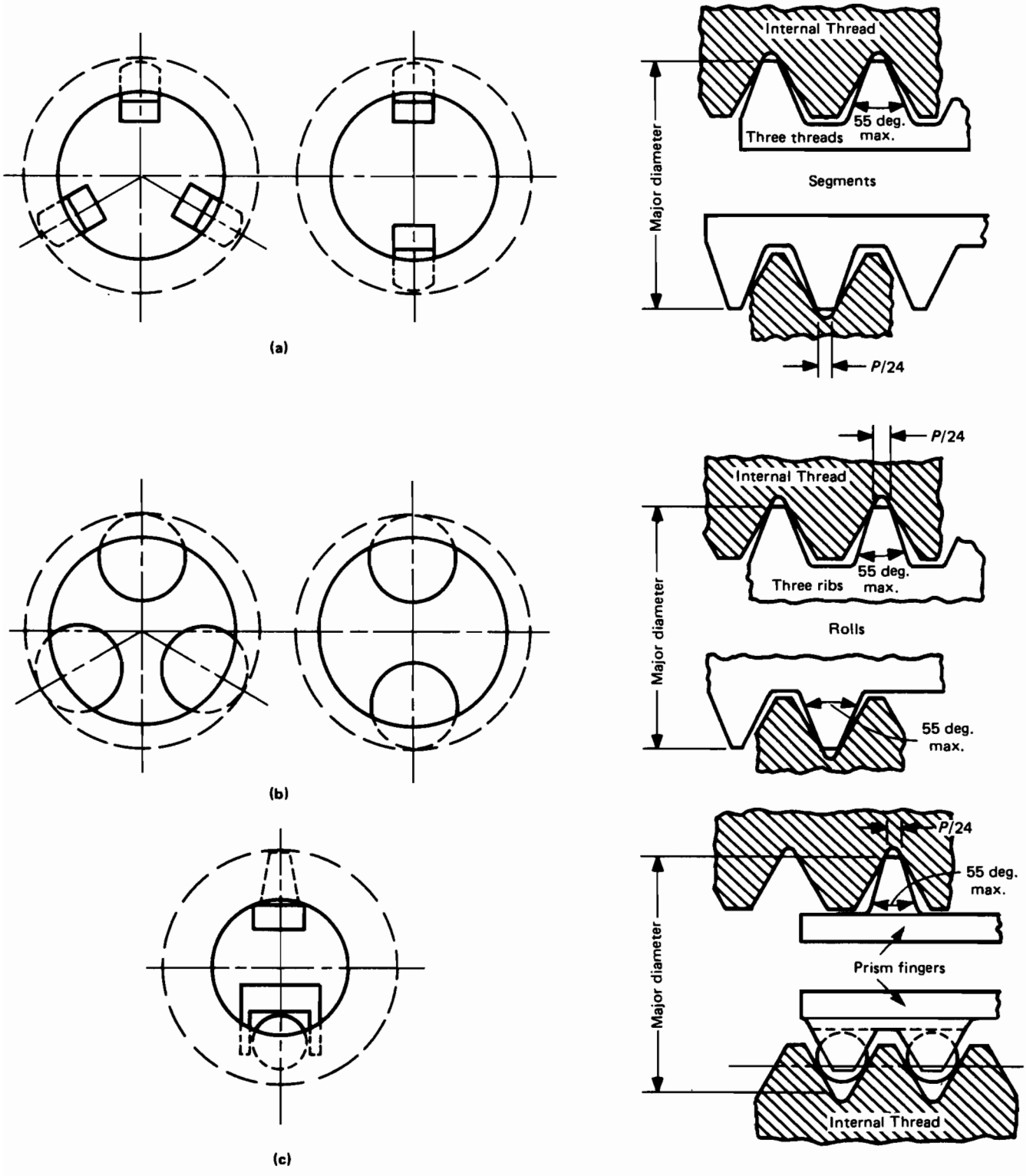



**FIG. 11 SNAP AND INDICATING DIAMETER GAGES — MAX.-MIN. MAJOR DIAMETER LIMIT AND SIZE**

**FIG. 12 INDICATING THREAD GAGES — MAXIMUM-MATERIAL GO FUNCTIONAL LIMIT AND SIZE**

TABLE 9 CONSTANTS FOR COMPUTING THREAD GAGE DIMENSIONS

| Threads/in., $n$ | Pitch, $p$ | Truncation of GO Truncated Setting Plug, $0.060\sqrt{p^2} + 0.017p$ | Half-Height of Cone Contact, $0.05p$ | Distance Between Pitch Cylinder and Half-Height of Cone Contact, $0.087p$ | Height of Gage Cone Contact, $0.11547H = 0.1p$ | Width of Flat on GO Plug, $p/8 = 0.125p$ | Addendum of Ring Thread and Truncation of Internal Thread, $H/4 = 0.25H = 0.216506p$ | Width of Flat on GO Ring, $p/4 = 0.25p$ | Dedendum of Ring Thread and Addendum of Plug Thread, $0.375H = 0.3247p$ | Twice External Thread Height, $.075H = 0.649519p$ $h$ | Half Height of Sharp V-Thread, $H/2 = 0.5H = 0.43301p$ | Height of Sharp V-Thread, $H = 0.866025p$ | Double Height of Internal Thread, $1.25H = 1.082532p$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 80 | 0.012500 | 0.0034 | 0.00063 | 0.00109 | 0.00125 | 0.00156 | 0.00271 | 0.00312 | 0.00406 | 0.008119 | 0.00541 | 0.010825 | 0.01353 |
| 72 | .013889 | .0037 | .00069 | .00122 | .00139 | .00174 | .00301 | .00347 | .00451 | .009021 | .00601 | .012028 | .01504 |
| 64 | .015625 | .0040 | .00078 | .00136 | .00156 | .00195 | .00338 | .00391 | .00507 | .010149 | .00677 | .013532 | .01691 |
| 56 | .017857 | .0044 | .00089 | .00155 | .00179 | .00223 | .00387 | .00446 | .00580 | .011599 | .00773 | .015465 | .01933 |
| 48 | .020833 | .0049 | .00104 | .00181 | .00208 | .00260 | .00451 | .00521 | .00677 | .013532 | .00902 | .018042 | .02255 |
| 44 | .022727 | .0052 | .00114 | .00198 | .00227 | .00284 | .00492 | .00568 | .00738 | .014762 | .00984 | .019682 | .02460 |
| 40 | .025000 | .0056 | .00125 | .00218 | .00250 | .00312 | .00541 | .00625 | .00812 | .016238 | .01083 | .021651 | .02706 |
| 36 | .027778 | .0060 | .00139 | .00242 | .00278 | .00347 | .00601 | .00694 | .00902 | .018042 | .01203 | .024056 | .03007 |
| 32 | .031250 | .0065 | .00156 | .00272 | .00313 | .00391 | .00677 | .00781 | .01015 | .020297 | .01353 | .027063 | .03383 |
| 28 | .035714 | .0071 | .00179 | .00311 | .00357 | .00446 | .00773 | .00893 | .01160 | .023197 | .01546 | .030929 | .03866 |
| 27 | .037037 | .0073 | .00185 | .00322 | .00370 | .00463 | .00802 | .00926 | .01203 | .024056 | .01604 | .032075 | .04009 |
| 24 | .041667 | .0079 | .00208 | .00361 | .00417 | .00521 | .00902 | .01042 | .01353 | .027063 | .01804 | .036084 | .04511 |
| 20 | .050000 | .0090 | .00250 | .00435 | .00500 | .00625 | .01083 | .01250 | .01624 | .032476 | .02165 | .043301 | .05413 |
| 18 | .055556 | .0097 | .00278 | .00483 | .00556 | .00694 | .01203 | .01389 | .01804 | .036084 | .02406 | .048113 | .06014 |
| 16 | .062500 | .0105 | .00313 | .00544 | .00625 | .00781 | .01353 | .01562 | .02030 | .040595 | .02706 | .054127 | .06766 |
| 14 | .071429 | .0115 | .00357 | .00621 | .00714 | .00893 | .01546 | .01786 | .02320 | .046394 | .03093 | .061859 | .07732 |
| 13 | .076923 | .0122 | .00385 | .00669 | .00769 | .00962 | .01665 | .01923 | .02498 | .049963 | .03331 | .066617 | .08327 |
| 12 | .083333 | .0129 | .00417 | .00725 | .00833 | .01042 | .01804 | .02083 | .02706 | .054127 | .03608 | .072169 | .09021 |
| 11½ | .086957 | .0133 | .00435 | .00757 | .00870 | .01087 | .01883 | .02174 | .02824 | .056480 | .03765 | .075307 | .09413 |
| 11 | .090909 | .0137 | .00451 | .00791 | .00909 | .01136 | .01968 | .02273 | .02952 | .059047 | .03936 | .078730 | .09841 |
| 10 | .100000 | .0146 | .00500 | .00870 | .01000 | .01250 | .02165 | .02500 | .03248 | .064952 | .04330 | .086603 | .10825 |
| 9 | .111111 | .0158 | .00556 | .00967 | .01111 | .01389 | .02406 | .02778 | .03608 | .072169 | .04811 | .096225 | .12028 |
| 8 | .125000 | .0171 | .00625 | .01088 | .01250 | .01562 | .02706 | .03125 | .04059 | .081190 | .05413 | .108253 | .13532 |
| 7 | .142857 | .0188 | .00714 | .01243 | .01429 | .01786 | .03093 | .03571 | .04639 | .092788 | .06186 | .123718 | .15465 |
| 6 | .166667 | .0210 | .00833 | .01450 | .01667 | .02083 | .03608 | .04167 | .05413 | .108253 | .07217 | .144338 | .18042 |
| 5 | .200000 | .0239 | .01000 | .01740 | .02000 | .02500 | .04330 | .05000 | .06495 | .129904 | .08660 | .173205 | .21651 |
| 4½ | .222222 | .0258 | .01111 | .01933 | .02222 | .02778 | .04811 | .05556 | .07217 | .144338 | .09623 | .192450 | .24056 |
| 4 | .250000 | .0281 | .01250 | .02175 | .02500 | .03125 | .05413 | .06250 | .08119 | .162380 | .10825 | .216506 | .27063 |

**4.10.4 Thread Crests.** The major diameter of the GO segments, rolls, or fingers are equivalent to a $P/8$ flat with a plus gage tolerance. The thread crests shall be flat in an axial plane and parallel to the axis of the segment, roll, or finger.

**4.10.5 Pitch Cylinder.** The pitch cylinder of the segments, rolls, or fingers shall be round and straight within the gage pitch diameter limits specified in Table 6.

**4.10.6 Lead and Half-Angle Variations.** Lead and half-angle variations on thread of segments, rolls, and fingers shall be within the limits specified. See Table 6.

**4.10.7 Thread Roots**

**4.10.7.1** The minor diameter of the GO threaded segments, rolls, or fingers shall be cleared beyond a $P/8$ width of flat either by extension of the sides of the thread toward a sharp vee or by an undercut no greater than $P/8$ maximum width and approximately central.

**4.10.8 Runout.** The pitch and major cylinders of the threaded portion of the GO segments or rolls shall not exceed the runout as determined by measurements of runout (full-indicator movement) on each gaging member, with respect to pitch cylinder. Runout shall not exceed one-half X gage major diameter tolerance.

**4.10.9 Identification.** The gaging elements, segments, rolls, or fingers shall be identified by the nominal size and threads/in. When indicating gage is assembled with proper contacts, the gage should be tagged with the nominal size, threads/in., thread series, class, PD, and pitch diameter limits.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B PD.2175-.2224

## 4.11 Minimum-Material Indicating Thread Gages for Internal Thread (Table 2 — Gages 4.5 and 4.6)

**4.11.1 Purpose and Use.** The indicating thread gage inspects the minimum-material limit and size ($C_1$ and $C_2$, $D_1$ and $D_2$) of product internal threads. By the use of interchangeable segments, rolls, or balls, the gage is also used to check roundness and taper of pitch cylinder. Some types of indicating gages are set by using a thread-setting ring gage. See 4.7. Readings indicate the position of product thread within the tolerance range. Other types may be set with gage blocks and jaws, plain ring gages, or measuring machine.

**4.11.2 Basic Design.** Indicating gages have three contacts at 120 deg. or two contacts at 180 deg. Gages are made with segments, rolls, or ball design with cone and vee configuration (pitch diameter type) or ball only (thread groove diameter type). It is impractical to attempt checking internal product threads smaller than 3/16 in. with indicating gages.

**4.11.3 Thread Form.** The specifications for cone and vee segments are shown in Fig. 13; the ball design and thread groove diameter type are shown in Fig. 14.

**4.11.4** The major diameter of the cone and vee segments or rolls are made to manufacturer's standard. See Figs. 13 and 14.

**4.11.5 Identification.** The gaging elements, segments, rolls, or ball fingers should be marked with nominal size and threads/in. When gage is assembled with proper gaging contacts, the indicating gage should be tagged with the nominal size, threads/in., thread series, class, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B PD.2224

## 4.12 Indicating Runout Thread Gage for Internal Thread (Table 2 — Gage 4.7)

**4.12.1 Purpose and Use.** This indicating gage inspects the runout of the minor diameter to the pitch diameter of the product internal thread. Readings indicate the position of product minor diameter to the pitch diameter, $M_1$, within the tolerance specified.

**4.12.2 Basic Design.** Indicating gages have three contacts, one plain and two threaded, at 120 deg.; or two contacts, one plain and one threaded, at 180 deg. See Fig. 15, sketch (a). The range of segments is 3/16 in. and larger; the range of rolls is 1-3/4 in. and larger.

The ball-type indicating gage has two balls on one contact engaging two threads, and one contact has a plain prism shaped finger 180 deg. apart from the ball contact. See Fig. 15, sketch (b): the range is 5/8 in. and larger.

The indicating gage is set by a GO setting ring gage (see Fig. 8) with plain gaging contact on minor diameter of thread ring gage and the thread contact on pitch diameter of ring thread gage.

**FIG. 13 INDICATING THREAD GAGES — MINIMUM-MATERIAL PITCH DIAMETER LIMIT AND SIZE — CONE AND VEE**

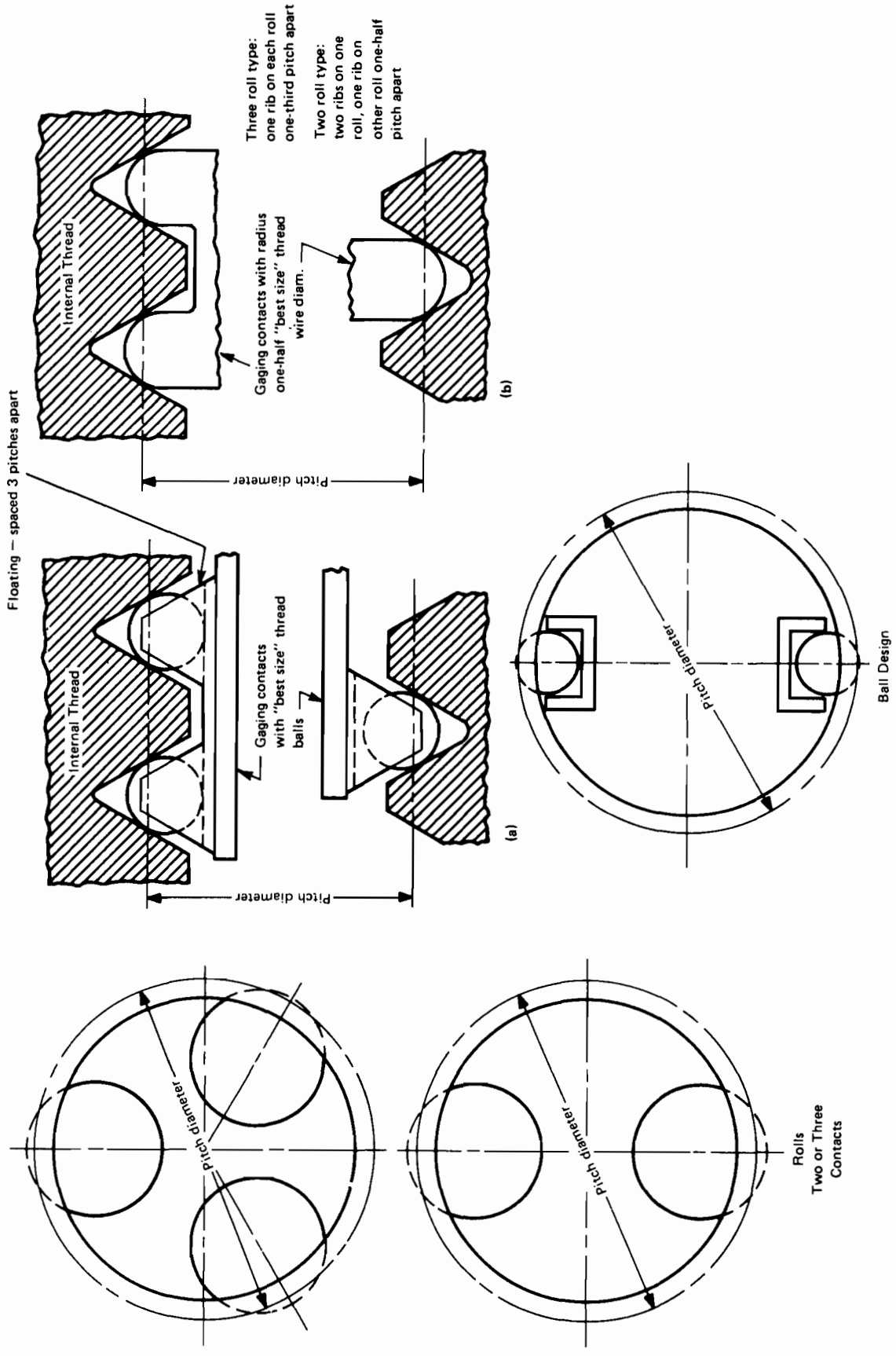



**FIG. 14 INDICATING THREAD GAGES — MINIMUM-MATERIAL PITCH DIAMETER LIMIT AND SIZE — BALL AND RADIUS**

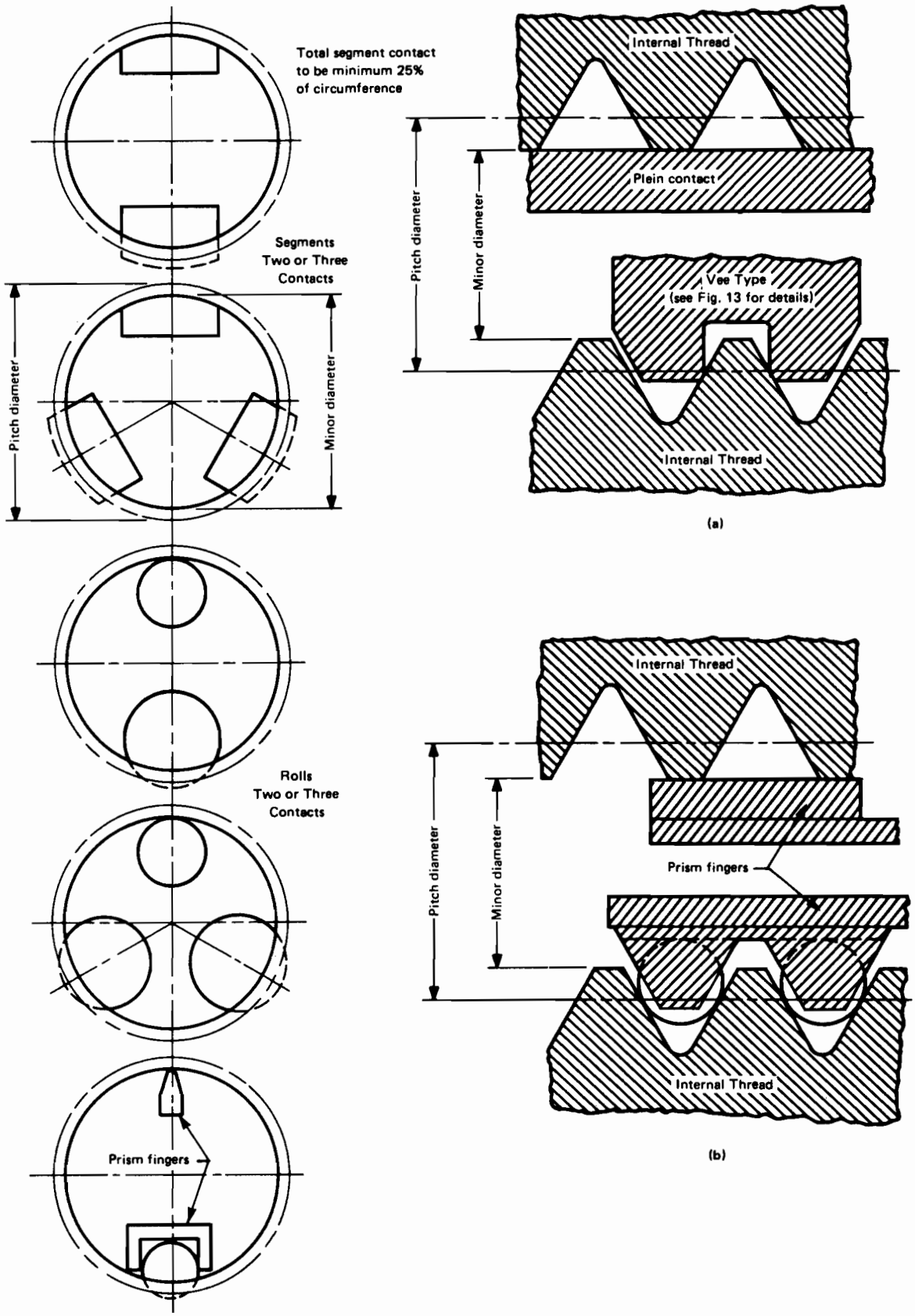



FIG. 15 INDICATING THREAD GAGES — DIAMETER RUNOUT — MINOR TO PITCH

**4.12.3 Thread Form.** The specifications for thread form on vee segments or rolls are summarized in Fig. 15. Plain contacts have line bearing on minor diameter of product. Balls are "best size" thread ball contacting thread at pitch line.

**4.12.4 Thread Crests.** The thread crests shall be flat in an axial plane and parallel to axis of segment or roll.

**4.12.5 Lead and Half-Angle Variations.** Lead and half-angle variations on threaded segments or rolls shall be within the limits specified. See Table 6.

**4.12.6 Identification.** The gaging elements, segments, rolls, or ball finger should be marked with the nominal size and threads/in. When gage is assembled with proper gaging contacts, the indicating gage should be tagged with the nominal size, threads/in., thread series, class, and RUNOUT.

EXAMPLE:
1/4-20 (or .250-20) UNC-2B RUNOUT

## 4.13 Differential Gaging (Table 2 — Gage 4.8)

**4.13.1** The concept of differential gaging for product internal screw threads makes use of fundamental geometric theorems that relate directly to size, position, and form.

For differential gaging, two methods are used for measuring screw thread size:

(*a*) GO functional size

(*b*) pitch diameter (or thread groove diameter)

Only when a screw thread has perfect position and form [i.e., zero variation in lead (including helical path), flank angle, taper, and roundness] are these two measurements equal. Differential gaging is a variables method of in-process inspection, final conformance inspection, or both, that provides the actual numerical values for both GO functional and pitch diameter sizes. These are the two extreme sizes of any product screw thread. One of the sizes, pitch diameter, is the size of the thread pitch diameter with essentially zero variation in all other thread elements, while the other size, GO functional size, is the size of the thread with the effects of all variations in all other thread elements added to the pitch diameter. The numerical difference between these two sizes is called a *cumulative thread element variation differential* and represents the diametral effect of the total amount of thread element variations.

The inspection process that further refines the total amount of thread element variation so that the amount of variation for each individual element becomes known is called *single thread element variation differential.*

**4.13.2 Cumulative Thread Element Variation Differential.** Indicating gages have either three contacts at 120 deg. spacing or two contacts at 180 deg. spacing. The indicating gages with segments or rolls as shown in Figs. 12 and 16, sketch (a) give the functional size indicating reading, Z. The indicating gages with cone and vee segments or rolls with one thread pitch engagement at pitch diameter line, Fig. 13, and thread groove diameter type, Fig. 14, sketch (a) or (b), or both, shown in Fig. 16, sketches (c) and (d), give the pitch diameter size indicating reading, X. The difference in the indicator readings, X − Z, between the two types of gages gives the cumulative form differential reading which corresponds to the pitch diameter equivalent, $\Delta D_2 C_2$, for the combination of lead, helix, flank angle, roundness, and taper variations on the product thread. See Fig. 16.

### 4.13.3 Single Thread Element Variation Differential

**4.13.3.1 Lead (Helix) Differential Reading.** The indicating gage reading, Y, using the full-form thread segments or rolls with one thread pitch engagement, similar to Figs. 12 and 16, sketch (b), is compared to the reading, Z, using the functional size gage shown in Figs. 12 and 16, sketch (a). The difference between the measured values, Y − Z, is the lead differential reading which corresponds to the pitch diameter equivalent, $\Delta D_2 \lambda$, for the lead and helix variation of the product thread.

**4.13.3.2 Flank Angle Differential Reading.** The indicating gage reading, X, using segments or rolls with cone and vee design, Figs. 13 and 16, sketch (c), is compared to reading, Y, using the full-form thread segments or rolls, similar to Figs. 12 and 16, sketch (b). Both designs have one thread pitch engagement. The difference between the measured values, X − Y, is the flank angle differential reading which corresponds approximately to the pitch diameter equivalent, $\Delta D_2 \propto$, for the combined flank angle variation on the product thread.

**4.13.3.3 Roundness and Taper Differential Readings.** By the use of full-form thread segments or rolls with one thread pitch engagement, similar to Figs. 12 and 16, sketch (b); cone and vee segments or rolls, Figs. 13 and 16, sketch (c); or thread groove diameter type, Figs. 14, sketch (a) or (b), and 16, sketch (d), the roundness and taper of pitch cylinder is

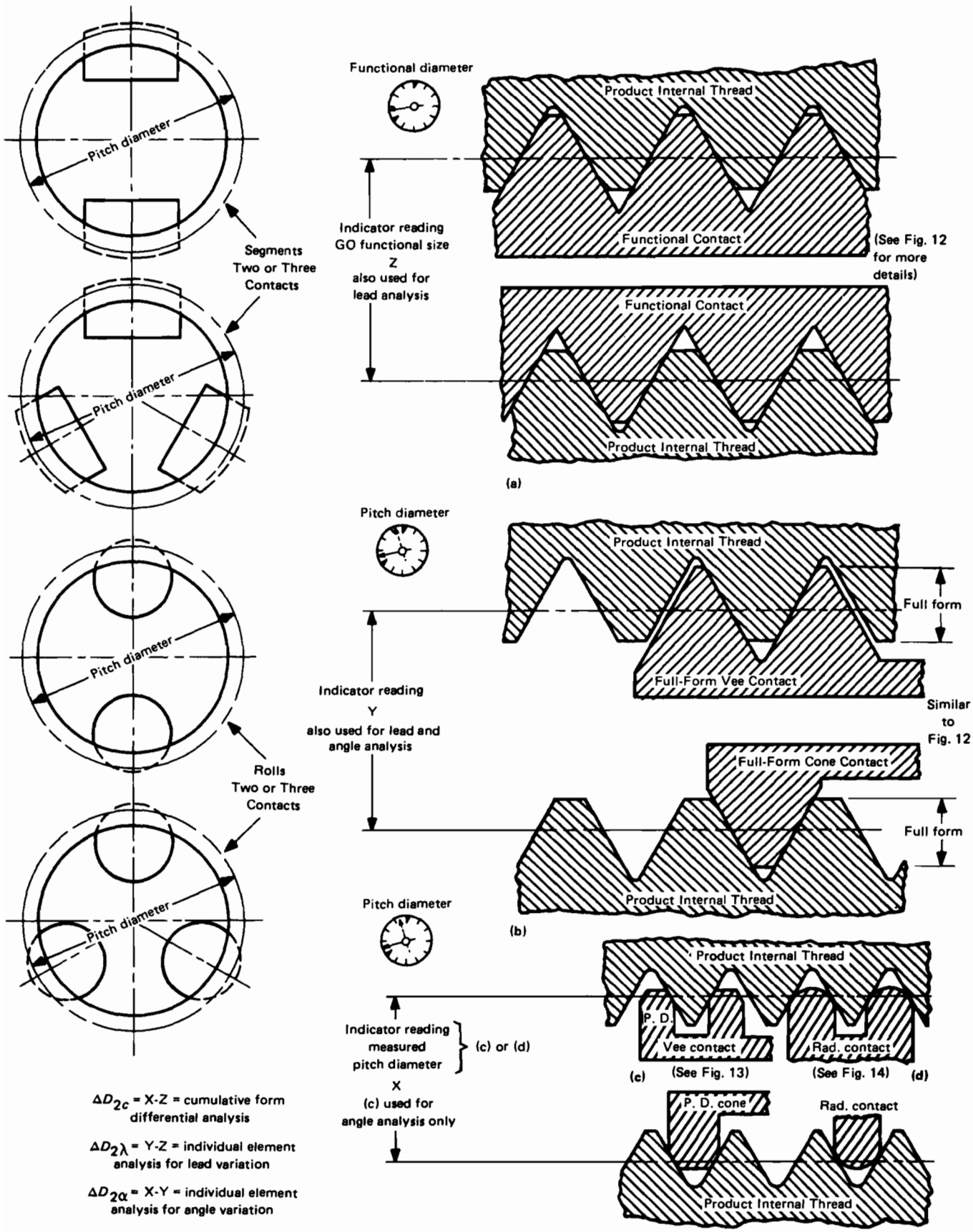



**FIG. 16 INDICATING THREAD GAGES — DIFFERENTIAL GAGING**

checked. Rotate the product between contacts at different axial locations on thread for maximum difference in roundness and taper readings. Two contacts spaced 180 deg. apart give even lobing out-of-round measurement. Three contacts spaced 120 deg. apart give odd lobing out-of-round measurements.

**4.13.4 Thread Form.** The functional segments or rolls, Fig. 16, sketch (a), are described in 4.10. The full-form one thread vee segment or roll, Figs. 12 and 16, sketch (b) upper contact, has a depth of thread equivalent to the functional type, but relieved on the outside thread flanks. The full-form cone segment or roll, Figs. 12 and 16, sketch (b) lower contact, has a $P/8$ flat on outside diameter. The cone and vee segments or rolls, Fig. 16, sketch (c), are described and shown in Fig. 13. Thread groove diameter type, Fig. 16, sketch (d), is described and shown in Fig. 14.

**4.13.5 Identification.** The gaging elements, segments, or rolls should be identified by nominal size and threads/in. Indicating gages, assembled with proper contacts, should be tagged with nominal size, threads/in., thread series, class, and the type of differential reading specified above.

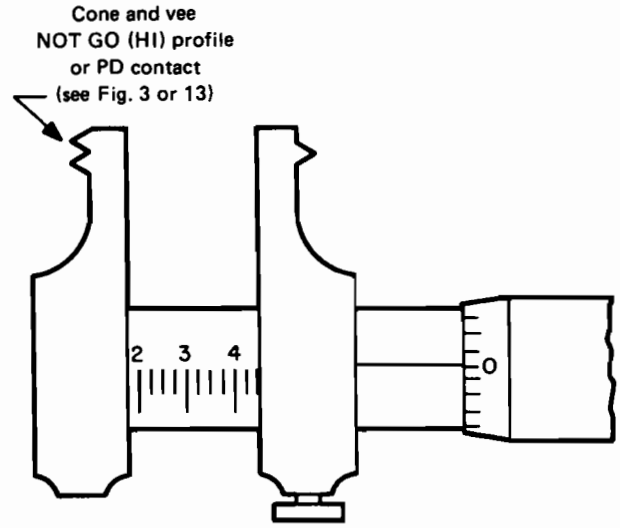
EXAMPLE:
1/4-20 (or .250-20) UNC-2B
Flank angle differential variation

## 4.14 Pitch Micrometers (Table 2 — Gages 6 and 7)

**4.14.1 Purpose and Use.** Inside micrometers, caliper type, are direct reading measuring instruments. Cone and vee contact points are modified for a NOT GO (HI) profile or pitch diameter contact only. See Fig. 17.

## 4.15 Thread-Measuring Balls (Table 2 — Gage 8)

**4.15.1 Purpose and Use.** One indicating gage using thread-measuring balls as gaging elements inspects the pitch diameter of the internal thread. It is shown in Fig. 14, sketch (a). Special fixturing and ball probes may be required when using a three-axis coordinate measuring machine for internal measurement of pitch diameter. See Appendix B9 and B10 for more information on thread-measuring balls.




Inside Micrometer
Caliper Type
(Ref. Table 2 — $B_1$, $B_2$, $C_1$, $C_2$, $E_1$, $E_2$, $G_1$, $G_2$)

**FIG. 17 INSIDE MICROMETER, CALIPER TYPE**

## 4.16 Optical Comparator and Toolmaker's Microscope (Table 2 — Gage 9)

**4.16.1 Purpose and Use.** The optical comparator magnifies and projects the thread profile on a screen. Internal threads are checked using cast replicas. For best profile image, the threaded item is positioned so that the light is aligned with the thread lead angle. Since the thread profile is defined in a plane containing the axis, a correction factor must be added to the measured flank angle observed normal to the lead angle. For most standard single lead threads, the correction factor is less than 0 deg., 5 min.

Optical comparators are generally fitted with lenses providing various magnifications between 10X and 100X. Profile dimensions are checked using appropriate linear and angular scales on the machine and by application of thread profile, radius, and other overlay charts. Flank angles, thread crest and root flats, root radius, other groove and ridge dimensions, and axial plane pitch and lead may be checked. Major, minor, and pitch diameters are identified, then measured using table traverse readouts.

**4.16.2** The toolmaker's microscope is similar in function to the optical comparator but does not include screen projection or overlay charts. Magnifi-

cations are generally lower than those of optical comparators. Profile reticules are used in place of charts.

### 4.17 Profile Tracing Instrument (Table 2 — Gage 10)

**4.17.1 Purpose and Use.** The instrument inspects thread contour to an accuracy of 0.0002 in. for 1 in. of horizontal and 0.100 in. of vertical travel at 100X magnification.

The tracing on the chart paper may be analyzed for elements of the thread profile, including depth, crest width, lead, angle, and radius at root of thread.

The instrument is generally able to check internal threads of 0.1875 in. and larger at magnifications from 5X to 100X.

### 4.18 Surface Roughness Equipment (Table 2 — Gage 14)

**4.18.1 Purpose and Use.** Measurement of surface roughness on screw thread flanks is usually made with an instrument which traverses a radiused stylus across the lay. The stylus displacement due to the surface irregularities is electronically amplified and the meter reading displays the arithmetical average roughness height in microinches (see ANSI B46.1, Surface Texture: Surface Roughness, Waviness, and Lay). Some instruments produce a chart of the traced path which shows the peak-to-valley heights of the surface irregularities. Special fixturing is required to position and guide stylus over thread surface.

### 4.19 Roundness Equipment (Table 2 — Gage 15)

**4.19.1 Purpose and Use.** There are two types of precision roundness measuring instruments: precision rotary tables and precision spindles. A special stylus coupled to an electric unit records the out-of-roundness on a circular chart as it traces around the internal cylindrical surface of the workpiece. The instrument provides a series of magnifications for stylus displacement, a filtering system for isolating lobing from surface irregularities, various means for centering the amplified stylus trace on the polar chart, and a selection of rotating speeds. For details on measuring and for other methods for checking roundness, see ANSI B89.3.1, Measurement of Out-of-Roundness.

### 4.20 Miscellaneous Gages and Gaging Equipment

**4.20.1** The description of internal gages in 4.1 through 4.19 is definitely not a complete catalog of the various types available for inspection purposes. The gages not described above may be used provided they adhere to the standard thread practice noted in this Standard (i.e., truncation, form of thread, tolerance, etc.) and have producer and consumer agreement.

## 5 TYPES OF GAGES FOR PRODUCT EXTERNAL THREAD

### 5.1 GO Working Thread Ring Gages (Table 1 — Gage 1.1)

**5.1.1 Purpose and Use.** The GO thread ring gage inspects the maximum-material GO functional limit, $A_1$, of product external thread. The GO thread ring gage when properly set to its respective calibrated thread-setting plug represents the maximum-material GO functional limit of the product external thread, and its purpose is to assure interchangeable assembly of maximum-material mating parts.

Adjustable GO thread ring gages must be set to the applicable W (see Table 5, Note 2) tolerance-setting plugs. The product thread must freely enter the GO thread ring gage for the entire length of the threaded portion. The GO thread ring gage is a cumulative check of all thread elements except the major diameter.

**5.1.2 Basic Design.** The maximum-material limit or GO thread ring gage is made to the prescribed maximum-material limit of the product thread, and the gaging length is equal to the thickness of the thread ring gage.

**5.1.3 Gage Blanks.** For practical and economic reasons, the designs and thicknesses of thread ring gages have been standardized for various size ranges and pitches (see ANSI B47.1 or Table A4).

**5.1.4 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 18.

**5.1.5 Thread Crests.** The minor diameter of the GO thread ring gage shall be equal to the maximum pitch diameter of the product external thread minus $H/2$ with a minus gage tolerance. This corresponds to a width of flat of $P/4$. The thread crests shall be flat in an axial section and parallel to the axis.



*(Section 5 continues on p. 127.)*

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0-80 or 0.060-80 | UNF | 2A | 0.0514 | 0.0460 | 0.0496 | 0.0469 | 0.0595 | 0.0563 | 0.0600 | 0.0519 | 0.0596 | 0.0542 | 0.0465 | 0.0514 | 2B |
| | | | .0512 | .0457 | .0498 | .0472 | .0594 | .0564 | .0603 | .0521 | .0593 | .0540 | .0466 | .0513 | |
| | | 3A | .0519 | .0465 | .0506 | .0479 | .0600 | .0568 | .0600 | .0519 | .0590 | .0536 | .0465 | .0514 | 3B |
| | | | .0517 | .0462 | .0508 | .0482 | .0599 | .0569 | .0603 | .0521 | .0587 | .0534 | .0466 | .0513 | |
| 1-64 or 0.073-64 | UNC | 2A | .0623 | .0555 | .0603 | .0569 | .0724 | .0686 | .0730 | .0629 | .0723 | .0655 | .0561 | .0623 | 2B |
| | | | .0621 | .0551 | .0605 | .0573 | .0723 | .0687 | .0734 | .0631 | .0719 | .0653 | .0562 | .0622 | |
| | | 3A | .0629 | .0561 | .0614 | .0580 | .0730 | .0692 | .0730 | .0629 | .0716 | .0648 | .0561 | .0623 | 3B |
| | | | .0627 | .0557 | .0616 | .0584 | .0729 | .0693 | .0734 | .0631 | .0712 | .0646 | .0562 | .0622 | |
| 1-72 or 0.073-72 | UNF | 2A | .0634 | .0574 | .0615 | .0585 | .0724 | .0689 | .0730 | .0640 | .0725 | .0665 | .0580 | .0635 | 2B |
| | | | .0632 | .0571 | .0617 | .0588 | .0723 | .0690 | .0733 | .0642 | .0722 | .0663 | .0581 | .0634 | |
| | | 3A | .0640 | .0580 | .0626 | .0596 | .0730 | .0695 | .0730 | .0640 | .0719 | .0659 | .0580 | .0635 | 3B |
| | | | .0638 | .0577 | .0628 | .0599 | .0729 | .0696 | .0733 | .0642 | .0716 | .0657 | .0581 | .0634 | |
| 2-56 or 0.086-56 | UNC | 2A | .0738 | .0661 | .0717 | .0678 | .0854 | .0813 | .0860 | .0744 | .0849 | .0772 | .0667 | .0737 | 2B |
| | | | .0736 | .0657 | .0719 | .0682 | .0853 | .0814 | .0864 | .0746 | .0845 | .0770 | .0668 | .0736 | |
| | | 3A | .0744 | .0667 | .0728 | .0689 | .0860 | .0819 | .0860 | .0744 | .0842 | .0765 | .0667 | .0737 | 3B |
| | | | .0742 | .0663 | .0730 | .0693 | .0859 | .0820 | .0864 | .0746 | .0838 | .0763 | .0668 | .0736 | |
| 2-64 or 0.086-64 | UNF | 2A | .0753 | .0685 | .0733 | .0699 | .0854 | .0816 | .0860 | .0759 | .0854 | .0786 | .0691 | .0753 | 2B |
| | | | .0751 | .0681 | .0735 | .0703 | .0853 | .0817 | .0864 | .0761 | .0850 | .0784 | .0692 | .0752 | |
| | | 3A | .0759 | .0691 | .0744 | .0710 | .0860 | .0822 | .0860 | .0759 | .0847 | .0779 | .0691 | .0753 | 3B |
| | | | .0757 | .0687 | .0746 | .0714 | .0859 | .0823 | .0864 | .0761 | .0843 | .0777 | .0692 | .0752 | |
| 3-48 or 0.099-48 | UNC | 2A | .0848 | .0758 | .0825 | .0780 | .0983 | .0938 | .0990 | .0855 | .0975 | .0885 | .0764 | .0845 | 2B |
| | | | .0846 | .0754 | .0827 | .0784 | .0982 | .0939 | .0994 | .0857 | .0971 | .0883 | .0765 | .0844 | |
| | | 3A | .0855 | .0765 | .0838 | .0793 | .0990 | .0945 | .0990 | .0855 | .0967 | .0877 | .0764 | .0845 | 3B |
| | | | .0853 | .0761 | .0840 | .0797 | .0989 | .0946 | .0994 | .0857 | .0963 | .0875 | .0765 | .0844 | |
| 3-56 or 0.099-56 | UNF | 2A | .0867 | .0790 | .0845 | .0806 | .0983 | .0942 | .0990 | .0874 | .0979 | .0902 | .0797 | .0865 | 2B |
| | | | .0865 | .0786 | .0847 | .0810 | .0982 | .0943 | .0994 | .0876 | .0975 | .0900 | .0798 | .0864 | |
| | | 3A | .0874 | .0797 | .0858 | .0819 | .0990 | .0949 | .0990 | .0874 | .0972 | .0895 | .0797 | .0865 | 3B |
| | | | .0872 | .0793 | .0860 | .0823 | .0989 | .0950 | .0994 | .0876 | .0968 | .0893 | .0798 | .0864 | |
| 4-40 or 0.112-40 | UNC | 2A | .0950 | .0842 | .0925 | .0871 | .1112 | .1061 | .1120 | .0958 | .1099 | .0991 | .0849 | .0939 | 2B |
| | | | .0948 | .0838 | .0927 | .0875 | .1111 | .1062 | .1124 | .0960 | .1095 | .0989 | .0850 | .0938 | |
| | | 3A | .0958 | .0850 | .0939 | .0885 | .1120 | .1069 | .1120 | .0958 | .1090 | .0982 | .0849 | .0939 | 3B |
| | | | .0956 | .0846 | .0941 | .0889 | .1119 | .1070 | .1124 | .0960 | .1086 | .0980 | .0850 | .0938 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4-48 or 0.112-48 | UNF | 2A | 0.0978 | 0.0888 | 0.0954 | 0.0909 | 0.1113 | 0.1068 | 0.1120 | 0.0985 | 0.1106 | 0.1016 | 0.0894 | 0.0968 | 2B |
| | | | .0976 | .0884 | .0956 | .0913 | .1112 | .1069 | .1124 | .0987 | .1102 | .1014 | .0895 | .0967 | |
| | | 3A | .0985 | .0895 | .0967 | .0922 | .1120 | .1075 | .1120 | .0985 | .1098 | .1008 | .0894 | .0968 | 3B |
| | | | .0983 | .0891 | .0969 | .0926 | .1119 | .1076 | .1124 | .0987 | .1094 | .1006 | .0895 | .0967 | |
| 5-40 or 0.125-40 | UNC | 2A | .1080 | .0972 | .1054 | .1000 | .1242 | .1191 | .1250 | .1088 | .1229 | .1121 | .0979 | .1062 | 2B |
| | | | .1078 | .0968 | .1056 | .1004 | .1241 | .1192 | .1254 | .1090 | .1225 | .1119 | .0980 | .1061 | |
| | | 3A | .1088 | .0980 | .1069 | .1015 | .1250 | .1199 | .1250 | .1088 | .1221 | .1113 | .0979 | .1062 | 3B |
| | | | .1086 | .0976 | .1071 | .1019 | .1249 | .1200 | .1254 | .1090 | .1217 | .1111 | .0980 | .1061 | |
| 5-44 or 0.125-44 | UNF | 2A | .1095 | .0997 | .1070 | .1021 | .1243 | .1195 | .1250 | .1102 | .1232 | .1134 | .1004 | .1079 | 2B |
| | | | .1093 | .0993 | .1072 | .1025 | .1242 | .1196 | .1254 | .1104 | .1228 | .1132 | .1005 | .1078 | |
| | | 3A | .1102 | .1004 | .1083 | .1034 | .1250 | .1202 | .1250 | .1102 | .1224 | .1126 | .1004 | .1079 | 3B |
| | | | .1100 | .1000 | .1085 | .1038 | .1249 | .1203 | .1254 | .1104 | .1220 | .1124 | .1005 | .1078 | |
| 6-32 or 0.138-32 | UNC | 2A | .1169 | .1034 | .1141 | .1073 | .1372 | .1312 | .1380 | .1177 | .1349 | .1214 | .1040 | .1140 | 2B |
| | | | .1166 | .1029 | .1144 | .1078 | .1371 | .1313 | .1385 | .1180 | .1344 | .1211 | .1041 | .1139 | |
| | | 3A | .1177 | .1042 | .1156 | .1088 | .1380 | .1320 | .1380 | .1177 | .1339 | .1204 | .1040 | .1140 | 3B |
| | | | .1174 | .1037 | .1159 | .1093 | .1379 | .1321 | .1385 | .1180 | .1334 | .1201 | .1041 | .1139 | |
| 6-40 or 0.138-40 | UNF | 2A | .1210 | .1102 | .1184 | .1130 | .1372 | .1321 | .1380 | .1218 | .1360 | .1252 | .1110 | .1190 | 2B |
| | | | .1208 | .1098 | .1186 | .1134 | .1371 | .1322 | .1384 | .1220 | .1356 | .1250 | .1111 | .1189 | |
| | | 3A | .1218 | .1110 | .1198 | .1144 | .1380 | .1329 | .1380 | .1218 | .1351 | .1243 | .1110 | .1186 | 3B |
| | | | .1216 | .1106 | .1200 | .1148 | .1379 | .1330 | .1384 | .1220 | .1347 | .1241 | .1111 | .1185 | |
| 8-32 or 0.164-32 | UNC | 2A | .1428 | .1293 | 1399 | .1331 | .1631 | .1571 | .1640 | .1437 | .1610 | .1475 | .1300 | .1390 | 2B |
| | | | .1425 | .1288 | .1402 | .1336 | .1630 | .1572 | .1645 | .1440 | .1605 | .1472 | .1301 | .1389 | |
| | | 3A | .1437 | .1302 | .1415 | .1347 | .1640 | .1580 | .1640 | .1437 | .1600 | .1465 | .1300 | .1389 | 3B |
| | | | .1434 | .1297 | .1418 | .1352 | .1639 | .1581 | .1645 | .1440 | .1595 | .1462 | .1301 | .1388 | |
| 8-36 or 0.164-36 | UNF | 2A | .1452 | .1332 | .1424 | .1364 | .1632 | .1577 | .1640 | .1460 | .1616 | .1496 | .1340 | .1420 | 2B |
| | | | .1450 | .1328 | .1426 | .1368 | .1631 | .1578 | .1644 | .1462 | .1612 | .1494 | .1341 | .1419 | |
| | | 3A | .1460 | .1340 | .1439 | .1379 | .1640 | .1585 | .1640 | .1460 | .1607 | .1487 | .1340 | .1416 | 3B |
| | | | .1458 | .1336 | .1441 | .1383 | .1639 | .1586 | .1644 | .1462 | .1603 | .1485 | .1341 | .1415 | |
| 10-24 or 0.190-24 | UNC | 2A | .1619 | .1439 | .1586 | .1496 | .1890 | .1818 | .1900 | .1629 | .1852 | .1672 | .1450 | .1560 | 2B |
| | | | .1616 | .1434 | .1589 | .1501 | .1889 | .1819 | .1905 | .1632 | .1847 | .1669 | .1451 | .1559 | |
| | | 3A | .1629 | .1449 | .1604 | .1514 | .1900 | .1828 | .1900 | .1629 | .1841 | .1661 | .1450 | .1555 | 3B |
| | | | .1626 | .1444 | .1607 | .1519 | .1899 | .1829 | .1905 | .1632 | .1836 | .1658 | .1451 | .1554 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 10-32 or 0.190-32 | UNF | 2A | 0.1688 | 0.1553 | 0.1658 | 0.1590 | 0.1891 | 0.1831 | 0.1900 | 0.1697 | 0.1871 | 0.1736 | 0.1560 | 0.1640 | 2B |
| | | | .1685 | .1548 | .1661 | .1595 | .1890 | .1832 | .1905 | .1700 | .1866 | .1733 | .1561 | .1639 | |
| | | 3A | .1697 | .1562 | .1674 | .1606 | .1900 | .1840 | .1900 | .1697 | .1861 | .1726 | .1560 | .1641 | 3B |
| | | | .1694 | .1557 | .1677 | .1611 | .1899 | .1841 | .1905 | .1700 | .1856 | .1723 | .1561 | .1640 | |
| 12-24 or 0.216-24 | UNC | 2A | .1879 | .1699 | .1845 | .1755 | .2150 | .2078 | .2160 | .1889 | .2113 | .1933 | .1710 | .1810 | 2B |
| | | | .1876 | .1694 | .1848 | .1760 | .2149 | .2079 | .2165 | .1892 | .2108 | .1930 | .1711 | .1809 | |
| | | 3A | .1889 | .1709 | .1863 | .1773 | .2160 | .2088 | .2160 | .1889 | .2102 | .1922 | .1710 | .1807 | 3B |
| | | | .1886 | .1704 | .1866 | .1778 | .2159 | .2089 | .2165 | .1892 | .2097 | .1919 | .1711 | .1806 | |
| 12-28 or 0.216-28 | UNF | 2A | .1918 | .1763 | .1886 | .1809 | .2150 | .2085 | .2160 | .1928 | .2125 | .1970 | .1770 | .1860 | 2B |
| | | | .1915 | .1758 | .1889 | .1814 | .2149 | .2086 | .2165 | .1931 | .2120 | .1967 | .1771 | .1859 | |
| | | 3A | .1928 | .1773 | .1904 | .1827 | .2160 | .2095 | .2160 | .1928 | .2114 | .1959 | .1770 | .1857 | 3B |
| | | | .1925 | .1768 | .1907 | .1832 | .2159 | .2096 | .2165 | .1931 | .2109 | .1956 | .1771 | .1856 | |
| 12-32 or 0.216-32 | UNEF | 2A | .1948 | .1813 | .1917 | .1849 | .2151 | .2091 | .2160 | .1957 | .2133 | .1998 | .1820 | .1900 | 2B |
| | | | .1945 | .1808 | .1920 | .1854 | .2150 | .2092 | .2165 | .1960 | .2128 | .1995 | .1821 | .1899 | |
| | | 3A | .1957 | .1822 | .1933 | .1865 | .2160 | .2100 | .2160 | .1957 | .2123 | .1988 | .1820 | .1895 | 3B |
| | | | .1954 | .1817 | .1936 | .1870 | .2159 | .2101 | .2165 | .1960 | .2118 | .1985 | .1821 | .1894 | |
| ¼-20 or 0.250-20 | UNC | 1A | .2164 | .1947 | .2108 | .2000 | .2489 | .2367 | .2500 | .2175 | .2465 | .2248 | .1960 | .2070 | 1B |
| | | | .2161 | .1942 | .2111 | .2005 | .2488 | .2368 | .2505 | .2178 | .2460 | .2245 | .1961 | .2069 | |
| | | 2A | .2164 | .1947 | .2127 | .2019 | .2489 | .2408 | .2500 | .2175 | .2441 | .2224 | .1960 | .2070 | 2B |
| | | | .2161 | .1942 | .2130 | .2024 | .2488 | .2409 | .2505 | .2178 | .2436 | .2221 | .1961 | .2069 | |
| | | 3A | .2175 | .1958 | .2147 | .2039 | .2500 | .2419 | .2500 | .2175 | .2428 | .2211 | .1960 | .2067 | 3B |
| | | | .2172 | .1953 | .2150 | .2044 | .2499 | .2420 | .2505 | .2178 | .2423 | .2208 | .1961 | .2066 | |
| ¼-28 or 0.250-28 | UNF | 1A | .2258 | .2103 | .2208 | .2131 | .2490 | .2392 | .2500 | .2268 | .2488 | .2333 | .2110 | .2200 | 1B |
| | | | .2255 | .2098 | .2211 | .2136 | .2489 | .2393 | .2505 | .2271 | .2483 | .2330 | .2111 | .2199 | |
| | | 2A | .2258 | .2103 | .2225 | .2148 | .2490 | .2425 | .2500 | .2268 | .2466 | .2311 | .2110 | .2200 | 2B |
| | | | .2255 | .2098 | .2228 | .2153 | .2489 | .2426 | .2505 | .2271 | .2461 | .2308 | .2111 | .2199 | |
| | | 3A | .2268 | .2113 | .2243 | .2166 | .2500 | .2435 | .2500 | .2268 | .2455 | .2300 | .2110 | .2190 | 3B |
| | | | .2265 | .2108 | .2246 | .2171 | .2499 | .2436 | .2505 | .2271 | .2450 | .2297 | .2111 | .2189 | |
| ¼-32 or 0.250-32 | UNEF | 2A | .2287 | .2152 | .2255 | .2187 | .2490 | .2430 | .2500 | .2297 | .2474 | .2339 | .2160 | .2240 | 2B |
| | | | .2284 | .2147 | .2258 | .2192 | .2489 | .2431 | .2505 | .2300 | .2469 | .2336 | .2161 | .2239 | |
| | | 3A | .2297 | .2162 | .2273 | .2205 | .2500 | .2440 | .2500 | .2297 | .2463 | .2328 | .2160 | .2229 | 3B |
| | | | .2294 | .2157 | .2276 | .2210 | .2499 | .2441 | .2505 | .2300 | .2458 | .2325 | .2161 | .2228 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5/16-18 or 0.3125-18 | UNC | 1A | 0.2752 | 0.2511 | 0.2691 | 0.2571 | 0.3113 | 0.2982 | 0.3125 | 0.2764 | 0.3084 | 0.2843 | 0.2520 | 0.2650 | 1B |
| | | | .2749 | .2506 | .2694 | .2576 | .3112 | .2983 | .3130 | .2767 | .3079 | .2840 | .2521 | .2649 | |
| | | 2A | .2752 | .2511 | .2712 | .2592 | .3113 | .3026 | .3125 | .2764 | .3058 | .2817 | .2520 | .2650 | 2B |
| | | | .2749 | .2506 | .2715 | .2597 | .3112 | .3027 | .3130 | .2767 | .3053 | .2814 | .2521 | .2649 | |
| | | 3A | .2764 | .2523 | .2734 | .2614 | .3125 | .3038 | .3125 | .2764 | .3044 | .2803 | .2520 | .2630 | 3B |
| | | | .2761 | .2518 | .2737 | .2619 | .2124 | .3039 | .3130 | .2767 | .3039 | .2800 | .2521 | .2629 | |
| 5/16-20 or 0.3125-20 | UN | 2A | .2788 | .2571 | .2748 | .2640 | .3113 | .3032 | .3125 | .2800 | .3069 | .2852 | .2580 | .2700 | 2B |
| | | | .2785 | .2566 | .2751 | .2645 | .3112 | .3033 | .3130 | .2803 | .3064 | .2849 | .2581 | .2699 | |
| | | 3A | .2800 | .2583 | .2770 | .2662 | .3125 | .3044 | .3125 | .2800 | .3056 | .2839 | .2580 | .2680 | 3B |
| | | | .2797 | .2578 | .2773 | .2667 | .3124 | .3045 | .3130 | .2803 | .3051 | .2836 | .2581 | .2679 | |
| 5/16-24 or 0.3125-24 | UNF | 1A | .2843 | .2663 | .2788 | .2698 | .3114 | .3006 | .3125 | .2854 | .3105 | .2925 | .2670 | .2770 | 1B |
| | | | .2840 | .2658 | .2791 | .2703 | .3113 | .3007 | .3130 | .2857 | .3100 | .2922 | .2671 | .2769 | |
| | | 2A | .2843 | .2663 | .2806 | .2716 | .3114 | .3042 | .3125 | .2854 | .3082 | .2902 | .2670 | .2770 | 2B |
| | | | .2840 | .2658 | .2809 | .2721 | .3113 | .3043 | .3130 | .2857 | .3077 | .2899 | .2671 | .2769 | |
| | | 3A | .2854 | .2674 | .2827 | .2737 | .3125 | .3053 | .3125 | .2854 | .3070 | .2890 | .2670 | .2754 | 3B |
| | | | .2851 | .2669 | .2830 | .2742 | .3124 | .3054 | .3130 | .2857 | .3065 | .2887 | .2671 | .2753 | |
| 5/16-28 or 0.3125-28 | UN | 2A | .2883 | .2728 | .2849 | .2772 | .3115 | .3050 | .3125 | .2893 | .3092 | .2937 | .2740 | .2820 | 2B |
| | | | .2880 | .2723 | .2852 | .2777 | .3114 | .3051 | .3130 | .2896 | .3087 | .2934 | .2741 | .2819 | |
| | | 3A | .2893 | .2738 | .2867 | .2790 | .3125 | .3060 | .3125 | .2893 | .3081 | .2926 | .2740 | .2807 | 3B |
| | | | .2890 | .2733 | .2870 | .2795 | .3124 | .3061 | .3130 | .2896 | .3076 | .2923 | .2741 | .2806 | |
| 5/16-32 or 0.3125-32 | UNEF | 2A | .2912 | .2777 | .2880 | .2812 | .3115 | .3055 | .3125 | .2922 | .3099 | .2964 | .2790 | .2860 | 2B |
| | | | .2909 | .2772 | .2883 | .2817 | .3114 | .3056 | .3130 | .2925 | .3094 | .2961 | .2791 | .2859 | |
| | | 3A | .2922 | .2787 | .2898 | .2830 | .3125 | .3065 | .3125 | .2922 | .3088 | .2953 | .2790 | .2847 | 3B |
| | | | .2919 | .2782 | .2901 | .2835 | .3124 | .3066 | .3130 | .2925 | .3083 | .2950 | .2791 | .2846 | |
| 3/8-16 or 0.375-16 | UNC | 1A | .3331 | .3060 | .3266 | .3131 | .3737 | .3595 | .3750 | .3344 | .3700 | .3429 | .3070 | .3210 | 1B |
| | | | .3328 | .3054 | .3269 | .3137 | .3736 | .3596 | .3756 | .3347 | .3694 | .3426 | .3071 | .3209 | |
| | | 2A | .3331 | .3060 | .3287 | .3152 | .3737 | .3643 | .3750 | .3344 | .3672 | .3401 | .3070 | .3210 | 2B |
| | | | .3328 | .3054 | .3290 | .3158 | .3736 | .3644 | .3756 | .3347 | .3666 | .3398 | .3071 | .3209 | |
| | | 3A | .3344 | .3073 | .3311 | .3176 | .3750 | .3656 | .3750 | .3344 | .3658 | .3387 | .3070 | .3182 | 3B |
| | | | .3341 | .3067 | .3314 | .3182 | .3749 | .3657 | .3756 | .3347 | .3652 | .3384 | .3071 | .3181 | |
| 3/8-20 or 0.375-20 | UN | 2A | .3413 | .3196 | .3372 | .3264 | .3738 | .3657 | .3750 | .3425 | .3696 | .3479 | .3210 | .3320 | 2B |
| | | | .3410 | .3191 | .3375 | .3269 | .3737 | .3658 | .3755 | .3428 | .3691 | .3476 | .3211 | .3319 | |
| | | 3A | .3425 | .3208 | .3394 | .3286 | .3750 | .3669 | .3750 | .3425 | .3682 | .3465 | .3210 | .3297 | 3B |
| | | | .3422 | .3203 | .3397 | .3291 | .3749 | .3670 | .3755 | .3428 | .3677 | .3462 | .3211 | .3296 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3/8-24 or 0.375-24 | UNF | 1A | 0.3468 | 0.3288 | 0.3411 | 0.3321 | 0.3739 | 0.3631 | 0.3750 | 0.3479 | 0.3733 | 0.3553 | 0.3300 | 0.3400 | 1B |
| | | | .3465 | .3283 | .3414 | .3326 | .3738 | .3632 | .3755 | .3482 | .3728 | .3550 | .3301 | .3399 | |
| | | 2A | .3468 | .3288 | .3430 | .3340 | .3739 | .3667 | .3750 | .3479 | .3708 | .3528 | .3300 | .3400 | 2B |
| | | | .3465 | .3283 | .3433 | .3345 | .3738 | .3668 | .3755 | .3482 | .3703 | .3525 | .3301 | .3399 | |
| | | 3A | .3479 | .3299 | .3450 | .3360 | .3750 | .3678 | .3750 | .3479 | .3696 | .3516 | .3300 | .3372 | 3B |
| | | | .3476 | .3294 | .3453 | .3365 | .3749 | .3679 | .3755 | .3482 | .3691 | .3513 | .3301 | .3371 | |
| 3/8-28 or 0.375-28 | UN | 2A | .3507 | .3352 | .3471 | .3394 | .3739 | .3674 | .3750 | .3518 | .3719 | .3564 | .3360 | .3450 | 2B |
| | | | .3504 | .3347 | .3474 | .3399 | .3738 | .3675 | .3755 | .3521 | .3714 | .3561 | .3361 | .3449 | |
| | | 3A | .3518 | .3363 | .3491 | .3414 | .3750 | .3685 | .3750 | .3518 | .3708 | .3553 | .3360 | .3426 | 3B |
| | | | .3515 | .3358 | .3494 | .3419 | .3749 | .3686 | .3755 | .3521 | .3703 | .3550 | .3361 | .3425 | |
| 3/8-32 or 0.375-32 | UNEF | 2A | .3537 | .3402 | .3503 | .3435 | .3740 | .3680 | .3750 | .3547 | .3726 | .3591 | .3410 | .3490 | 2B |
| | | | .3534 | .3397 | .3506 | .3440 | .3739 | .3681 | .3755 | .3550 | .3721 | .3588 | .3411 | .3489 | |
| | | 3A | .3547 | .3412 | .3522 | .3454 | .3750 | .3690 | .3750 | .3547 | .3715 | .3580 | .3410 | .3469 | 3B |
| | | | .3544 | .3407 | .3525 | .3459 | .3749 | .3691 | .3755 | .3550 | .3710 | .3577 | .3411 | .3468 | |
| 7/16-14 or 0.4375-14 | UNC | 1A | .3897 | .3588 | .3826 | .3671 | .4361 | .4206 | .4375 | .3911 | .4312 | .4003 | .3600 | .3760 | 1B |
| | | | .3894 | .3582 | .3829 | .3677 | .4360 | .4207 | .4381 | .3914 | .4306 | .4000 | .3601 | .3759 | |
| | | 2A | .3897 | .3588 | .3850 | .3695 | .4361 | .4258 | .4375 | .3911 | .4281 | .3972 | .3600 | .3760 | 2B |
| | | | .3894 | .3582 | .3853 | .3701 | .4360 | .4259 | .4381 | .3914 | .4275 | .3969 | .3601 | .3759 | |
| | | 3A | .3911 | .3602 | .3876 | .3721 | .4375 | .4272 | .4375 | .3911 | .4266 | .3957 | .3600 | .3717 | 3B |
| | | | .3908 | .3596 | .3879 | .3727 | .4374 | .4273 | .4381 | .3914 | .4260 | .3954 | .3601 | .3716 | |
| 7/16-16 or 0.4375-16 | UN | 2A | .3955 | .3684 | .3909 | .3774 | .4361 | .4267 | .4375 | .3969 | .4299 | .4028 | .3700 | .3840 | 2B |
| | | | .3952 | .3678 | .3912 | .3780 | .4360 | .4268 | .4381 | .3972 | .4293 | .4025 | .3701 | .3839 | |
| | | 3A | .3969 | .3698 | .3935 | .3800 | .4375 | .4281 | .4375 | .3969 | .4285 | .4014 | .3700 | .3800 | 3B |
| | | | .3966 | .3692 | .3938 | .3806 | .4374 | .4282 | .4381 | .3972 | .4279 | .4011 | .3701 | .3799 | |
| 7/16-20 or 0.4375-20 | UNF | 1A | .4037 | .3820 | .3974 | .3866 | .4362 | .4240 | .4375 | .4050 | .4348 | .4131 | .3830 | .3950 | 1B |
| | | | .4034 | .3815 | .3977 | .3871 | .4361 | .4241 | .4380 | .4053 | .4343 | .4128 | .3831 | .3949 | |
| | | 2A | .4037 | .3820 | .3995 | .3887 | .4362 | .4281 | .4375 | .4050 | .4321 | .4104 | .3830 | .3950 | 2B |
| | | | .4034 | .3815 | .3998 | .3892 | .4361 | .4282 | .4380 | .4053 | .4316 | .4101 | .3831 | .3949 | |
| | | 3A | .4050 | .3833 | .4019 | .3911 | .4375 | .4294 | .4375 | .4050 | .4308 | .4091 | .3830 | .3916 | 3B |
| | | | .4047 | .3828 | .4022 | .3916 | .4374 | .4295 | .4380 | .4053 | .4303 | .4088 | .3831 | .3915 | |
| 7/16-28 or 0.4375-28 | UNEF | 2A | .4132 | .3977 | .4096 | .4019 | .4364 | .4299 | .4375 | .4143 | .4344 | .4189 | .3990 | .4070 | 2B |
| | | | .4129 | .3972 | .4099 | .4024 | .4363 | .4300 | .4380 | .4146 | .4339 | .4186 | .3991 | .4069 | |
| | | 3A | .4143 | .3988 | .4116 | .4039 | .4375 | .4310 | .4375 | .4143 | .4333 | .4178 | .3990 | .4051 | 3B |
| | | | .4140 | .3983 | .4119 | .4044 | .4374 | .4311 | .4380 | .4146 | .4328 | .4175 | .3991 | .4050 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 7/16-32 or 0.4375-32 | UN | 2A | 0.4162 | 0.4027 | 0.4128 | 0.4060 | 0.4365 | 0.4305 | 0.4375 | 0.4172 | 0.4351 | 0.4216 | 0.4040 | 0.4110 | 2B |
| | | | .4159 | .4022 | .4131 | .4065 | .4364 | .4306 | .4380 | .4175 | .4346 | .4213 | .4041 | .4109 | |
| | | 3A | .4172 | .4037 | .4147 | .4079 | .4375 | .4315 | .4375 | .4172 | .4340 | .4205 | .4040 | .4094 | 3B |
| | | | .4169 | .4032 | .4150 | .4084 | .4374 | .4316 | .4380 | .4175 | .4335 | .4202 | .4041 | .4093 | |
| 1/2-13 or 0.500-13 | UNC | 1A | .4485 | .4152 | .4411 | .4245 | .4985 | .4822 | .5000 | .4500 | .4930 | .4597 | .4170 | .4340 | 1B |
| | | | .4482 | .4146 | .4414 | .4251 | .4984 | .4823 | 5006 | .4503 | .4924 | .4594 | .4171 | .4339 | |
| | | 2A | .4485 | .4152 | .4435 | .4269 | .4985 | .4876 | .5000 | .4500 | .4898 | .4565 | .4170 | .4340 | 2B |
| | | | .4482 | .4146 | .4438 | .4275 | .4984 | .4877 | .5006 | .4503 | .4892 | .4562 | .4171 | .4339 | |
| | | 3A | .4500 | .4167 | .4463 | .4297 | .5000 | .4891 | .5000 | .4500 | .4881 | .4548 | .4170 | .4284 | 3B |
| | | | .4497 | .4161 | .4466 | .4303 | .4999 | .4892 | .5006 | .4503 | .4875 | .4545 | .4171 | .4283 | |
| 1/2-16 or 0.500-16 | UN | 2A | .4580 | .4309 | .4533 | .4398 | .4986 | .4892 | .5000 | .4594 | .4926 | .4655 | .4320 | .4460 | 2B |
| | | | .4577 | .4303 | .4536 | .4404 | .4985 | .4893 | .5006 | .4597 | .4920 | .4652 | .4321 | .4459 | |
| | | 3A | .4594 | .4323 | .4559 | .4424 | .5000 | .4906 | .5000 | .4594 | .4911 | .4640 | .4320 | .4419 | 3B |
| | | | .4591 | .4317 | .4562 | .4430 | .4999 | .4907 | .5006 | .4597 | .4905 | .4637 | .4321 | .4418 | |
| 1/2-20 or 0.500-20 | UNF | 1A | .4662 | .4445 | .4598 | .4490 | .4987 | .4865 | .5000 | .4675 | .4976 | .4759 | .4460 | .4570 | 1B |
| | | | .4659 | .4440 | .4601 | .4495 | .4986 | .4866 | .5005 | .4678 | .4971 | .4756 | .4461 | .4569 | |
| | | 2A | .4662 | .4445 | .4619 | .4511 | .4987 | .4906 | .5000 | .4675 | .4948 | .4731 | .4460 | .4570 | 2B |
| | | | .4659 | .4440 | .4622 | .4516 | .4986 | .4907 | .5005 | .4678 | .4943 | .4728 | .4461 | .4569 | |
| | | 3A | .4675 | .4458 | .4643 | .4535 | .5000 | .4919 | .5000 | .4675 | .4934 | .4717 | .4460 | .4537 | 3B |
| | | | .4672 | .4453 | .4646 | .4540 | .4999 | .4920 | .5005 | .4678 | .4929 | .4714 | .4461 | .4536 | |
| 1/2-28 or 0.500-28 | UNEF | 2A | .4757 | .4602 | .4720 | .4643 | .4989 | .4924 | .5000 | .4768 | .4971 | .4816 | .4610 | .4700 | 2B |
| | | | .4754 | .4597 | .4723 | .4648 | .4988 | .4925 | .5005 | .4771 | .4966 | .4813 | .4611 | .4699 | |
| | | 3A | .4768 | .4613 | .4740 | .4663 | .5000 | .4935 | .5000 | .4768 | .4959 | .4804 | .4610 | .4676 | 3B |
| | | | .4765 | .4608 | .4743 | .4668 | .4999 | .4936 | .5005 | .4771 | .4954 | .4801 | .4611 | .4675 | |
| 1/2-32 or 0.500-32 | UN | 2A | .4787 | .4652 | .4752 | .4684 | .4990 | .4930 | .5000 | .4797 | .4977 | .4842 | .4660 | .4740 | 2B |
| | | | .4784 | .4647 | .4755 | .4689 | .4989 | .4931 | .5005 | .4800 | .4972 | .4839 | .4661 | .4739 | |
| | | 3A | .4797 | .4662 | .4771 | .4703 | .5000 | .4940 | .5000 | .4797 | .4966 | .4831 | .4660 | .4719 | 3B |
| | | | .4794 | .4657 | .4774 | .4708 | .4999 | .4941 | .5005 | .4800 | .4961 | .4828 | .4661 | .4718 | |
| 9/16-12 or 0.5625-12 | UNC | 1A | .5068 | .4707 | .4990 | .4810 | .5609 | .5437 | .5625 | .5084 | .5547 | .5186 | .4720 | .4900 | 1B |
| | | | .5065 | .4701 | .4993 | .4816 | .5608 | .5438 | .5631 | .5087 | .5541 | .5183 | .4721 | .4899 | |
| | | 2A | .5068 | .4707 | .5016 | .4836 | .5609 | .5495 | .5625 | .5084 | .5513 | .5152 | .4720 | .4900 | 2B |
| | | | .5065 | .4701 | .5019 | .4842 | .5608 | .5496 | .5631 | .5087 | .5507 | .5149 | .4721 | .4899 | |
| | | 3A | .5084 | .4723 | .5045 | .4865 | .5625 | .5511 | .5625 | .5084 | .5496 | .5135 | .4720 | .4843 | 3B |
| | | | .5081 | .4717 | .5048 | .4871 | .5624 | .5512 | .5631 | .5087 | .5490 | .5132 | .4721 | .4842 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 9/16-16 or 0.5625-16 | UN | 2A | 0.5205 | 0.4934 | 0.5158 | 0.5023 | 0.5611 | 0.5517 | 0.5625 | 0.5219 | 0.5351 | 0.5280 | 0.4950 | 0.5090 | 2B |
| | | | .5202 | .4928 | .5161 | .5029 | .5610 | .5518 | .5631 | .5222 | .5545 | .5277 | .4951 | .5089 | |
| | | 3A | .5219 | .4948 | .5184 | .5049 | .5625 | .5531 | .5625 | .5219 | .5536 | .5265 | .4950 | .5040 | 3B |
| | | | .5216 | .4942 | .5187 | .5055 | .5624 | .5532 | .5631 | .5222 | .5530 | .5262 | .4951 | .5039 | |
| 9/16-18 or 0.5625-18 | UNF | 1A | .5250 | .5009 | .5182 | .5062 | .5611 | .5480 | .5625 | .5264 | .5594 | .5353 | .5020 | .5150 | 1B |
| | | | .5247 | .5004 | .5185 | .5067 | .5610 | .5481 | .5630 | .5267 | .5589 | .5350 | .5021 | .5149 | |
| | | 2A | .5250 | .5009 | .5205 | .5085 | .5611 | .5524 | .5625 | .5264 | .5564 | .5323 | .5020 | .5150 | 2B |
| | | | .5247 | .5004 | .5208 | .5090 | .5610 | .5525 | .5630 | .5267 | .5559 | .5320 | .5021 | .5149 | |
| | | 3A | .5264 | .5023 | .5230 | .5110 | .5625 | .5538 | .5625 | .5264 | .5549 | .5308 | .5020 | .5106 | 3B |
| | | | .5261 | .5018 | .5233 | .5115 | .5624 | .5539 | .5630 | .5267 | .5544 | .5305 | .5021 | .5105 | |
| 9/16-20 or 0.5625-20 | UN | 2A | .5287 | .5070 | .5245 | .5137 | .5612 | .5531 | .5625 | .5300 | .5572 | .5355 | .5080 | .5200 | 2B |
| | | | .5284 | .5065 | .5248 | .5142 | .5611 | .5532 | .5630 | .5303 | .5567 | .5352 | .5081 | .5199 | |
| | | 3A | .5300 | .5083 | .5268 | .5160 | .5625 | .5544 | .5625 | .5300 | .5558 | .5341 | .5080 | .5162 | 3B |
| | | | .5297 | .5078 | .5271 | .5165 | .5624 | .5545 | .5630 | .5303 | .5553 | .5338 | .5081 | .5161 | |
| 9/16-24 or 0.5625-24 | UNEF | 2A | .5342 | .5162 | .5303 | .5213 | .5613 | .5541 | .5625 | .5354 | .5585 | .5405 | .5170 | .5270 | 2B |
| | | | .5339 | .5157 | .5306 | .5218 | .5612 | .5542 | .5630 | .5357 | .5580 | .5402 | .5171 | .5269 | |
| | | 3A | .5354 | .5174 | .5325 | .5235 | .5625 | .5553 | .5625 | .5354 | .5572 | .5392 | .5170 | .5244 | 3B |
| | | | .5351 | .5169 | .5328 | .5240 | .5624 | .5554 | .5630 | .5357 | .5567 | .5389 | .5171 | .5243 | |
| 9/16-28 or 0.5625-28 | UN | 2A | .5382 | .5227 | .5345 | .5268 | .5614 | .5549 | .5625 | .5393 | .5596 | .5441 | .5240 | .5320 | 2B |
| | | | .5379 | .5222 | .5348 | .5273 | .5613 | .5550 | .5630 | .5396 | .5591 | .5438 | .5241 | .5319 | |
| | | 3A | .5393 | .5238 | .5365 | .5288 | .5625 | .5560 | .5625 | .5393 | .5584 | .5429 | .5240 | .5301 | 3B |
| | | | .5390 | .5233 | .5368 | .5293 | .5624 | .5561 | .5630 | .5396 | .5579 | .5426 | .5241 | .5300 | |
| 9/16-32 or 0.5625-32 | UN | 2A | .5412 | .5277 | .5377 | .5309 | .5615 | .5555 | .5625 | .5422 | .5602 | .5467 | .5290 | .5360 | 2B |
| | | | .5409 | .5272 | .5380 | .5314 | .5614 | .5556 | .5630 | .5425 | .5597 | .5464 | .5291 | .5359 | |
| | | 3A | .5422 | .5287 | .5396 | .5328 | .5625 | .5565 | .5625 | .5422 | .5591 | .5456 | .5290 | .5344 | 3B |
| | | | .5419 | .5282 | .5399 | .5333 | .5624 | .5566 | .5630 | .5425 | .5586 | .5453 | .5291 | .5343 | |
| 5/8-11 or 0.625-11 | UNC | 1A | .5644 | .5250 | .5561 | .5364 | .6234 | .6052 | .6250 | .5660 | .6161 | .5767 | .5270 | .5460 | 1B |
| | | | .5641 | .5244 | .5564 | .5370 | .6233 | .6053 | .6256 | .5663 | .6155 | .5764 | .5271 | .5459 | |
| | | 2A | .5644 | .5250 | .5589 | .5392 | .6234 | .6113 | .6250 | .5660 | .6126 | .5732 | .5270 | .5460 | 2B |
| | | | .5641 | .5244 | .5592 | .5398 | .6233 | .6114 | .6256 | .5663 | .6120 | .5729 | .5271 | .5459 | |
| | | 3A | .5660 | .5266 | .5619 | .5422 | .6250 | .6129 | .6250 | .5660 | .6108 | .5714 | .5270 | .5391 | 3B |
| | | | .5657 | .5260 | .5622 | .5428 | .6249 | .6130 | .6256 | .5663 | .6102 | .5711 | .5271 | .5390 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5/8-12 or 0.625-12 | UN | 2A | 0.5693 | 0.5332 | 0.5639 | 0.5459 | 0.6234 | 0.6120 | 0.6250 | 0.5709 | 0.6141 | 0.5780 | 0.5350 | 0.5530 | 2B |
| | | | .5690 | .5326 | .5642 | .5465 | .6233 | .6121 | .6256 | .5712 | .6135 | .5777 | .5351 | .5529 | |
| | | 3A | .5709 | .5348 | .5668 | .5488 | .6250 | .6136 | .6250 | .5709 | .6123 | .5762 | .5350 | .5463 | 3B |
| | | | .5706 | .5342 | .5671 | .5494 | .6249 | .6137 | .6256 | .5712 | .6117 | .5759 | .5351 | .5462 | |
| 5/8-16 or 0.625-16 | UN | 2A | .5830 | .5559 | .5782 | .5647 | .6236 | .6142 | .6250 | .5844 | .6177 | .5906 | .5650 | .5710 | 2B |
| | | | .5827 | .5553 | .5785 | .5653 | .6235 | .6143 | .6256 | .5847 | .6171 | .5903 | .5571 | .5709 | |
| | | 3A | .5844 | .5573 | .5808 | .5673 | .6250 | .6156 | .6250 | .5844 | .6161 | .5890 | .5570 | .5662 | 3B |
| | | | .5841 | .5567 | .5811 | .5679 | .6249 | .6157 | .6256 | .5847 | .6155 | .5887 | .5571 | .5661 | |
| 5/8-18 or 0.625-18 | UNF | 1A | .5875 | .5634 | .5805 | .5685 | .6236 | .6105 | .6250 | .5889 | .6221 | .5980 | .5650 | .5780 | 1B |
| | | | .5872 | .5629 | .5808 | .5690 | .6235 | .6106 | .6255 | .5892 | .6216 | .5977 | .5651 | .5779 | |
| | | 2A | .5875 | .5634 | .5828 | .5708 | .6236 | .6149 | .6250 | .5889 | .6190 | .5949 | .5650 | .5780 | 2B |
| | | | .5872 | .5629 | .5831 | .5713 | .6235 | .6150 | .6255 | .5892 | .6185 | .5946 | .5651 | .5779 | |
| | | 3A | .5889 | .5648 | .5854 | .5734 | .6250 | .6163 | .6250 | .5889 | .6175 | .5934 | .5650 | .5730 | 3B |
| | | | .5886 | .5643 | .5857 | .5739 | .6249 | .6164 | .6255 | .5892 | .6170 | .5931 | .5651 | .5729 | |
| 5/8-20 or 0.625-20 | UN | 2A | .5912 | .5695 | .5869 | .5761 | .6237 | .6156 | .6250 | .5925 | .6198 | .5981 | .5710 | .5820 | 2B |
| | | | .5909 | .5690 | .5872 | .5766 | .6236 | .6157 | .6255 | .5928 | .6193 | .5978 | .5711 | .5819 | |
| | | 3A | .5925 | .5708 | .5893 | .5785 | .6250 | .6169 | .6250 | .5925 | .6184 | .5967 | .5710 | .5787 | 3B |
| | | | .5922 | .5703 | .5896 | .5790 | .6249 | .6170 | .6255 | .5928 | .6179 | .5964 | .5711 | .5786 | |
| 5/8-24 or 0.625-24 | UNEF | 2A | .5967 | .5787 | .5927 | .5837 | .6238 | .6166 | .6250 | .5979 | .6211 | .6031 | .5800 | .5900 | 2B |
| | | | .5964 | .5782 | .5930 | 5842 | .6237 | .6167 | .6255 | .5982 | .6206 | .6028 | .5801 | .5899 | |
| | | 3A | .5979 | .5799 | .5949 | .5859 | .6250 | .6178 | .6250 | .5979 | .6198 | .6018 | .5800 | .5869 | 3B |
| | | | .5976 | .5794 | .5952 | .5864 | .6249 | .6179 | .6255 | .5982 | .6193 | .6015 | .5801 | .5868 | |
| 5/8-28 or 0.625-28 | UN | 2A | .6007 | .5852 | .5969 | .5892 | .6239 | .6174 | .6250 | .6018 | .6222 | .6067 | .5860 | .5950 | 2B |
| | | | .6004 | .5847 | .5972 | .5897 | .6238 | .6175 | .6255 | .6021 | .6217 | .6064 | .5861 | .5949 | |
| | | 3A | .6018 | .5863 | .5990 | .5913 | .6250 | .6185 | .6250 | .6018 | .6210 | .6055 | .5860 | .5926 | 3B |
| | | | .6015 | .5858 | .5993 | .5918 | .6249 | .6186 | .6255 | .6021 | .6205 | .6052 | .5861 | .5925 | |
| 5/8-32 or 0.625-32 | UN | 2A | .6036 | .5901 | .6000 | .5932 | .6239 | .6179 | .6250 | .6047 | .6228 | .6093 | .5910 | .5990 | 2B |
| | | | .6033 | .5896 | .6003 | .5937 | .6238 | .6180 | .6255 | .6050 | .6223 | .6090 | .5911 | .5989 | |
| | | 3A | .6047 | .5912 | .6020 | .5952 | .6250 | .6190 | .6250 | .6047 | .6217 | .6082 | .5910 | .5969 | 3B |
| | | | .6044 | .5907 | .6023 | .5957 | .6249 | .6191 | .6255 | .6050 | .6212 | .6079 | .5911 | .5968 | |
| 1 1/16-12 or 0.6875-12 | UN | 2A | .6318 | .5957 | .6264 | .6084 | .6859 | .6745 | .6875 | .6334 | .6766 | .6405 | .5970 | .6150 | 2B |
| | | | .6315 | .5951 | .6267 | .6090 | .6858 | .6746 | .6881 | .6337 | .6760 | .6402 | .5971 | .6149 | |
| | | 3A | .6334 | .5973 | .6293 | .6113 | .6875 | .6761 | .6875 | .6334 | .6748 | .6387 | .5970 | .6085 | 3B |
| | | | .6331 | .5967 | .6296 | .6119 | .6874 | .6762 | .6881 | .6337 | .6742 | .6384 | .5971 | .6084 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 1/16-16 or 0.6875-16 | UN | 2A | 0.6455 | 0.6184 | 0.6407 | 0.6272 | 0.6861 | 0.6767 | 0.6875 | 0.6469 | 0.6802 | 0.6531 | 0.6200 | 0.6340 | 2B |
| | | | .6452 | .6178 | .6410 | .6278 | .6860 | .6768 | .6881 | .6472 | .6796 | .6528 | .6201 | .6339 | |
| | | 3A | .6469 | .6198 | .6433 | .6298 | .6875 | .6781 | .6875 | .6469 | .6786 | .6515 | .6200 | .6284 | 3B |
| | | | .6466 | .6192 | .6436 | .6304 | .6874 | .6782 | .6881 | .6472 | .6780 | .6512 | .6201 | .6283 | |
| 1 1/16-20 or 0.6875-20 | UN | 2A | .6537 | .6320 | .6494 | .6386 | .6862 | .6781 | .6875 | .6550 | .6823 | .6606 | .6330 | .6450 | 2B |
| | | | .6534 | .6315 | .6497 | .6391 | .6861 | .6782 | .6880 | .6553 | .6818 | .6603 | .6331 | .6449 | |
| | | 3A | .6550 | .6333 | .6518 | .6410 | .6875 | .6794 | .6875 | .6550 | .6809 | .6592 | .6330 | .6412 | 3B |
| | | | .6547 | .6328 | .6521 | .6415 | .6874 | .6795 | .6880 | .6553 | .6804 | .6589 | .6331 | .6411 | |
| 1 1/16-24 or 0.6875-24 | UNEF | 2A | .6592 | .6412 | .6552 | .6462 | .6863 | .6791 | .6875 | .6604 | .6836 | .6656 | .6420 | .6520 | 2B |
| | | | .6589 | .6407 | .6555 | .6467 | .6862 | .6792 | .6880 | .6607 | .6831 | .6653 | .6421 | .6519 | |
| | | 3A | .6604 | .6424 | .6574 | .6484 | .6875 | .6803 | .6875 | .6604 | .6823 | .6643 | .6420 | .6494 | 3B |
| | | | .6601 | .6419 | .6577 | .6489 | .6874 | .6804 | .6880 | .6607 | .6818 | .6640 | .6421 | .6493 | |
| 1 1/16-28 or 0.6875-28 | UN | 2A | .6632 | .6477 | .6594 | .6517 | .6864 | .6799 | .6875 | .6643 | .6847 | .6692 | .6490 | .6570 | 2B |
| | | | .6629 | .6472 | .6597 | .6522 | .6863 | .6800 | .6880 | .6646 | .6842 | .6689 | .6491 | .6569 | |
| | | 3A | .6643 | .6488 | .6615 | .6538 | .6875 | .6810 | .6875 | .6643 | .6835 | .6680 | .6490 | .6551 | 3B |
| | | | .6640 | .6483 | .6618 | .6543 | .6874 | .6811 | .6880 | .6646 | .6830 | .6677 | .6491 | .6550 | |
| 1 1/16-32 or 0.6875-32 | UN | 2A | .6661 | .6526 | .6625 | .6557 | .6864 | .6804 | .6875 | .6672 | .6853 | .6718 | .6540 | .6610 | 2B |
| | | | .6658 | .6521 | .6628 | .6562 | .6863 | .6805 | .6880 | .6675 | .6848 | .6715 | .6541 | .6609 | |
| | | 3A | .6672 | .6537 | .6645 | .6577 | .6875 | .6815 | .6875 | .6672 | .6842 | .6707 | .6540 | .6594 | 3B |
| | | | .6669 | .6532 | .6648 | .6582 | .6874 | .6816 | .6880 | .6675 | .6837 | .6704 | .6541 | .6593 | |
| 3/4-10 or 0.750-10 | UNC | 1A | .6832 | .6399 | .6744 | .6528 | .7482 | .7288 | .7500 | .6850 | .7398 | .6965 | .6420 | .6630 | 1B |
| | | | .6829 | .6393 | .6747 | .6534 | .7481 | .7289 | .7506 | .6853 | .7392 | .6962 | .6421 | .6629 | |
| | | 2A | .6832 | .6399 | .6773 | .6557 | .7482 | .7353 | .7500 | .6850 | .7360 | .6927 | .6420 | .6630 | 2B |
| | | | .6829 | .6393 | .6776 | .6563 | .7481 | .7354 | .7506 | .6853 | .7354 | .6924 | .6421 | .6629 | |
| | | 3A | .6850 | .6417 | .6806 | .6590 | .7500 | .7371 | .7500 | .6850 | .7340 | .6907 | .6420 | .6545 | 3B |
| | | | .6847 | .6411 | .6809 | .6596 | .7499 | .7372 | .7506 | .6853 | .7334 | .6904 | .6421 | .6544 | |
| 3/4-12 or 0.750-12 | UN | 2A | .6942 | .6581 | .6887 | .6707 | .7483 | .7369 | .7500 | .6959 | .7392 | .7031 | .6600 | .6780 | 2B |
| | | | .6939 | .6575 | .6890 | .6713 | .7482 | .7370 | .7506 | .6962 | .7386 | .7028 | .6601 | .6779 | |
| | | 3A | .6959 | .6598 | .6918 | .6738 | .7500 | .7386 | .7500 | .6959 | .7374 | .7013 | .6600 | .6707 | 3B |
| | | | .6956 | .6592 | .6921 | .6744 | .7499 | .7387 | .7506 | .6962 | .7368 | .7010 | .6601 | .6706 | |
| 3/4-16 or 0.750-16 | UNF | 1A | .7079 | .6808 | .7004 | .6869 | .7485 | .7343 | .7500 | .7094 | .7463 | .7192 | .6820 | .6960 | 1B |
| | | | .7076 | .6802 | .7007 | .6875 | .7484 | .7344 | .7506 | .7097 | .7457 | .7189 | .6821 | .6959 | |
| | | 2A | .7079 | .6808 | .7029 | .6894 | .7485 | .7391 | .7500 | .7094 | .7430 | .7159 | .6820 | .6960 | 2B |
| | | | .7076 | .6802 | .7032 | .6900 | .7484 | .7392 | .7506 | .7097 | .7424 | .7156 | .6821 | .6959 | |
| | | 3A | .7094 | .6823 | .7056 | .6921 | .7500 | .7406 | .7500 | .7094 | .7414 | .7143 | .6820 | .6908 | 3B |
| | | | .7091 | .6817 | .7059 | .6927 | .7499 | .7407 | .7506 | .7097 | .7408 | .7140 | .6821 | .6907 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| ¾-20 or 0.750-20 | UNEF | 2A | 0.7162 | 0.6945 | 0.7118 | 0.7010 | 0.7487 | 0.7406 | 0.7500 | 0.7175 | 0.7449 | 0.7232 | 0.6960 | 0.7070 | 2B |
| | | | .7159 | .6940 | .7121 | .7015 | .7486 | .7407 | .7505 | .7178 | .7444 | .7229 | .6961 | .7069 | |
| | | 3A | .7175 | .6958 | .7142 | .7034 | .7500 | .7419 | .7500 | .7175 | .7435 | .7218 | .6960 | .7037 | 3B |
| | | | .7172 | .6953 | .7145 | .7039 | .7499 | .7420 | .7505 | .7178 | .7430 | .7215 | .6961 | .7036 | |
| ¾-28 or 0.750-28 | UN | 2A | .7256 | .7101 | .7218 | .7141 | .7488 | .7423 | .7500 | .7268 | .7473 | .7318 | .7110 | .7200 | 2B |
| | | | .7253 | .7096 | .7221 | .7146 | .7487 | .7424 | .7505 | .7271 | .7468 | .7315 | .7111 | .7199 | |
| | | 3A | .7268 | .7113 | .7239 | .7162 | .7500 | .7435 | .7500 | .7268 | .7460 | .7305 | .7110 | .7176 | 3B |
| | | | .7265 | .7108 | .7242 | .7167 | .7499 | .7436 | .7505 | .7271 | .7455 | .7302 | .7111 | .7175 | |
| ¾-32 or 0.750-32 | UN | 2A | .7286 | .7151 | .7250 | .7182 | .7489 | .7429 | .7500 | .7297 | .7479 | .7344 | .7160 | .7240 | 2B |
| | | | .7283 | .7146 | .7253 | .7187 | .7488 | .7430 | .7505 | .7300 | .7474 | .7341 | .7161 | .7239 | |
| | | 3A | .7297 | .7162 | .7270 | .7202 | .7500 | .7440 | .7500 | .7297 | .7468 | .7333 | .7160 | .7219 | 3B |
| | | | .7294 | .7157 | .7273 | .7207 | .7499 | .7441 | .7505 | .7300 | .7463 | .7330 | .7161 | .7218 | |
| 13/16-12 or 0.8125-12 | UN | 2A | .7567 | .7206 | .7512 | .7332 | .8108 | .7994 | .8125 | .7584 | .8017 | .7656 | .7220 | .7400 | 2B |
| | | | .7564 | .7200 | .7515 | .7338 | .8107 | .7995 | .8131 | .7587 | .8011 | .7653 | .7221 | .7399 | |
| | | 3A | .7584 | .7223 | .7543 | .7363 | .8125 | .8011 | .8125 | .7584 | .7999 | .7638 | .7220 | .7329 | 3B |
| | | | .7581 | .7217 | .7546 | .7369 | .8124 | .8012 | .8131 | .7587 | .7993 | .7635 | .7221 | .7328 | |
| 13/16-16 or 0.8125-16 | UN | 2A | .7704 | .7433 | .7655 | .7520 | .8110 | .8016 | .8125 | .7719 | .8053 | .7782 | .7450 | .7590 | 2B |
| | | | .7701 | .7427 | .7658 | .7526 | .8109 | .8017 | .8131 | .7722 | .8047 | .7779 | .7451 | .7589 | |
| | | 3A | .7719 | .7448 | .7683 | .7548 | .8125 | .8031 | .8125 | .7719 | .8037 | .7766 | .7450 | .7533 | 3B |
| | | | .7716 | .7442 | .7686 | .7554 | .8124 | .8032 | .8131 | .7722 | .8031 | .7763 | .7451 | .7532 | |
| 13/16-20 or 0.8125-20 | UNEF | 2A | .7787 | .7570 | .7743 | .7635 | .8112 | .8031 | .8125 | .7800 | .8074 | .7857 | .7580 | .7700 | 2B |
| | | | .7784 | .7565 | .7746 | .7640 | .8111 | .8032 | .8130 | .7803 | .8069 | .7854 | .7581 | .7699 | |
| | | 3A | .7800 | .7583 | .7767 | .7659 | .8125 | .8044 | .8125 | .7800 | .8060 | .7843 | .7580 | .7662 | 3B |
| | | | .7797 | .7578 | .7770 | .7664 | .8124 | .8045 | .8130 | .7803 | .8055 | .7840 | .7581 | .7661 | |
| 13/16-28 or 0.8125-28 | UN | 2A | .7881 | .7726 | .7843 | .7766 | .8113 | .8048 | .8125 | .7893 | .8098 | .7943 | .7740 | .7820 | 2B |
| | | | .7878 | .7721 | .7846 | .7771 | .8112 | .8049 | .8130 | .7896 | .8093 | .7940 | .7741 | .7819 | |
| | | 3A | .7893 | .7738 | .7864 | .7787 | .8125 | .8060 | .8125 | .7893 | .8085 | .7930 | .7740 | .7801 | 3B |
| | | | .7890 | .7733 | .7867 | .7792 | .8124 | .8061 | .8130 | .7896 | .8080 | .7927 | .7741 | .7800 | |
| 13/16-32 or 0.8125-32 | UN | 2A | .7911 | .7776 | .7875 | .7807 | .8114 | .8054 | .8125 | .7922 | .8104 | .7969 | .7790 | .7860 | 2B |
| | | | .7908 | .7771 | .7878 | .7812 | .8113 | .8055 | .8130 | .7925 | .8099 | .7966 | .7791 | .7859 | |
| | | 3A | .7922 | .7787 | .7895 | .7827 | .8125 | .8065 | .8125 | .7922 | .8093 | .7958 | .7790 | .7844 | 3B |
| | | | .7919 | .7782 | .7898 | .7832 | .8124 | .8066 | .8130 | .7925 | .8088 | .7955 | .7791 | .7843 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 7/8-9 or .875-9 | UNC | 1A | 0.8009 | 0.7528 | 0.7914 | 0.7673 | 0.87310 | 0.85230 | 0.8750 | 0.8028 | 0.8632 | 0.8151 | 0.75500 | 0.77800 | 1B |
| | | | .8006 | .7521 | .7917 | .7680 | .87298 | .85242 | .8757 | .8031 | .8625 | .8148 | .75512 | .77788 | |
| | | 2A | .8009 | .7528 | .7946 | .7705 | .87310 | .85920 | .8750 | .8028 | .8591 | .8110 | .75500 | .77800 | 2B |
| | | | .8006 | .7521 | .7949 | .7712 | .87298 | .85932 | .8757 | .8031 | .8584 | .8107 | .75512 | .77788 | |
| | | 3A | .8028 | .7547 | .7981 | .7740 | .87500 | .86110 | .8750 | .8028 | .8570 | .8089 | .75500 | .76810 | 3B |
| | | | .8025 | .7540 | .7984 | .7747 | .87488 | .86122 | .8757 | .8031 | .8563 | .8086 | .75512 | .76798 | |
| 7/8-12 or 0.875-12 | UN | 2A | .8192 | .7831 | .8137 | .7957 | .87330 | .86190 | .8750 | .8209 | .8642 | .8281 | .78500 | .80300 | 2B |
| | | | .8189 | .7825 | .8140 | .7963 | .87318 | .86202 | .8756 | .8212 | .8636 | .8278 | .78512 | .80288 | |
| | | 3A | .8209 | .7848 | .8168 | .7988 | .87500 | .86360 | .8750 | .8209 | .8624 | .8263 | .78500 | .79520 | 3B |
| | | | .8206 | .7842 | .8171 | .7994 | .87488 | .86372 | .8756 | .8212 | .8618 | .8260 | .78512 | .79508 | |
| 7/8-14 or 0.875-14 | UNF | 1A | .8270 | .7961 | .8189 | .8034 | .87340 | .85790 | .8750 | .8286 | .8701 | .8392 | .79800 | .81400 | 1B |
| | | | .8267 | .7955 | .8192 | .8040 | .87328 | .85802 | .8756 | .8289 | .8695 | .8389 | .79812 | .81388 | |
| | | 2A | .8270 | .7961 | .8216 | .8061 | .87340 | .86310 | .8750 | .8286 | .8665 | .8356 | .79800 | .81400 | 2B |
| | | | .8267 | .7955 | .8219 | .8067 | .87328 | .86322 | .8756 | .8289 | .8659 | .8353 | .79812 | .81388 | |
| | | 3A | .8286 | .7977 | .8245 | .8090 | .87500 | .86470 | .8750 | .8286 | .8648 | .8339 | .79800 | .80680 | 3B |
| | | | .8283 | .7971 | .8248 | .8096 | .87488 | .86482 | .8756 | .8289 | .8642 | .8336 | .79812 | .80668 | |
| 7/8-16 or 0.875-16 | UN | 2A | .8329 | .8058 | .8280 | .8145 | .87350 | .86410 | .8750 | .8344 | .8678 | .8407 | .80700 | .82100 | 2B |
| | | | .8326 | .8052 | .8283 | .8151 | .87338 | .86422 | .8756 | .8347 | .8672 | .8404 | .80712 | .82088 | |
| | | 3A | .8344 | .8073 | .8308 | .8173 | .87500 | .86560 | .8750 | .8344 | .8662 | .8391 | .80700 | .81580 | 3B |
| | | | .8341 | .8067 | .8311 | .8179 | .87488 | .86572 | .8756 | .8347 | .8656 | .8388 | .80712 | .81568 | |
| 7/8-20 or 0.875-20 | UNEF | 2A | .8412 | .8195 | .8368 | .8260 | .87370 | .86560 | .8750 | .8425 | .8699 | .8482 | .82100 | .83200 | 2B |
| | | | .8409 | .8190 | .8371 | .8265 | .87358 | .86572 | .8755 | .8428 | .8694 | .8479 | .82112 | .83188 | |
| | | 3A | .8425 | .8208 | .8392 | .8284 | .87500 | .86690 | .8750 | .8425 | .8685 | .8468 | .82100 | .82870 | 3B |
| | | | .8422 | .8203 | .8395 | .8289 | .87488 | .86702 | .8755 | .8428 | .8680 | .8465 | .82112 | .82858 | |
| 7/8-28 or 0.875-28 | UN | 2A | .8506 | .8351 | .8468 | .8391 | .87380 | .86730 | .8750 | .8518 | .8723 | .8568 | .83600 | .84500 | 2B |
| | | | .8503 | .8346 | .8471 | .8396 | .87368 | .86742 | .8755 | .8521 | .8718 | .8565 | .83612 | .84488 | |
| | | 3A | .8518 | .8363 | .8489 | .8412 | .87500 | .86850 | .8750 | .8518 | .8710 | .8555 | .83600 | .84260 | 3B |
| | | | .8515 | .8358 | .8492 | .8417 | .87488 | .86862 | .8755 | .8521 | .8705 | .8552 | .83612 | .84248 | |
| 7/8-32 or 0.875-32 | UN | 2A | .8536 | .8401 | .8500 | .8432 | .87390 | .86790 | .8750 | .8547 | .8729 | .8594 | .84100 | .84900 | 2B |
| | | | .8533 | .8396 | .8503 | .8437 | .87378 | .86802 | .8755 | .8550 | .8724 | .8591 | .84112 | .84888 | |
| | | 3A | .8547 | .8412 | .8520 | .8452 | .87500 | .86900 | .8750 | .8547 | .8718 | .8583 | .84100 | .84690 | 3B |
| | | | .8544 | .8407 | .8523 | .8457 | .87488 | .86912 | .8755 | .8550 | .8713 | .8580 | .84112 | .84678 | |
| 15/16-12 or 0.9375-12 | UN | 2A | .8817 | .8456 | .8760 | .8580 | .93580 | .92440 | .9375 | .8834 | .9269 | .8908 | .84700 | .86500 | 2B |
| | | | .8814 | .8450 | .8763 | .8586 | .93568 | .92452 | .9381 | .8837 | .9263 | .8905 | .84712 | .86488 | |
| | | 3A | .8834 | .8473 | .8792 | .8612 | .93750 | .92610 | .9375 | .8834 | .9250 | .8889 | .84700 | .85750 | 3B |
| | | | .8831 | .8467 | .8795 | .8618 | .93738 | .92622 | .9381 | .8837 | .9244 | .8886 | .84712 | .85738 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 15/16-16 or 0.9375-16 | UN | 2A | 0.8954 | 0.8683 | 0.8904 | 0.8769 | 0.93600 | 0.92660 | 0.9375 | 0.8969 | 0.9305 | 0.9034 | 0.87000 | 0.88400 | 2B |
| | | | .8951 | .8677 | .8907 | .8775 | .93588 | .92672 | .9381 | .8972 | .9299 | .9031 | .87012 | .88388 | |
| | | 3A | .8969 | .8698 | .8932 | .8797 | .93750 | .92810 | .9375 | .8969 | .9289 | .9018 | .87000 | .87830 | 3B |
| | | | .8966 | .8692 | .8935 | .8803 | .93738 | .92822 | .9381 | .8972 | .9283 | .9015 | .87012 | .87818 | |
| 15/16-20 or 0.9375-20 | UNEF | 2A | .9036 | .8819 | .8991 | .8883 | .93610 | .92800 | .9375 | .9050 | .9326 | .9109 | .88300 | .89500 | 2B |
| | | | .9033 | .8814 | .8994 | .8888 | .93598 | .92812 | .9380 | .9053 | .9321 | .9106 | .88312 | .89488 | |
| | | 3A | .9050 | .8833 | .9016 | .8908 | .93750 | .92940 | .9375 | .9050 | .9311 | .9094 | .88300 | 89120 | 3B |
| | | | .9047 | .8828 | .9019 | .8913 | .93738 | .92952 | .9380 | .9053 | .9306 | .9091 | .88312 | 89108 | |
| 15/16-28 or 0.9375-28 | UN | 2A | .9131 | .8976 | .9091 | .9014 | .93630 | .92980 | .9375 | .9143 | .9350 | .9195 | .89900 | .90700 | 2B |
| | | | .9128 | .8971 | .9094 | .9019 | .93618 | .92992 | .9380 | .9146 | .9345 | .9192 | .89912 | .90688 | |
| | | 3A | .9143 | .8988 | .9113 | .9036 | .93750 | .93100 | .9375 | .9143 | .9337 | .9182 | .89900 | .90510 | 3B |
| | | | .9140 | .8983 | .9116 | .9041 | .93738 | .93112 | .9380 | .9146 | .9332 | .9179 | .89912 | .90498 | |
| 15/16-32 or 0.9375-32 | UN | 2A | .9161 | .9026 | .9123 | .9055 | .93640 | .93040 | .9375 | .9172 | .9356 | .9221 | .90400 | .91100 | 2B |
| | | | .9158 | .9021 | .9126 | .9060 | .93628 | .93052 | .9380 | .9175 | .9351 | .9218 | .90412 | .91088 | |
| | | 3A | .9172 | .9037 | .9144 | .9076 | .93750 | .93150 | .9375 | .9172 | .9344 | .9209 | .90400 | .90940 | 3B |
| | | | .9169 | .9032 | .9147 | .9081 | .93738 | .93162 | .9380 | .9175 | .9339 | .9206 | .90412 | .90928 | |
| 1-8 or 1.000-8 | UNC | 1A | .9168 | .8627 | .9067 | .8796 | .99800 | .97550 | 1.0000 | .9188 | .9861 | .9320 | .86500 | .89000 | 1B |
| | | | .9164 | .8620 | .9071 | .8803 | .99788 | .97562 | 1.0007 | .9192 | .9854 | .9316 | .86512 | .88988 | |
| | | 2A | .9168 | .8627 | .9100 | .8829 | .99800 | .98300 | 1.0000 | .9188 | .9817 | .9276 | .86500 | .89000 | 2B |
| | | | .9164 | .8620 | .9104 | .8836 | .99788 | .98312 | 1.0007 | .9192 | .9810 | .9272 | .86512 | .88988 | |
| | | 3A | .9188 | .8647 | .9137 | .8866 | 1.00000 | .98500 | 1.0000 | .9188 | .9795 | .9254 | .86500 | .87970 | 3B |
| | | | .9184 | .8640 | .9141 | .8873 | .99988 | .98512 | 1.0007 | .9192 | .9788 | .9250 | .86512 | .87958 | |
| 1-12 or 1.000-12 | UNF | 1A | .9441 | .9080 | .9353 | .9173 | .99820 | .98100 | 1.0000 | .9459 | .9934 | .9573 | .91000 | .92800 | 1B |
| | | | .9438 | .9074 | .9356 | .9179 | .99808 | .98112 | 1.0006 | .9462 | .9928 | .9570 | .91012 | .92788 | |
| | | 2A | .9441 | .9080 | .9382 | .9202 | .99820 | .98680 | 1.0000 | .9459 | .9896 | .9535 | .91000 | .92800 | 2B |
| | | | .9438 | .9074 | .9385 | .9208 | .99808 | .98692 | 1.0006 | .9462 | .9890 | .9532 | .91012 | .92788 | |
| | | 3A | .9459 | .9098 | .9415 | .9235 | 1.00000 | .98860 | 1.0000 | .9459 | .9877 | .9516 | .91000 | .91980 | 3B |
| | | | .9456 | .9092 | .9418 | .9241 | .99988 | .98872 | 1.0006 | .9462 | .9871 | .9513 | .91012 | .91968 | |
| 1-16 or 1.000-16 | UN | 2A | .9579 | .9308 | .9529 | .9394 | .99850 | .98910 | 1.0000 | .9594 | .9930 | .9659 | .93200 | .94600 | 2B |
| | | | .9576 | .9302 | .9532 | .9400 | .99838 | .98922 | 1.0006 | .9597 | .9924 | .9656 | .93212 | .94588 | |
| | | 3A | .9594 | .9323 | .9557 | .9422 | 1.00000 | .99060 | 1.0000 | .9594 | .9914 | .9643 | .93200 | .94080 | 3B |
| | | | .9591 | .9317 | .9560 | .9428 | .99988 | .99072 | 1.0006 | .9597 | .9908 | .9640 | .93212 | .94068 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1-20 or 1.000-20 | UNEF | 2A | 0.9661 | 0.9444 | 0.9616 | 0.9508 | 0.99860 | 0.99050 | 1.0000 | 0.9675 | 0.9951 | 0.9734 | 0.94600 | 0.95700 | 2B |
| | | | .9658 | .9439 | .9619 | .9513 | .99848 | .99062 | 1.0005 | .9678 | .9946 | .9731 | .94612 | .95688 | |
| | | 3A | .9675 | .9458 | .9641 | .9533 | 1.00000 | .99190 | 1.0000 | .9675 | .9936 | .9719 | .94600 | .95370 | 3B |
| | | | .9672 | .9453 | .9644 | .9538 | .99988 | .99202 | 1.0005 | .9678 | .9931 | .9716 | .94612 | .95358 | |
| 1-28 or 1.000-28 | UN | 2A | .9756 | .9601 | .9716 | .9639 | .99880 | .99230 | 1.0000 | .9768 | .9975 | .9820 | .96100 | .97000 | 2B |
| | | | .9753 | .9596 | .9719 | .9644 | .99868 | .99242 | 1.0005 | .9771 | .9970 | .9817 | .96112 | .96988 | |
| | | 3A | .9768 | .9613 | .9738 | .9661 | 1.00000 | .99350 | 1.0000 | .9768 | .9962 | .9807 | .96100 | .96760 | 3B |
| | | | .9765 | .9608 | .9741 | .9666 | .99988 | .99362 | 1.0005 | .9771 | .9957 | .9804 | .96112 | .96748 | |
| 1-32 or 1.000-32 | UN | 2A | .9786 | .9651 | .9748 | .9680 | .99890 | .99290 | 1.0000 | .9797 | .9981 | .9846 | .96600 | .97400 | 2B |
| | | | .9783 | .9646 | .9751 | .9685 | .99878 | .99302 | 1.0005 | .9800 | .9976 | .9843 | .96612 | .97388 | |
| | | 3A | .9797 | .9662 | .9769 | .9701 | 1.00000 | .99400 | 1.0000 | .9797 | .9969 | .9834 | .96600 | .97190 | 3B |
| | | | .9794 | .9657 | .9772 | .9706 | .99988 | .99412 | 1.0005 | .9800 | .9964 | .9831 | .96612 | .97178 | |
| 1 1/16-8 or 1.0625-8 | UN | 2A | .9793 | .9252 | .9725 | .9454 | 1.06050 | 1.04550 | 1.0625 | .9813 | 1.0443 | .9902 | .92700 | .95200 | 2B |
| | | | .9789 | .9245 | .9729 | .9461 | 1.06038 | 1.04562 | 1.0632 | .9817 | 1.0436 | .9898 | .92712 | .95188 | |
| | | 3A | .9813 | .9272 | .9762 | .9491 | 1.06250 | 1.04750 | 1.0625 | .9813 | 1.0421 | .9880 | .92700 | .94220 | 3B |
| | | | .9809 | .9265 | .9766 | .9498 | 1.06238 | 1.04762 | 1.0632 | .9817 | 1.0414 | .9876 | .92712 | .94208 | |
| 1 1/16-12 or 1.0625-12 | UN | 2A | 1.0067 | .9706 | 1.0010 | .9830 | 1.06080 | 1.04940 | 1.0625 | 1.0084 | 1.0519 | 1.0158 | .97200 | .99000 | 2B |
| | | | 1.0064 | .9700 | 1.0013 | .9836 | 1.06068 | 1.04952 | 1.0631 | 1.0087 | 1.0513 | 1.0155 | .97212 | .98988 | |
| | | 3A | 1.0084 | .9723 | 1.0042 | .9862 | 1.06250 | 1.05110 | 1.0625 | 1.0084 | 1.0500 | 1.0139 | .97200 | .98230 | 3B |
| | | | 1.0081 | .9717 | 1.0045 | .9868 | 1.06238 | 1.05122 | 1.0631 | 1.0087 | 1.0494 | 1.0136 | .97212 | .98218 | |
| 1 1/16-16 or 1.0625-16 | UN | 2A | 1.0204 | .9933 | 1.0154 | 1.0019 | 1.06100 | 1.05160 | 1.0625 | 1.0219 | 1.0555 | 1.0284 | .99500 | 1.00900 | 2B |
| | | | 1.0201 | .9927 | 1.0157 | 1.0025 | 1.06088 | 1.05172 | 1.0631 | 1.0222 | 1.0549 | 1.0281 | .99512 | 1.00888 | |
| | | 3A | 1.0219 | .9948 | 1.0182 | 1.0047 | 1.06250 | 1.05310 | 1.0625 | 1.0219 | 1.0539 | 1.0268 | .99500 | 1.00330 | 3B |
| | | | 1.0216 | .9942 | 1.0185 | 1.0053 | 1.06238 | 1.05322 | 1.0631 | 1.0222 | 1.0533 | 1.0265 | .99512 | 1.00318 | |
| 1 1/16-18 or 1.0625-18 | UNEF | 2A | 1.0250 | 1.0009 | 1.0203 | 1.0083 | 1.06110 | 1.05240 | 1.0625 | 1.0264 | 1.0567 | 1.0326 | 1.00200 | 1.01500 | 2B |
| | | | 1.0247 | 1.0004 | 1.0206 | 1.0088 | 1.06098 | 1.05252 | 1.0630 | 1.0267 | 1.0562 | 1.0323 | 1.00212 | 1.01488 | |
| | | 3A | 1.0264 | 1.0023 | 1.0228 | 1.0108 | 1.06250 | 1.05380 | 1.0625 | 1.0264 | 1.0551 | 1.0310 | 1.00200 | 1.01050 | 3B |
| | | | 1.0261 | 1.0018 | 1.0231 | 1.0113 | 1.06238 | 1.05392 | 1.0630 | 1.0267 | 1.0546 | 1.0307 | 1.00212 | 1.01038 | |
| 1 1/16-20 or 1.0625-20 | UN | 2A | 1.0286 | 1.0069 | 1.0241 | 1.0133 | 1.06110 | 1.05300 | 1.0625 | 1.0300 | 1.0576 | 1.0359 | 1.00800 | 1.02000 | 2B |
| | | | 1.0283 | 1.0064 | 1.0244 | 1.0138 | 1.06098 | 1.05312 | 1.0630 | 1.0303 | 1.0571 | 1.0356 | 1.00812 | 1.01988 | |
| | | 3A | 1.0300 | 1.0083 | 1.0266 | 1.0158 | 1.06250 | 1.05440 | 1.0625 | 1.0300 | 1.0561 | 1.0344 | 1.00800 | 1.01620 | 3B |
| | | | 1.0297 | 1.0078 | 1.0269 | 1.0163 | 1.06238 | 1.05452 | 1.0630 | 1.0303 | 1.0556 | 1.0341 | 1.00812 | 1.01608 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 1/16-28 or 1.0625-28 | UN | 2A | 1.0381 | 1.0226 | 1.0341 | 1.0264 | 1.06130 | 1.05480 | 1.0625 | 1.0393 | 1.0600 | 1.0445 | 1.02400 | 1.03200 | 2B |
| | | | 1.0378 | 1.0221 | 1.0344 | 1.0269 | 1.06118 | 1.05492 | 1.0630 | 1.0396 | 1.0595 | 1.0442 | 1.02412 | 1.03188 | |
| | | 3A | 1.0393 | 1.0238 | 1.0363 | 1.0286 | 1.06250 | 1.05600 | 1.0625 | 1.0393 | 1.0587 | 1.0432 | 1.02400 | 1.03010 | 3B |
| | | | 1.0390 | 1.0233 | 1.0366 | 1.0291 | 1.06238 | 1.05612 | 1.0630 | 1.0396 | 1.0582 | 1.0429 | 1.02412 | 1.02998 | |
| 1 1/8-7 or 1.125-7 | UNC | 1A | 1.0300 | .9681 | 1.0191 | .9882 | 1.12280 | 1.09820 | 1.1250 | 1.0322 | 1.1082 | 1.0463 | .97000 | .99800 | 1B |
| | | | 1.0296 | .9674 | 1.0195 | .9889 | 1.12268 | 1.09832 | 1.1257 | 1.0326 | 1.1075 | 1.0459 | .97012 | .99788 | |
| | | 2A | 1.0300 | .9681 | 1.0228 | .9919 | 1.12280 | 1.10640 | 1.1250 | 1.0322 | 1.1035 | 1.0416 | .97000 | .99800 | 2B |
| | | | 1.0296 | .9674 | 1.0232 | .9926 | 1.12268 | 1.10652 | 1.1257 | 1.0326 | 1.1028 | 1.0412 | .97012 | .99788 | |
| | | 3A | 1.0322 | .9703 | 1.0268 | .9959 | 1.12500 | 1.10860 | 1.1250 | 1.0322 | 1.1012 | 1.0393 | .97000 | .98750 | 3B |
| | | | 1.0318 | .9696 | 1.0272 | .9966 | 1.12488 | 1.10872 | 1.1257 | 1.0326 | 1.1005 | 1.0389 | .97012 | .98738 | |
| 1 1/8-8 or 1.125-8 | UN | 2A | 1.0417 | .9876 | 1.0348 | 1.0077 | 1.12290 | 1.10790 | 1.1250 | 1.0438 | 1.1069 | 1.0528 | .99000 | 1.01500 | 2B |
| | | | 1.0413 | .9869 | 1.0352 | 1.0084 | 1.12278 | 1.10802 | 1.1257 | 1.0442 | 1.1062 | 1.0524 | .99012 | 1.01488 | |
| | | 3A | 1.0438 | .9897 | 1.0386 | 1.0115 | 1.12500 | 1.11000 | 1.1250 | 1.0438 | 1.1046 | 1.0505 | .99000 | 1.00470 | 3B |
| | | | 1.0434 | .9890 | 1.0390 | 1.0122 | 1.12488 | 1.11012 | 1.1257 | 1.0442 | 1.1039 | 1.0501 | .99012 | 1.00458 | |
| 1 1/8-12 or 1.125-12 | UNF | 1A | 1.0691 | 1.0330 | 1.0601 | 1.0421 | 1.12320 | 1.10600 | 1.1250 | 1.0709 | 1.1187 | 1.0826 | 1.03500 | 1.05300 | 1B |
| | | | 1.0688 | 1.0324 | 1.0604 | 1.0427 | 1.12308 | 1.10612 | 1.1256 | 1.0712 | 1.1181 | 1.0823 | 1.03512 | 1.05288 | |
| | | 2A | 1.0691 | 1.0330 | 1.0631 | 1.0451 | 1.12320 | 1.11180 | 1.1250 | 1.0709 | 1.1148 | 1.0787 | 1.03500 | 1.05300 | 2B |
| | | | 1.0688 | 1.0324 | 1.0634 | 1.0457 | 1.12308 | 1.11192 | 1.1256 | 1.0712 | 1.1142 | 1.0784 | 1.03512 | 1.05288 | |
| | | 3A | 1.0709 | 1.0348 | 1.0664 | 1.0484 | 1.12500 | 1.11360 | 1.1250 | 1.0709 | 1.1129 | 1.0768 | 1.03500 | 1.04480 | 3B |
| | | | 1.0706 | 1.0342 | 1.0667 | 1.0490 | 1.12488 | 1.11372 | 1.1256 | 1.0712 | 1.1123 | 1.0765 | 1.03512 | 1.04468 | |
| 1 1/8-16 or 1.125-16 | UN | 2A | 1.0829 | 1.0558 | 1.0779 | 1.0644 | 1.12350 | 1.11410 | 1.1250 | 1.0844 | 1.1180 | 1.0909 | 1.05700 | 1.07100 | 2B |
| | | | 1.0826 | 1.0552 | 1.0782 | 1.0650 | 1.12338 | 1.11422 | 1.1256 | 1.0847 | 1.1174 | 1.0906 | 1.05712 | 1.07088 | |
| | | 3A | 1.0844 | 1.0573 | 1.0807 | 1.0672 | 1.12500 | 1.11560 | 1.1250 | 1.0844 | 1.1164 | 1.0893 | 1.05700 | 1.06580 | 3B |
| | | | 1.0841 | 1.0567 | 1.0810 | 1.0678 | 1.12488 | 1.11572 | 1.1256 | 1.0847 | 1.1158 | 1.0890 | 1.05712 | 1.06568 | |
| 1 1/8-18 or 1.125-18 | UNEF | 2A | 1.0875 | 1.0634 | 1.0828 | 1.0708 | 1.12360 | 1.11490 | 1.1250 | 1.0889 | 1.1192 | 1.0951 | 1.06500 | 1.07800 | 2B |
| | | | 1.0872 | 1.0629 | 1.0831 | 1.0713 | 1.12348 | 1.11502 | 1.1255 | 1.0892 | 1.1187 | 1.0948 | 1.06512 | 1.07788 | |
| | | 3A | 1.0889 | 1.0648 | 1.0853 | 1.0733 | 1.12500 | 1.11630 | 1.1250 | 1.0889 | 1.1176 | 1.0935 | 1.06500 | 1.07300 | 3B |
| | | | 1.0886 | 1.0643 | 1.0856 | 1.0738 | 1.12488 | 1.11642 | 1.1255 | 1.0892 | 1.1171 | 1.0932 | 1.06512 | 1.07288 | |
| 1 1/8-20 or 1.125-20 | UN | 2A | 1.0911 | 1.0694 | 1.0866 | 1.0758 | 1.12360 | 1.11550 | 1.1250 | 1.0925 | 1.1201 | 1.0984 | 1.07100 | 1.08200 | 2B |
| | | | 1.0908 | 1.0689 | 1.0869 | 1.0763 | 1.12348 | 1.11562 | 1.1255 | 1.0928 | 1.1196 | 1.0981 | 1.07112 | 1.08188 | |
| | | 3A | 1.0925 | 1.0708 | 1.0891 | 1.0783 | 1.12500 | 1.11690 | 1.1250 | 1.0925 | 1.1186 | 1.0969 | 1.07100 | 1.07870 | 3B |
| | | | 1.0922 | 1.0703 | 1.0894 | 1.0788 | 1.12488 | 1.11702 | 1.1255 | 1.0928 | 1.1181 | 1.0966 | 1.07112 | 1.07858 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1⅛-28 or 1.125-28 | UN | 2A | 1.1006 | 1.0851 | 1.0966 | 1.0889 | 1.12380 | 1.11730 | 1.1250 | 1.1018 | 1.1225 | 1.1070 | 1.08600 | 1.09500 | 2B |
| | | | 1.1003 | 1.0846 | 1.0969 | 1.0894 | 1.12368 | 1.11742 | 1.1255 | 1.1021 | 1.1220 | 1.1067 | 1.08612 | 1.09488 | |
| | | 3A | 1.1018 | 1.0863 | 1.0988 | 1.0911 | 1.12500 | 1.11850 | 1.1250 | 1.1018 | 1.1212 | 1.1057 | 1.08600 | 1.09260 | 3B |
| | | | 1.1015 | 1.0858 | 1.0991 | 1.0916 | 1.12488 | 1.11862 | 1.1255 | 1.1021 | 1.1217 | 1.1054 | 1.08612 | 1.09248 | |
| 1³⁄16-8 or 1.1875-8 | UN | 2A | 1.1042 | 1.0501 | 1.0972 | 1.0701 | 1.18540 | 1.17040 | 1.1875 | 1.1063 | 1.1695 | 1.1154 | 1.05200 | 1.07700 | 2B |
| | | | 1.1038 | 1.0494 | 1.0976 | 1.0708 | 1.18528 | 1.17052 | 1.1882 | 1.1067 | 1.1688 | 1.1150 | 1.05212 | 1.07688 | |
| | | 3A | 1.1063 | 1.0522 | 1.1011 | 1.0740 | 1.18750 | 1.17250 | 1.1875 | 1.1063 | 1.1672 | 1.1131 | 1.05200 | 1.06720 | 3B |
| | | | 1.1059 | 1.0515 | 1.1015 | 1.0747 | 1.18738 | 1.17262 | 1.1882 | 1.1067 | 1.1665 | 1.1127 | 1.05212 | 1.06708 | |
| 1³⁄16-12 or 1.1875-12 | UN | 2A | 1.1317 | 1.0956 | 1.1259 | 1.1079 | 1.18580 | 1.17440 | 1.1875 | 1.1334 | 1.1770 | 1.1409 | 1.09700 | 1.11500 | 2B |
| | | | 1.1314 | 1.0950 | 1.1262 | 1.1085 | 1.18568 | 1.17452 | 1.1881 | 1.1337 | 1.1764 | 1.1406 | 1.09712 | 1.11488 | |
| | | 3A | 1.1334 | 1.0973 | 1.1291 | 1.1111 | 1.18750 | 1.17610 | 1.1875 | 1.1334 | 1.1751 | 1.1390 | 1.09700 | 1.10730 | 3B |
| | | | 1.1331 | 1.0967 | 1.1294 | 1.1117 | 1.18738 | 1.17622 | 1.1881 | 1.1337 | 1.1745 | 1.1387 | 1.09712 | 1.10718 | |
| 1³⁄16-16 or 1.1875-16 | UN | 2A | 1.1454 | 1.1183 | 1.1403 | 1.1268 | 1.18600 | 1.17660 | 1.1875 | 1.1469 | 1.1806 | 1.1535 | 1.12000 | 1.13400 | 2B |
| | | | 1.1451 | 1.1177 | 1.1406 | 1.1274 | 1.18588 | 1.17672 | 1.1881 | 1.1472 | 1.1800 | 1.1532 | 1.12012 | 1.13388 | |
| | | 3A | 1.1469 | 1.1198 | 1.1431 | 1.1296 | 1.18750 | 1.17810 | 1.1875 | 1.1469 | 1.1790 | 1.1519 | 1.12000 | 1.12830 | 3B |
| | | | 1.1466 | 1.1192 | 1.1434 | 1.1302 | 1.18738 | 1.17822 | 1.1881 | 1.1472 | 1.1784 | 1.1516 | 1.12012 | 1.12818 | |
| 1³⁄16-18 or 1.1875-18 | UNEF | 2A | 1.1499 | 1.1258 | 1.1450 | 1.1330 | 1.18600 | 1.17730 | 1.1875 | 1.1514 | 1.1818 | 1.1577 | 1.12700 | 1.14000 | 2B |
| | | | 1.1496 | 1.1253 | 1.1453 | 1.1335 | 1.18588 | 1.17742 | 1.1880 | 1.1517 | 1.1813 | 1.1574 | 1.12712 | 1.13988 | |
| | | 3A | 1.1514 | 1.1273 | 1.1478 | 1.1358 | 1.18750 | 1.17880 | 1.1875 | 1.1514 | 1.1802 | 1.1561 | 1.12700 | 1.13550 | 3B |
| | | | 1.1511 | 1.1268 | 1.1481 | 1.1363 | 1.18738 | 1.17892 | 1.1880 | 1.1517 | 1.1797 | 1.1558 | 1.12712 | 1.13538 | |
| 1³⁄16-20 or 1.1875-20 | UN | 2A | 1.1536 | 1.1319 | 1.1489 | 1.1381 | 1.18610 | 1.17800 | 1.1875 | 1.1550 | 1.1828 | 1.1611 | 1.13300 | 1.14500 | 2B |
| | | | 1.1533 | 1.1314 | 1.1492 | 1.1386 | 1.18598 | 1.17812 | 1.1880 | 1.1553 | 1.1823 | 1.1608 | 1.13312 | 1.14488 | |
| | | 3A | 1.1550 | 1.1333 | 1.1515 | 1.1407 | 1.18750 | 1.17940 | 1.1875 | 1.1550 | 1.1812 | 1.1595 | 1.13300 | 1.14120 | 3B |
| | | | 1.1547 | 1.1328 | 1.1518 | 1.1412 | 1.18738 | 1.17952 | 1.1880 | 1.1553 | 1.1807 | 1.1592 | 1.13312 | 1.14108 | |
| 1³⁄16-28 or 1.1875-28 | UN | 2A | 1.1631 | 1.1476 | 1.1590 | 1.1513 | 1.18630 | 1.17980 | 1.1875 | 1.1643 | 1.1851 | 1.1696 | 1.14900 | 1.15700 | 2B |
| | | | 1.1628 | 1.1471 | 1.1593 | 1.1518 | 1.18618 | 1.17992 | 1.1880 | 1.1646 | 1.1846 | 1.1693 | 1.14912 | 1.15688 | |
| | | 3A | 1.1643 | 1.1488 | 1.1612 | 1.1535 | 1.18750 | 1.18100 | 1.1875 | 1.1643 | 1.1838 | 1.1683 | 1.14900 | 1.15510 | 3B |
| | | | 1.1640 | 1.1483 | 1.1615 | 1.1540 | 1.18738 | 1.18112 | 1.1880 | 1.1646 | 1.1833 | 1.1680 | 1.14912 | 1.15498 | |
| 1¼-7 or 1.250-7 | UNC | 1A | 1.1550 | 1.0931 | 1.1439 | 1.1130 | 1.24780 | 1.22320 | 1.2500 | 1.1572 | 1.2335 | 1.1716 | 1.09500 | 1.12300 | 1B |
| | | | 1.1546 | 1.0924 | 1.1443 | 1.1137 | 1.24768 | 1.22332 | 1.2507 | 1.1576 | 1.2328 | 1.1712 | 1.09512 | 1.12288 | |
| | | 2A | 1.1550 | 1.0931 | 1.1476 | 1.1167 | 1.24780 | 1.23140 | 1.2500 | 1.1572 | 1.2287 | 1.1668 | 1.09500 | 1.12300 | 2B |
| | | | 1.1546 | 1.0924 | 1.1480 | 1.1174 | 1.24768 | 1.23152 | 1.2507 | 1.1576 | 1.2280 | 1.1664 | 1.09512 | 1.12288 | |
| | | 3A | 1.1572 | 1.0953 | 1.1517 | 1.1208 | 1.25000 | 1.23360 | 1.2500 | 1.1572 | 1.2263 | 1.1644 | 1.09500 | 1.11250 | 3B |
| | | | 1.1568 | 1.0946 | 1.1521 | 1.1215 | 1.24988 | 1.23372 | 1.2507 | 1.1576 | 1.2256 | 1.1640 | 1.09512 | 1.11238 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1¼-8 or 1.250-8 | UN | 2A | 1.1667 | 1.1126 | 1.1597 | 1.1326 | 1.24790 | 1.23290 | 1.2500 | 1.1688 | 1.2321 | 1.1780 | 1.11500 | 1.14000 | 2B |
| | | | 1.1663 | 1.1119 | 1.1601 | 1.1333 | 1.24778 | 1.23302 | 1.2507 | 1.1692 | 1.2314 | 1.1776 | 1.11512 | 1.13988 | |
| | | 3A | 1.1688 | 1.1147 | 1.1635 | 1.1364 | 1.25000 | 1.23500 | 1.2500 | 1.1688 | 1.2298 | 1.1757 | 1.11500 | 1.12970 | 3B |
| | | | 1.1684 | 1.1140 | 1.1639 | 1.1371 | 1.24988 | 1.23512 | 1.2507 | 1.1692 | 1.2291 | 1.1753 | 1.11512 | 1.12958 | |
| 1¼-12 or 1.250-12 | UNF | 1A | 1.1941 | 1.1580 | 1.1849 | 1.1669 | 1.24820 | 1.23100 | 1.2500 | 1.1959 | 1.2440 | 1.2079 | 1.16000 | 1.17800 | 1B |
| | | | 1.1938 | 1.1574 | 1.1852 | 1.1675 | 1.24808 | 1.23112 | 1.2506 | 1.1962 | 1.2434 | 1.2076 | 1.16012 | 1.17788 | |
| | | 2A | 1.1941 | 1.1580 | 1.1879 | 1.1699 | 1.24820 | 1.23680 | 1.2500 | 1.1959 | 1.2400 | 1.2039 | 1.16000 | 1.17800 | 2B |
| | | | 1.1938 | 1.1574 | 1.1882 | 1.1705 | 1.24808 | 1.23692 | 1.2506 | 1.1962 | 1.2394 | 1.2036 | 1.16012 | 1.17788 | |
| | | 3A | 1.1959 | 1.1598 | 1.1913 | 1.1733 | 1.25000 | 1.23860 | 1.2500 | 1.1959 | 1.2380 | 1.2019 | 1.16000 | 1.16980 | 3B |
| | | | 1.1956 | 1.1592 | 1.1916 | 1.1739 | 1.24988 | 1.23872 | 1.2506 | 1.1962 | 1.2374 | 1.2016 | 1.16012 | 1.16968 | |
| 1¼-16 or 1.250-16 | UN | 2A | 1.2079 | 1.1808 | 1.2028 | 1.1893 | 1.24850 | 1.23910 | 1.2500 | 1.2094 | 1.2431 | 1.2160 | 1.18200 | 1.19600 | 2B |
| | | | 1.2076 | 1.1802 | 1.2031 | 1.1899 | 1.24838 | 1.23922 | 1.2506 | 1.2097 | 1.2425 | 1.2157 | 1.18212 | 1.19588 | |
| | | 3A | 1.2094 | 1.1823 | 1.2056 | 1.1921 | 1.25000 | 1.24060 | 1.2500 | 1.2094 | 1.2415 | 1.2144 | 1.18200 | 1.19080 | 3B |
| | | | 1.2091 | 1.1817 | 1.2059 | 1.1927 | 1.24988 | 1.24072 | 1.2506 | 1.2097 | 1.2409 | 1.2141 | 1.18212 | 1.19068 | |
| 1¼-18 or 1.250-18 | UNEF | 2A | 1.2124 | 1.1883 | 1.2075 | 1.1955 | 1.24850 | 1.23980 | 1.2500 | 1.2139 | 1.2443 | 1.2202 | 1.19000 | 1.20300 | 2B |
| | | | 1.2121 | 1.1878 | 1.2078 | 1.1960 | 1.24838 | 1.23992 | 1.2505 | 1.2142 | 1.2438 | 1.2199 | 1.19012 | 1.20288 | |
| | | 3A | 1.2139 | 1.1898 | 1.2103 | 1.1983 | 1.25000 | 1.24130 | 1.2500 | 1.2139 | 1.2427 | 1.2186 | 1.19000 | 1.19800 | 3B |
| | | | 1.2136 | 1.1893 | 1.2106 | 1.1988 | 1.24988 | 1.24142 | 1.2505 | 1.2142 | 1.2422 | 1.2183 | 1.19012 | 1.19788 | |
| 1¼-20 or 1.250-20 | UN | 2A | 1.2161 | 1.1944 | 1.2114 | 1.2006 | 1.24860 | 1.24050 | 1.2500 | 1.2175 | 1.2453 | 1.2236 | 1.19600 | 1.20700 | 2B |
| | | | 1.2158 | 1.1939 | 1.2117 | 1.2011 | 1.24848 | 1.24062 | 1.2505 | 1.2178 | 1.2448 | 1.2233 | 1.19612 | 1.20688 | |
| | | 3A | 1.2175 | 1.1958 | 1.2140 | 1.2032 | 1.25000 | 1.24190 | 1.2500 | 1.2175 | 1.2437 | 1.2220 | 1.19600 | 1.20370 | 3B |
| | | | 1.2172 | 1.1953 | 1.2143 | 1.2037 | 1.24988 | 1.24202 | 1.2505 | 1.2178 | 1.2432 | 1.2217 | 1.19612 | 1.20358 | |
| 1¼-28 or 1.250-28 | UN | 2A | 1.2256 | 1.2101 | 1.2215 | 1.2138 | 1.24880 | 1.24230 | 1.2500 | 1.2268 | 1.2476 | 1.2321 | 1.21100 | 1.22000 | 2B |
| | | | 1.2253 | 1.2096 | 1.2218 | 1.2143 | 1.24868 | 1.24242 | 1.2505 | 1.2271 | 1.2471 | 1.2318 | 1.21112 | 1.21988 | |
| | | 3A | 1.2268 | 1.2113 | 1.2237 | 1.2160 | 1.25000 | 1.24350 | 1.2500 | 1.2268 | 1.2463 | 1.2308 | 1.21100 | 1.21760 | 3B |
| | | | 1.2265 | 1.2108 | 1.2240 | 1.2165 | 1.24988 | 1.24362 | 1.2505 | 1.2271 | 1.2458 | 1.2305 | 1.21112 | 1.21748 | |
| 1⁵⁄₁₆-8 or 1.3125-8 | UN | 2A | 1.2292 | 1.1751 | 1.2221 | 1.1950 | 1.31040 | 1.29540 | 1.3125 | 1.2313 | 1.2946 | 1.2405 | 1.17700 | 1.20200 | 2B |
| | | | 1.2288 | 1.1744 | 1.2225 | 1.1957 | 1.31028 | 1.29552 | 1.3132 | 1.2317 | 1.2939 | 1.2401 | 1.17712 | 1.20188 | |
| | | 3A | 1.2313 | 1.1772 | 1.2260 | 1.1989 | 1.31250 | 1.29750 | 1.3125 | 1.2313 | 1.2923 | 1.2382 | 1.17700 | 1.19220 | 3B |
| | | | 1.2309 | 1.1765 | 1.2264 | 1.1996 | 1.31238 | 1.29762 | 1.3132 | 1.2317 | 1.2916 | 1.2378 | 1.17712 | 1.19208 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 5/16-12 or 1.3125-12 | UN | 2A | 1.2567 | 1.2206 | 1.2509 | 1.2329 | 1.31080 | 1.29940 | 1.3125 | 1.2584 | 1.3020 | 1.2659 | 1.22200 | 1.24000 | 2B |
| | | | 1.2564 | 1.2200 | 1.2512 | 1.2335 | 1.31068 | 1.29952 | 1.3131 | 1.2587 | 1.3014 | 1.2656 | 1.22212 | 1.23988 | |
| | | 3A | 1.2584 | 1.2223 | 1.2541 | 1.2361 | 1.31250 | 1.30110 | 1.3125 | 1.2584 | 1.3001 | 1.2640 | 1.22200 | 1.23230 | 3B |
| | | | 1.2581 | 1.2217 | 1.2544 | 1.2367 | 1.31238 | 1.30122 | 1.3131 | 1.2587 | 1.2995 | 1.2637 | 1.22212 | 1.23218 | |
| 1 5/16-16 or 1.3125-16 | UN | 2A | 1.2704 | 1.2433 | 1.2653 | 1.2518 | 1.31100 | 1.30160 | 1.3125 | 1.2719 | 1.3056 | 1.2785 | 1.24500 | 1.25900 | 2B |
| | | | 1.2701 | 1.2427 | 1.2656 | 1.2524 | 1.31088 | 1.30172 | 1.3131 | 1.2722 | 1.3050 | 1.2782 | 1.24512 | 1.25888 | |
| | | 3A | 1.2719 | 1.2448 | 1.2681 | 1.2546 | 1.31250 | 1.30310 | 1.3125 | 1.2719 | 1.3040 | 1.2769 | 1.24500 | 1.25330 | 3B |
| | | | 1.2716 | 1.2442 | 1.2684 | 1.2552 | 1.31238 | 1.30322 | 1.3131 | 1.2722 | 1.3034 | 1.2766 | 1.24512 | 1.25318 | |
| 1 5/16-18 or 1.3125-18 | UNEF | 2A | 1.2749 | 1.2508 | 1.2700 | 1.2580 | 1.31100 | 1.30230 | 1.3125 | 1.2764 | 1.3068 | 1.2827 | 1.25200 | 1.26500 | 2B |
| | | | 1.2746 | 1.2503 | 1.2703 | 1.2585 | 1.31088 | 1.30242 | 1.3130 | 1.2767 | 1.3063 | 1.2824 | 1.25212 | 1.26488 | |
| | | 3A | 1.2764 | 1.2523 | 1.2728 | 1.2608 | 1.31250 | 1.30380 | 1.3125 | 1.2764 | 1.3052 | 1.2811 | 1.25200 | 1.26050 | 3B |
| | | | 1.2761 | 1.2518 | 1.2731 | 1.2613 | 1.31238 | 1.30392 | 1.3130 | 1.2767 | 1.3047 | 1.2808 | 1.25212 | 1.26038 | |
| 1 5/16-20 or 1.3125-20 | UN | 2A | 1.2786 | 1.2569 | 1.2739 | 1.2631 | 1.31110 | 1.30300 | 1.3125 | 1.2800 | 1.3078 | 1.2861 | 1.25800 | 1.27000 | 2B |
| | | | 1.2783 | 1.2564 | 1.2742 | 1.2636 | 1.31098 | 1.30312 | 1.3130 | 1.2803 | 1.3073 | 1.2858 | 1.25812 | 1.26988 | |
| | | 3A | 1.2800 | 1.2583 | 1.2765 | 1.2657 | 1.31250 | 1.30440 | 1.3125 | 1.2800 | 1.3062 | 1.2845 | 1.25800 | 1.26620 | 3B |
| | | | 1.2797 | 1.2578 | 1.2768 | 1.2662 | 1.31238 | 1.30452 | 1.3130 | 1.2803 | 1.3057 | 1.2842 | 1.25812 | 1.26608 | |
| 1 5/16-28 or 1.3125-28 | UN | 2A | 1.2881 | 1.2726 | 1.2840 | 1.2763 | 1.31130 | 1.30480 | 1.3125 | 1.2893 | 1.3101 | 1.2946 | 1.27400 | 1.28200 | 2B |
| | | | 1.2878 | 1.2721 | 1.2843 | 1.2768 | 1.31118 | 1.30492 | 1.3130 | 1.2896 | 1.3096 | 1.2943 | 1.27412 | 1.28188 | |
| | | 3A | 1.2893 | 1.2738 | 1.2862 | 1.2785 | 1.31250 | 1.30600 | 1.3125 | 1.2893 | 1.3088 | 1.2933 | 1.27400 | 1.28010 | 3B |
| | | | 1.2890 | 1.2733 | 1.2865 | 1.2790 | 1.31238 | 1.30612 | 1.3130 | 1.2896 | 1.3083 | 1.2930 | 1.27412 | 1.27998 | |
| 1 3/8-6 or 1.375-6 | UNC | 1A | 1.2643 | 1.1921 | 1.2523 | 1.2162 | 1.37260 | 1.34530 | 1.3750 | 1.2667 | 1.3544 | 1.2822 | 1.19500 | 1.22500 | 1B |
| | | | 1.2639 | 1.1913 | 1.2527 | 1.2170 | 1.37248 | 1.34542 | 1.3758 | 1.2671 | 1.3536 | 1.2818 | 1.19512 | 1.22488 | |
| | | 2A | 1.2643 | 1.1921 | 1.2563 | 1.2202 | 1.37260 | 1.35440 | 1.3750 | 1.2667 | 1.3493 | 1.2771 | 1.19500 | 1.22500 | 2B |
| | | | 1.2639 | 1.1913 | 1.2567 | 1.2210 | 1.37248 | 1.35452 | 1.3758 | 1.2671 | 1.3485 | 1.2767 | 1.19512 | 1.22488 | |
| | | 3A | 1.2667 | 1.1945 | 1.2607 | 1.2246 | 1.37500 | 1.35680 | 1.3750 | 1.2667 | 1.3467 | 1.2745 | 1.19500 | 1.21460 | 3B |
| | | | 1.2663 | 1.1937 | 1.2611 | 1.2254 | 1.37488 | 1.35692 | 1.3758 | 1.2671 | 1.3459 | 1.2741 | 1.19512 | 1.21448 | |
| 1 3/8-8 or 1.375-8 | UN | 2A | 1.2916 | 1.2375 | 1.2844 | 1.2573 | 1.37280 | 1.35780 | 1.3750 | 1.2938 | 1.3572 | 1.3031 | 1.24000 | 1.26500 | 2B |
| | | | 1.2912 | 1.2368 | 1.2848 | 1.2580 | 1.37268 | 1.35792 | 1.3757 | 1.2942 | 1.3565 | 1.3027 | 1.24012 | 1.26488 | |
| | | 3A | 1.2938 | 1.2397 | 1.2884 | 1.2613 | 1.37500 | 1.36000 | 1.3750 | 1.2938 | 1.3549 | 1.3008 | 1.24000 | 1.25470 | 3B |
| | | | 1.2934 | 1.2390 | 1.2888 | 1.2620 | 1.37488 | 1.36012 | 1.3757 | 1.2942 | 1.3542 | 1.3004 | 1.24012 | 1.25458 | |
| 1 3/8-12 or 1.375-12 | UNF | 1A | 1.3190 | 1.2829 | 1.3096 | 1.2916 | 1.37310 | 1.35590 | 1.3750 | 1.3209 | 1.3693 | 1.3332 | 1.28500 | 1.30300 | 1B |
| | | | 1.3187 | 1.2823 | 1.3099 | 1.2922 | 1.37298 | 1.35602 | 1.3756 | 1.3212 | 1.3687 | 1.3329 | 1.28512 | 1.30288 | |
| | | 2A | 1.3190 | 1.2829 | 1.3127 | 1.2947 | 1.37310 | 1.36170 | 1.3750 | 1.3209 | 1.3652 | 1.3291 | 1.28500 | 1.30300 | 2B |
| | | | 1.3187 | 1.2823 | 1.3130 | 1.2953 | 1.37298 | 1.36182 | 1.3756 | 1.3212 | 1.3646 | 1.3288 | 1.28512 | 1.30288 | |
| | | 3A | 1.3209 | 1.2848 | 1.3162 | 1.2982 | 1.37500 | 1.36360 | 1.3750 | 1.3209 | 1.3631 | 1.3270 | 1.28500 | 1.29480 | 3B |
| | | | 1.3206 | 1.2842 | 1.3165 | 1.2988 | 1.37488 | 1.36372 | 1.3756 | 1.3212 | 1.3625 | 1.3267 | 1.28512 | 1.29468 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1⅜-16 or 1.375-16 | UN | 2A | 1.3329 | 1.3058 | 1.3278 | 1.3143 | 1.37350 | 1.36410 | 1.3750 | 1.3344 | 1.3681 | 1.3410 | 1.30700 | 1.32100 | 2B |
| | | | 1.3326 | 1.3052 | 1.3281 | 1.3149 | 1.37338 | 1.36422 | 1.3756 | 1.3347 | 1.3675 | 1.3407 | 1.30712 | 1.32088 | |
| | | 3A | 1.3344 | 1.3073 | 1.3306 | 1.3171 | 1.37500 | 1.36560 | 1.3750 | 1.3344 | 1.3665 | 1.3394 | 1.30700 | 1.31580 | 3B |
| | | | 1.3341 | 1.3067 | 1.3309 | 1.3177 | 1.37488 | 1.36572 | 1.3756 | 1.3347 | 1.3659 | 1.3391 | 1.30712 | 1.31568 | |
| 1⅜-18 or 1.375-18 | UNEF | 2A | 1.3374 | 1.3133 | 1.3325 | 1.3205 | 1.37350 | 1.36480 | 1.3750 | 1.3389 | 1.3693 | 1.3452 | 1.31500 | 1.32800 | 2B |
| | | | 1.3371 | 1.3128 | 1.3328 | 1.3210 | 1.37338 | 1.36492 | 1.3755 | 1.3392 | 1.3688 | 1.3449 | 1.31512 | 1.32788 | |
| | | 3A | 1.3389 | 1.3148 | 1.3353 | 1.3233 | 1.37500 | 1.36630 | 1.3750 | 1.3389 | 1.3677 | 1.3436 | 1.31500 | 1.32300 | 3B |
| | | | 1.3386 | 1.3143 | 1.3356 | 1.3238 | 1.37488 | 1.36642 | 1.3755 | 1.3392 | 1.3672 | 1.3433 | 1.31512 | 1.32288 | |
| 1⅜-20 or 1.375-20 | UN | 2A | 1.3411 | 1.3194 | 1.3364 | 1.3256 | 1.37360 | 1.36550 | 1.3750 | 1.3425 | 1.3703 | 1.3486 | 1.32100 | 1.33200 | 2B |
| | | | 1.3408 | 1.3189 | 1.3367 | 1.3261 | 1.37348 | 1.36562 | 1.3755 | 1.3428 | 1.3698 | 1.3483 | 1.32112 | 1.33188 | |
| | | 3A | 1.3425 | 1.3208 | 1.3390 | 1.3282 | 1.37500 | 1.36690 | 1.3750 | 1.3425 | 1.3687 | 1.3470 | 1.32100 | 1.32870 | 3B |
| | | | 1.3422 | 1.3203 | 1.3393 | 1.3287 | 1.37488 | 1.36702 | 1.3755 | 1.3428 | 1.3682 | 1.3467 | 1.32112 | 1.32858 | |
| 1⅜-28 or 1.375-28 | UN | 2A | 1.3506 | 1.3351 | 1.3465 | 1.3388 | 1.37380 | 1.36730 | 1.3750 | 1.3518 | 1.3726 | 1.3571 | 1.33600 | 1.34500 | 2B |
| | | | 1.3503 | 1.3346 | 1.3468 | 1.3393 | 1.37368 | 1.36742 | 1.3755 | 1.3521 | 1.3721 | 1.3568 | 1.33612 | 1.34488 | |
| | | 3A | 1.3518 | 1.3363 | 1.3487 | 1.3410 | 1.37500 | 1.36850 | 1.3750 | 1.3518 | 1.3713 | 1.3558 | 1.33600 | 1.34260 | 3B |
| | | | 1.3515 | 1.3358 | 1.3490 | 1.3415 | 1.37488 | 1.36862 | 1.3755 | 1.3521 | 1.3708 | 1.3555 | 1.33612 | 1.34248 | |
| 1⁷⁄₁₆-6 or 1.4375-6 | UN | 2A | 1.3268 | 1.2546 | 1.3188 | 1.2827 | 1.43510 | 1.41690 | 1.4375 | 1.3292 | 1.4118 | 1.3396 | 1.25700 | 1.28800 | 2B |
| | | | 1.3264 | 1.2538 | 1.3192 | 1.2835 | 1.43498 | 1.41702 | 1.4383 | 1.3296 | 1.4110 | 1.3392 | 1.25712 | 1.28788 | |
| | | 3A | 1.3292 | 1.2570 | 1.3232 | 1.2871 | 1.43750 | 1.41930 | 1.4375 | 1.3292 | 1.4092 | 1.3370 | 1.25700 | 1.27710 | 3B |
| | | | 1.3288 | 1.2562 | 1.3236 | 1.2879 | 1.43738 | 1.41942 | 1.4383 | 1.3296 | 1.4084 | 1.3366 | 1.25712 | 1.27698 | |
| 1⁷⁄₁₆-8 or 1.4375-8 | UN | 2A | 1.3541 | 1.3000 | 1.3469 | 1.3198 | 1.43530 | 1.42030 | 1.4375 | 1.3563 | 1.4198 | 1.3657 | 1.30200 | 1.32700 | 2B |
| | | | 1.3537 | 1.2993 | 1.3473 | 1.3205 | 1.43518 | 1.42042 | 1.4382 | 1.3567 | 1.4191 | 1.3653 | 1.30212 | 1.32688 | |
| | | 3A | 1.3563 | 1.3022 | 1.3509 | 1.3238 | 1.43750 | 1.42250 | 1.4375 | 1.3563 | 1.4175 | 1.3634 | 1.30200 | 1.31720 | 3B |
| | | | 1.3559 | 1.3015 | 1.3513 | 1.3245 | 1.43738 | 1.42262 | 1.4382 | 1.3567 | 1.4168 | 1.3630 | 1.30212 | 1.31708 | |
| 1⁷⁄₁₆-12 or 1.4375-12 | UN | 2A | 1.3816 | 1.3455 | 1.3757 | 1.3577 | 1.43570 | 1.42430 | 1.4375 | 1.3834 | 1.4271 | 1.3910 | 1.34700 | 1.36500 | 2B |
| | | | 1.3813 | 1.3449 | 1.3760 | 1.3583 | 1.43558 | 1.42442 | 1.4381 | 1.3837 | 1.4265 | 1.3907 | 1.34712 | 1.36488 | |
| | | 3A | 1.3834 | 1.3473 | 1.3790 | 1.3610 | 1.43750 | 1.42610 | 1.4375 | 1.3834 | 1.4252 | 1.3891 | 1.34700 | 1.35730 | 3B |
| | | | 1.3831 | 1.3467 | 1.3793 | 1.3616 | 1.43738 | 1.42622 | 1.4381 | 1.3837 | 1.4246 | 1.3888 | 1.34712 | 1.35718 | |
| 1⁷⁄₁₆-16 or 1.4375-16 | UN | 2A | 1.3953 | 1.3682 | 1.3901 | 1.3766 | 1.43590 | 1.42650 | 1.4375 | 1.3969 | 1.4308 | 1.4037 | 1.37000 | 1.38400 | 2B |
| | | | 1.3950 | 1.3676 | 1.3904 | 1.3772 | 1.43578 | 1.42662 | 1.4381 | 1.3972 | 1.4302 | 1.4034 | 1.37012 | 1.38388 | |
| | | 3A | 1.3969 | 1.3698 | 1.3930 | 1.3795 | 1.43750 | 1.42810 | 1.4375 | 1.3969 | 1.4291 | 1.4020 | 1.37000 | 1.37830 | 3B |
| | | | 1.3966 | 1.3692 | 1.3933 | 1.3801 | 1.43738 | 1.42822 | 1.4381 | 1.3972 | 1.4285 | 1.4017 | 1.37012 | 1.37818 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 7/16-18 or 1.4375-18 | UNEF | 2A | 1.3999 | 1.3758 | 1.3949 | 1.3829 | 1.43600 | 1.42730 | 1.4375 | 1.4014 | 1.4320 | 1.4079 | 1.37700 | 1.39000 | 2B |
| | | | 1.3996 | 1.3753 | 1.3952 | 1.3834 | 1.43588 | 1.42742 | 1.4380 | 1.4017 | 1.4315 | 1.4076 | 1.37712 | 1.38988 | |
| | | 3A | 1.4014 | 1.3773 | 1.3977 | 1.3857 | 1.43750 | 1.42880 | 1.4375 | 1.4014 | 1.4303 | 1.4062 | 1.37700 | 1.38550 | 3B |
| | | | 1.4011 | 1.3768 | 1.3980 | 1.3862 | 1.43738 | 1.42892 | 1.4380 | 1.4017 | 1.4298 | 1.4059 | 1.37712 | 1.38538 | |
| 1 7/16-20 or 1.4375-20 | UN | 2A | 1.4036 | 1.3819 | 1.3988 | 1.3880 | 1.43610 | 1.42800 | 1.4375 | 1.4050 | 1.4329 | 1.4112 | 1.38300 | 1.39500 | 2B |
| | | | 1.4033 | 1.3814 | 1.3991 | 1.3885 | 1.43598 | 1.42812 | 1.4380 | 1.4053 | 1.4324 | 1.4109 | 1.38312 | 1.39488 | |
| | | 3A | 1.4050 | 1.3833 | 1.4014 | 1.3906 | 1.43750 | 1.42940 | 1.4375 | 1.4050 | 1.4313 | 1.4096 | 1.38300 | 1.39120 | 3B |
| | | | 1.4047 | 1.3828 | 1.4017 | 1.3911 | 1.43738 | 1.42952 | 1.4380 | 1.4053 | 1.4308 | 1.4093 | 1.38312 | 1.39108 | |
| 1 7/16-28 or 1.4375-28 | UN | 2A | 1.4130 | 1.3975 | 1.4088 | 1.4011 | 1.43620 | 1.42970 | 1.4375 | 1.4143 | 1.4353 | 1.4198 | 1.39900 | 1.40700 | 2B |
| | | | 1.4127 | 1.3970 | 1.4091 | 1.4016 | 1.43608 | 1.42982 | 1.4380 | 1.4146 | 1.4348 | 1.4195 | 1.39912 | 1.40688 | |
| | | 3A | 1.4143 | 1.3988 | 1.4112 | 1.4035 | 1.43750 | 1.43100 | 1.4375 | 1.4143 | 1.4339 | 1.4184 | 1.39900 | 1.40510 | 3B |
| | | | 1.4140 | 1.3983 | 1.4115 | 1.4040 | 1.43738 | 1.43112 | 1.4380 | 1.4146 | 1.4334 | 1.4181 | 1.39912 | 1.40498 | |
| 1 1/2-6 or 1.500-6 | UNC | 1A | 1.3893 | 1.3171 | 1.3772 | 1.3411 | 1.49760 | 1.47030 | 1.5000 | 1.3917 | 1.4797 | 1.4075 | 1.32000 | 1.35000 | 1B |
| | | | 1.3889 | 1.3163 | 1.3776 | 1.3419 | 1.49748 | 1.47042 | 1.5008 | 1.3921 | 1.4789 | 1.4071 | 1.32012 | 1.34988 | |
| | | 2A | 1.3893 | 1.3171 | 1.3812 | 1.3451 | 1.49760 | 1.47940 | 1.5000 | 1.3917 | 1.4744 | 1.4022 | 1.32000 | 1.35000 | 2B |
| | | | 1.3889 | 1.3163 | 1.3816 | 1.3459 | 1.49748 | 1.47952 | 1.5008 | 1.3921 | 1.4736 | 1.4018 | 1.32012 | 1.34988 | |
| | | 3A | 1.3917 | 1.3195 | 1.3856 | 1.3495 | 1.50000 | 1.48180 | 1.5000 | 1.3917 | 1.4718 | 1.3996 | 1.32000 | 1.33960 | 3B |
| | | | 1.3913 | 1.3187 | 1.3860 | 1.3503 | 1.49988 | 1.48192 | 1.5008 | 1.3921 | 1.4710 | 1.3992 | 1.32012 | 1.33948 | |
| 1 1/2-8 or 1.500-8 | UN | 2A | 1.4166 | 1.3625 | 1.4093 | 1.3822 | 1.49780 | 1.48280 | 1.5000 | 1.4188 | 1.4824 | 1.4283 | 1.36500 | 1.39000 | 2B |
| | | | 1.4162 | 1.3618 | 1.4097 | 1.3829 | 1.49768 | 1.48292 | 1.5007 | 1.4192 | 1.4817 | 1.4279 | 1.36512 | 1.38988 | |
| | | 3A | 1.4188 | 1.3647 | 1.4133 | 1.3862 | 1.50000 | 1.48500 | 1.5000 | 1.4188 | 1.4800 | 1.4259 | 1.36500 | 1.37970 | 3B |
| | | | 1.4184 | 1.3640 | 1.4137 | 1.3869 | 1.49988 | 1.48512 | 1.5007 | 1.4192 | 1.4793 | 1.4255 | 1.36512 | 1.37958 | |
| 1 1/2-12 or 1.500-12 | UNF | 1A | 1.4440 | 1.4079 | 1.4344 | 1.4164 | 1.49810 | 1.48090 | 1.5000 | 1.4459 | 1.4945 | 1.4584 | 1.41000 | 1.42800 | 1B |
| | | | 1.4437 | 1.4073 | 1.4347 | 1.4170 | 1.49798 | 1.48102 | 1.5006 | 1.4462 | 1.4939 | 1.4581 | 1.41012 | 1.42788 | |
| | | 2A | 1.4440 | 1.4079 | 1.4376 | 1.4196 | 1.49810 | 1.48670 | 1.5000 | 1.4459 | 1.4903 | 1.4542 | 1.41000 | 1.42800 | 2B |
| | | | 1.4437 | 1.4073 | 1.4379 | 1.4202 | 1.49798 | 1.48682 | 1.5006 | 1.4462 | 1.4897 | 1.4539 | 1.41012 | 1.42788 | |
| | | 3A | 1.4459 | 1.4098 | 1.4411 | 1.4231 | 1.50000 | 1.48860 | 1.5000 | 1.4459 | 1.4883 | 1.4522 | 1.41000 | 1.41980 | 3B |
| | | | 1.4456 | 1.4092 | 1.4414 | 1.4237 | 1.49988 | 1.48872 | 1.5006 | 1.4462 | 1.4877 | 1.4519 | 1.41012 | 1.41968 | |
| 1 1/2-16 or 1.500-16 | UN | 2A | 1.4578 | 1.4307 | 1.4526 | 1.4391 | 1.49840 | 1.48900 | 1.5000 | 1.4594 | 1.4933 | 1.4662 | 1.43200 | 1.44600 | 2B |
| | | | 1.4575 | 1.4301 | 1.4529 | 1.4397 | 1.49828 | 1.48912 | 1.5006 | 1.4597 | 1.4927 | 1.4659 | 1.43212 | 1.44588 | |
| | | 3A | 1.4594 | 1.4323 | 1.4555 | 1.4420 | 1.50000 | 1.49060 | 1.5000 | 1.4594 | 1.4916 | 1.4645 | 1.43200 | 1.44080 | 3B |
| | | | 1.4591 | 1.4317 | 1.4558 | 1.4426 | 1.49988 | 1.49072 | 1.5006 | 1.4597 | 1.4910 | 1.4642 | 1.43212 | 1.44068 | |
| 1 1/2-18 or 1.500-18 | UNEF | 2A | 1.4624 | 1.4383 | 1.4574 | 1.4454 | 1.49850 | 1.48980 | 1.5000 | 1.4639 | 1.4945 | 1.4704 | 1.44000 | 1.45200 | 2B |
| | | | 1.4621 | 1.4378 | 1.4577 | 1.4459 | 1.49838 | 1.48992 | 1.5005 | 1.4642 | 1.4940 | 1.4701 | 1.44012 | 1.45188 | |
| | | 3A | 1.4639 | 1.4398 | 1.4602 | 1.4482 | 1.50000 | 1.49130 | 1.5000 | 1.4639 | 1.4928 | 1.4687 | 1.44000 | 1.44800 | 3B |
| | | | 1.4636 | 1.4393 | 1.4605 | 1.4487 | 1.49988 | 1.49142 | 1.5005 | 1.4642 | 1.4923 | 1.4684 | 1.44012 | 1.44788 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1½-20 or 1.500-20 | UN | 2A | 1.4661 | 1.4444 | 1.4613 | 1.4505 | 1.49860 | 1.49050 | 1.5000 | 1.4675 | 1.4954 | 1.4737 | 1.44600 | 1.45700 | 2B |
| | | | 1.4658 | 1.4439 | 1.4616 | 1.4510 | 1.49848 | 1.49062 | 1.5005 | 1.4678 | 1.4949 | 1.4734 | 1.44612 | 1.45688 | |
| | | 3A | 1.4675 | 1.4458 | 1.4639 | 1.4531 | 1.50000 | 1.49190 | 1.5000 | 1.4675 | 1.4938 | 1.4721 | 1.44600 | 1.45370 | 3B |
| | | | 1.4672 | 1.4453 | 1.4642 | 1.4536 | 1.49988 | 1.49202 | 1.5005 | 1.4678 | 1.4933 | 1.4718 | 1.44612 | 1.45358 | |
| 1½-28 or 1.500-28 | UN | 2A | 1.4755 | 1.4600 | 1.4713 | 1.4636 | 1.49870 | 1.49220 | 1.5000 | 1.4768 | 1.4978 | 1.4823 | 1.46100 | 1.47000 | 2B |
| | | | 1.4752 | 1.4595 | 1.4716 | 1.4641 | 1.49858 | 1.49232 | 1.5005 | 1.4771 | 1.4973 | 1.4820 | 1.46112 | 1.46988 | |
| | | 3A | 1.4768 | 1.4613 | 1.4737 | 1.4660 | 1.50000 | 1.49350 | 1.5000 | 1.4768 | 1.4964 | 1.4809 | 1.46100 | 1.46760 | 3B |
| | | | 1.4765 | 1.4608 | 1.4740 | 1.4665 | 1.49988 | 1.49362 | 1.5005 | 1.4771 | 1.4959 | 1.4806 | 1.46112 | 1.46748 | |
| 1 9/16-6 or 1.5625-6 | UN | 2A | 1.4518 | 1.3796 | 1.4436 | 1.4075 | 1.56010 | 1.54190 | 1.5625 | 1.4542 | 1.5370 | 1.4648 | 1.38200 | 1.41300 | 2B |
| | | | 1.4513 | 1.3788 | 1.4441 | 1.4083 | 1.55994 | 1.54206 | 1.5633 | 1.4547 | 1.5362 | 1.4643 | 1.38216 | 1.41284 | |
| | | 3A | 1.4542 | 1.3820 | 1.4481 | 1.4120 | 1.56250 | 1.54430 | 1.5625 | 1.4542 | 1.5344 | 1.4622 | 1.38200 | 1.40210 | 3B |
| | | | 1.4537 | 1.3812 | 1.4486 | 1.4128 | 1.56234 | 1.54446 | 1.5633 | 1.4547 | 1.5336 | 1.4617 | 1.38216 | 1.40194 | |
| 1 9/16-8 or 1.5625-8 | UN | 2A | 1.4791 | 1.4250 | 1.4717 | 1.4446 | 1.56030 | 1.54530 | 1.5625 | 1.4813 | 1.5450 | 1.4909 | 1.42700 | 1.45200 | 2B |
| | | | 1.4786 | 1.4243 | 1.4722 | 1.4453 | 1.56014 | 1.54546 | 1.5632 | 1.4818 | 1.5443 | 1.4904 | 1.42716 | 1.45184 | |
| | | 3A | 1.4813 | 1.4272 | 1.4758 | 1.4487 | 1.56250 | 1.54750 | 1.5625 | 1.4813 | 1.5426 | 1.4885 | 1.42700 | 1.44220 | 3B |
| | | | 1.4808 | 1.4265 | 1.4763 | 1.4494 | 1.56234 | 1.54766 | 1.5632 | 1.4818 | 1.5419 | 1.4880 | 1.42716 | 1.44204 | |
| 1 9/16-12 or 1.5625-12 | UN | 2A | 1.5066 | 1.4705 | 1.5007 | 1.4827 | 1.56070 | 1.54930 | 1.5625 | 1.5084 | 1.5521 | 1.5160 | 1.47200 | 1.49000 | 2B |
| | | | 1.5062 | 1.4699 | 1.5011 | 1.4833 | 1.56054 | 1.54946 | 1.5631 | 1.5088 | 1.5515 | 1.5156 | 1.47216 | 1.48984 | |
| | | 3A | 1.5084 | 1.4723 | 1.5040 | 1.4860 | 1.56250 | 1.55110 | 1.5625 | 1.5084 | 1.5502 | 1.5141 | 1.47200 | 1.48230 | 3B |
| | | | 1.5080 | 1.4717 | 1.5044 | 1.4866 | 1.56234 | 1.55126 | 1.5631 | 1.5088 | 1.5496 | 1.5137 | 1.47216 | 1.48214 | |
| 1 9/16-16 or 1.5625-16 | UN | 2A | 1.5203 | 1.4932 | 1.5151 | 1.5016 | 1.56090 | 1.55150 | 1.5625 | 1.5219 | 1.5558 | 1.5287 | 1.49500 | 1.50900 | 2B |
| | | | 1.5199 | 1.4926 | 1.5155 | 1.5022 | 1.56074 | 1.55166 | 1.5631 | 1.5223 | 1.5552 | 1.5283 | 1.49516 | 1.50884 | |
| | | 3A | 1.5219 | 1.4948 | 1.5180 | 1.5045 | 1.56250 | 1.55310 | 1.5625 | 1.5219 | 1.5541 | 1.5270 | 1.49500 | 1.50330 | 3B |
| | | | 1.5215 | 1.4942 | 1.5184 | 1.5051 | 1.56234 | 1.55326 | 1.5631 | 1.5223 | 1.5535 | 1.5266 | 1.49516 | 1.50314 | |
| 1 9/16-18 or 1.5625-18 | UNEF | 2A | 1.5249 | 1.5008 | 1.5199 | 1.5079 | 1.56100 | 1.55230 | 1.5625 | 1.5264 | 1.5570 | 1.5329 | 1.50200 | 1.51500 | 2B |
| | | | 1.5245 | 1.5003 | 1.5203 | 1.5084 | 1.56084 | 1.55246 | 1.5630 | 1.5268 | 1.5565 | 1.5325 | 1.50216 | 1.51484 | |
| | | 3A | 1.5264 | 1.5023 | 1.5227 | 1.5107 | 1.56250 | 1.55380 | 1.5625 | 1.5264 | 1.5553 | 1.5312 | 1.50200 | 1.51050 | 3B |
| | | | 1.5260 | 1.5018 | 1.5231 | 1.5112 | 1.56234 | 1.55396 | 1.5630 | 1.5268 | 1.5548 | 1.5308 | 1.50216 | 1.51034 | |
| 1 9/16-20 or 1.5625-20 | UN | 2A | 1.5286 | 1.5069 | 1.5238 | 1.5130 | 1.56110 | 1.55300 | 1.5625 | 1.5300 | 1.5579 | 1.5362 | 1.50800 | 1.52000 | 2B |
| | | | 1.5282 | 1.5064 | 1.5242 | 1.5135 | 1.56094 | 1.55316 | 1.5630 | 1.5304 | 1.5574 | 1.5358 | 1.50816 | 1.51984 | |
| | | 3A | 1.5300 | 1.5083 | 1.5264 | 1.5156 | 1.56250 | 1.55440 | 1.5625 | 1.5300 | 1.5563 | 1.5346 | 1.50800 | 1.51620 | 3B |
| | | | 1.5296 | 1.5078 | 1.5268 | 1.5161 | 1.56234 | 1.55456 | 1.5630 | 1.5304 | 1.5558 | 1.5342 | 1.50816 | 1.51604 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1⅝-6 or 1.625-6 | UN | 2A | 1.5142 | 1.4420 | 1.5060 | 1.4699 | 1.62250 | 1.60430 | 1.6250 | 1.5167 | 1.5996 | 1.5274 | 1.44500 | 1.47500 | 2B |
| | | | 1.5137 | 1.4412 | 1.5065 | 1.4707 | 1.62234 | 1.60446 | 1.6258 | 1.5172 | 1.5988 | 1.5269 | 1.44516 | 1.47484 | |
| | | 3A | 1.5167 | 1.4445 | 1.5105 | 1.4744 | 1.62500 | 1.60680 | 1.6250 | 1.5167 | 1.5969 | 1.5247 | 1.44500 | 1.46460 | 3B |
| | | | 1.5162 | 1.4437 | 1.5110 | 1.4752 | 1.62484 | 1.60696 | 1.6258 | 1.5172 | 1.5961 | 1.5242 | 1.44516 | 1.46444 | |
| 1⅝-8 or 1.625-8 | UN | 2A | 1.5416 | 1.4875 | 1.5342 | 1.5071 | 1.62280 | 1.60780 | 1.6250 | 1.5438 | 1.6076 | 1.5535 | 1.49000 | 1.51500 | 2B |
| | | | 1.5411 | 1.4868 | 1.5347 | 1.5078 | 1.62264 | 1.60796 | 1.6257 | 1.5443 | 1.6069 | 1.5530 | 1.49016 | 1.51484 | |
| | | 3A | 1.5438 | 1.4897 | 1.5382 | 1.5111 | 1.62500 | 1.61000 | 1.6250 | 1.5438 | 1.6051 | 1.5510 | 1.49000 | 1.50470 | 3B |
| | | | 1.5433 | 1.4890 | 1.5387 | 1.5118 | 1.62484 | 1.61016 | 1.6257 | 1.5443 | 1.6044 | 1.5505 | 1.49016 | 1.50454 | |
| 1⅝-12 or 1.625-12 | UN | 2A | 1.5691 | 1.5330 | 1.5632 | 1.5452 | 1.62320 | 1.61180 | 1.6250 | 1.5709 | 1.6146 | 1.5785 | 1.53500 | 1.55300 | 2B |
| | | | 1.5687 | 1.5324 | 1.5636 | 1.5458 | 1.62304 | 1.61196 | 1.6256 | 1.5713 | 1.6140 | 1.5781 | 1.53516 | 1.55284 | |
| | | 3A | 1.5709 | 1.5348 | 1.5665 | 1.5485 | 1.62500 | 1.61360 | 1.6250 | 1.5709 | 1.6127 | 1.5766 | 1.53500 | 1.54480 | 3B |
| | | | 1.5705 | 1.5342 | 1.5669 | 1.5491 | 1.62484 | 1.61376 | 1.6256 | 1.5713 | 1.6121 | 1.5762 | 1.53516 | 1.54464 | |
| 1⅝-16 or 1.625-16 | UN | 2A | 1.5828 | 1.5557 | 1.5776 | 1.5641 | 1.62340 | 1.61400 | 1.6250 | 1.5844 | 1.6183 | 1.5912 | 1.55700 | 1.57100 | 2B |
| | | | 1.5824 | 1.5551 | 1.5780 | 1.5647 | 1.62324 | 1.61416 | 1.6256 | 1.5848 | 1.6177 | 1.5908 | 1.55716 | 1.57084 | |
| | | 3A | 1.5844 | 1.5573 | 1.5805 | 1.5670 | 1.62500 | 1.61560 | 1.6250 | 1.5844 | 1.6166 | 1.5895 | 1.55700 | 1.56580 | 3B |
| | | | 1.5840 | 1.5567 | 1.5809 | 1.5676 | 1.62484 | 1.61576 | 1.6256 | 1.5848 | 1.6160 | 1.5891 | 1.55716 | 1.56564 | |
| 1⅝-18 or 1.625-18 | UNEF | 2A | 1.5874 | 1.5633 | 1.5824 | 1.5704 | 1.62350 | 1.61480 | 1.6250 | 1.5889 | 1.6195 | 1.5954 | 1.56500 | 1.57800 | 2B |
| | | | 1.5870 | 1.5628 | 1.5828 | 1.5709 | 1.62334 | 1.61496 | 1.6255 | 1.5893 | 1.6190 | 1.5950 | 1.56516 | 1.57784 | |
| | | 3A | 1.5889 | 1.5648 | 1.5852 | 1.5732 | 1.62500 | 1.61630 | 1.6250 | 1.5889 | 1.6178 | 1.5937 | 1.56500 | 1.57300 | 3B |
| | | | 1.5885 | 1.5643 | 1.5856 | 1.5737 | 1.62484 | 1.61646 | 1.6255 | 1.5893 | 1.6173 | 1.5933 | 1.56516 | 1.57284 | |
| 1⅝-20 or 1.625-20 | UN | 2A | 1.5911 | 1.5694 | 1.5863 | 1.5755 | 1.62360 | 1.61550 | 1.6250 | 1.5925 | 1.6204 | 1.5987 | 1.57100 | 1.58200 | 2B |
| | | | 1.5907 | 1.5689 | 1.5867 | 1.5760 | 1.62344 | 1.61566 | 1.6255 | 1.5929 | 1.6199 | 1.5983 | 1.57116 | 1.58184 | |
| | | 3A | 1.5925 | 1.5708 | 1.5889 | 1.5781 | 1.62500 | 1.61690 | 1.6250 | 1.5925 | 1.6188 | 1.5971 | 1.57100 | 1.57870 | 3B |
| | | | 1.5921 | 1.5703 | 1.5893 | 1.5786 | 1.62484 | 1.61706 | 1.6255 | 1.5929 | 1.6183 | 1.5967 | 1.57116 | 1.57854 | |
| 1 11/16-6 or 1.6875-6 | UN | 2A | 1.5767 | 1.5045 | 1.5684 | 1.5323 | 1.68500 | 1.66680 | 1.6875 | 1.5792 | 1.6622 | 1.5900 | 1.50700 | 1.53800 | 2B |
| | | | 1.5762 | 1.5037 | 1.5689 | 1.5331 | 1.68484 | 1.66696 | 1.6883 | 1.5797 | 1.6614 | 1.5895 | 1.50716 | 1.53784 | |
| | | 3A | 1.5792 | 1.5070 | 1.5730 | 1.5369 | 1.68750 | 1.66930 | 1.6875 | 1.5792 | 1.6595 | 1.5873 | 1.50700 | 1.52710 | 3B |
| | | | 1.5787 | 1.5062 | 1.5735 | 1.5377 | 1.68734 | 1.66946 | 1.6883 | 1.5797 | 1.6587 | 1.5868 | 1.50716 | 1.52694 | |
| 1 11/16-8 or 1.6875-8 | UN | 2A | 1.6041 | 1.5500 | 1.5966 | 1.5695 | 1.68530 | 1.67030 | 1.6875 | 1.6063 | 1.6701 | 1.6160 | 1.55200 | 1.57700 | 2B |
| | | | 1.6036 | 1.5493 | 1.5971 | 1.5702 | 1.68514 | 1.67046 | 1.6882 | 1.6068 | 1.6694 | 1.6155 | 1.55216 | 1.57684 | |
| | | 3A | 1.6063 | 1.5522 | 1.6007 | 1.5736 | 1.68750 | 1.67250 | 1.6875 | 1.6063 | 1.6677 | 1.6136 | 1.55200 | 1.56720 | 3B |
| | | | 1.6058 | 1.5515 | 1.6012 | 1.5743 | 1.68734 | 1.67266 | 1.6882 | 1.6068 | 1.6670 | 1.6131 | 1.55216 | 1.56704 | |
| 1 11/16-12 or 1.6875-12 | UN | 2A | 1.6316 | 1.5955 | 1.6256 | 1.6076 | 1.68570 | 1.67430 | 1.6875 | 1.6334 | 1.6773 | 1.6412 | 1.59700 | 1.61500 | 2B |
| | | | 1.6312 | 1.5949 | 1.6260 | 1.6082 | 1.68554 | 1.67446 | 1.6881 | 1.6338 | 1.6767 | 1.6408 | 1.59716 | 1.61484 | |
| | | 3A | 1.6334 | 1.5973 | 1.6289 | 1.6109 | 1.68750 | 1.67610 | 1.6875 | 1.6334 | 1.6753 | 1.6392 | 1.59700 | 1.60730 | 3B |
| | | | 1.6330 | 1.5967 | 1.6293 | 1.6115 | 1.68734 | 1.67626 | 1.6881 | 1.6338 | 1.6747 | 1.6388 | 1.59716 | 1.60714 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 1/16-16 or 1.6875-16 | UN | 2A | 1.6453 | 1.6182 | 1.6400 | 1.6265 | 1.68590 | 1.67650 | 1.6875 | 1.6469 | 1.6809 | 1.6538 | 1.62000 | 1.63400 | 2B |
| | | | 1.6449 | 1.6176 | 1.6404 | 1.6271 | 1.68574 | 1.67666 | 1.6881 | 1.6473 | 1.6803 | 1.6534 | 1.62016 | 1.63384 | |
| | | 3A | 1.6469 | 1.6198 | 1.6429 | 1.6294 | 1.68750 | 1.67810 | 1.6875 | 1.6469 | 1.6792 | 1.6521 | 1.62000 | 1.62830 | 3B |
| | | | 1.6465 | 1.6192 | 1.6433 | 1.6300 | 1.68734 | 1.67826 | 1.6881 | 1.6473 | 1.6786 | 1.6517 | 1.62016 | 1.62814 | |
| 1 1/16-18 or 1.6875-18 | UNEF | 2A | 1.6499 | 1.6258 | 1.6448 | 1.6328 | 1.68600 | 1.67730 | 1.6875 | 1.6514 | 1.6821 | 1.6580 | 1.62700 | 1.64000 | 2B |
| | | | 1.6495 | 1.6253 | 1.6452 | 1.6333 | 1.68584 | 1.67746 | 1.6880 | 1.6518 | 1.6816 | 1.6576 | 1.62716 | 1.63984 | |
| | | 3A | 1.6514 | 1.6273 | 1.6476 | 1.6356 | 1.68750 | 1.67880 | 1.6875 | 1.6514 | 1.6804 | 1.6563 | 1.62700 | 1.63550 | 3B |
| | | | 1.6510 | 1.6268 | 1.6480 | 1.6361 | 1.68734 | 1.67896 | 1.6880 | 1.6518 | 1.6799 | 1.6559 | 1.62716 | 1.63534 | |
| 1 1/16-20 or 1.6875-20 | UN | 2A | 1.6535 | 1.6318 | 1.6487 | 1.6379 | 1.68600 | 1.67790 | 1.6875 | 1.6550 | 1.6830 | 1.6613 | 1.63300 | 1.64500 | 2B |
| | | | 1.6531 | 1.6313 | 1.6491 | 1.6384 | 1.68584 | 1.67806 | 1.6880 | 1.6554 | 1.6825 | 1.6609 | 1.63316 | 1.64484 | |
| | | 3A | 1.6550 | 1.6333 | 1.6514 | 1.6406 | 1.68750 | 1.67940 | 1.6875 | 1.6550 | 1.6814 | 1.6597 | 1.63300 | 1.64120 | 3B |
| | | | 1.6546 | 1.6328 | 1.6518 | 1.6411 | 1.68734 | 1.67956 | 1.6880 | 1.6554 | 1.6809 | 1.6593 | 1.63316 | 1.64104 | |
| 1 3/4-5 or 1.750-5 | UNC | 1A | 1.6174 | 1.5308 | 1.6040 | 1.5607 | 1.74730 | 1.71650 | 1.7500 | 1.6201 | 1.7241 | 1.6375 | 1.53400 | 1.56800 | 1B |
| | | | 1.6169 | 1.5300 | 1.6045 | 1.5615 | 1.74714 | 1.71666 | 1.7508 | 1.6206 | 1.7233 | 1.6370 | 1.53416 | 1.56784 | |
| | | 2A | 1.6174 | 1.5308 | 1.6085 | 1.5652 | 1.74730 | 1.72680 | 1.7500 | 1.6201 | 1.7183 | 1.6317 | 1.53400 | 1.56800 | 2B |
| | | | 1.6169 | 1.5300 | 1.6090 | 1.5660 | 1.74714 | 1.72696 | 1.7508 | 1.6206 | 1.7175 | 1.6312 | 1.53416 | 1.56784 | |
| | | 3A | 1.6201 | 1.5335 | 1.6134 | 1.5701 | 1.75000 | 1.72950 | 1.7500 | 1.6201 | 1.7154 | 1.6288 | 1.53400 | 1.55750 | 3B |
| | | | 1.6196 | 1.5327 | 1.6139 | 1.5709 | 1.74984 | 1.72966 | 1.7508 | 1.6206 | 1.7146 | 1.6283 | 1.53416 | 1.55734 | |
| 1 3/4-6 or 1.750-6 | UN | 2A | 1.6392 | 1.5670 | 1.6309 | 1.5948 | 1.74750 | 1.72930 | 1.7500 | 1.6417 | 1.7247 | 1.6525 | 1.57000 | 1.60000 | 2B |
| | | | 1.6387 | 1.5662 | 1.6314 | 1.5956 | 1.74734 | 1.72946 | 1.7508 | 1.6422 | 1.7239 | 1.6520 | 1.57016 | 1.59984 | |
| | | 3A | 1.6417 | 1.5695 | 1.6354 | 1.5993 | 1.75000 | 1.73180 | 1.7500 | 1.6417 | 1.7220 | 1.6498 | 1.57000 | 1.58960 | 3B |
| | | | 1.6412 | 1.5687 | 1.6359 | 1.6001 | 1.74984 | 1.73196 | 1.7508 | 1.6422 | 1.7212 | 1.6493 | 1.57016 | 1.58944 | |
| 1 3/4-8 or 1.750-8 | UN | 2A | 1.6665 | 1.6124 | 1.6590 | 1.6319 | 1.74770 | 1.73270 | 1.7500 | 1.6688 | 1.7327 | 1.6786 | 1.61500 | 1.64000 | 2B |
| | | | 1.6660 | 1.6117 | 1.6595 | 1.6326 | 1.74754 | 1.73286 | 1.7507 | 1.6693 | 1.7320 | 1.6781 | 1.61516 | 1.63984 | |
| | | 3A | 1.6688 | 1.6147 | 1.6631 | 1.6360 | 1.75000 | 1.73500 | 1.7500 | 1.6688 | 1.7303 | 1.6762 | 1.61500 | 1.62970 | 3B |
| | | | 1.6683 | 1.6140 | 1.6636 | 1.6367 | 1.74984 | 1.73516 | 1.7507 | 1.6693 | 1.7296 | 1.6757 | 1.61516 | 1.62954 | |
| 1 3/4-12 or 1.750-12 | UN | 2A | 1.6941 | 1.6580 | 1.6881 | 1.6701 | 1.74820 | 1.73680 | 1.7500 | 1.6959 | 1.7398 | 1.7037 | 1.66000 | 1.67800 | 2B |
| | | | 1.6937 | 1.6574 | 1.6885 | 1.6707 | 1.74804 | 1.73696 | 1.7506 | 1.6963 | 1.7392 | 1.7033 | 1.66016 | 1.67784 | |
| | | 3A | 1.6959 | 1.6598 | 1.6914 | 1.6734 | 1.75000 | 1.73860 | 1.7500 | 1.6959 | 1.7378 | 1.7017 | 1.66000 | 1.66980 | 3B |
| | | | 1.6955 | 1.6592 | 1.6918 | 1.6740 | 1.74984 | 1.73876 | 1.7506 | 1.6963 | 1.7372 | 1.7013 | 1.66016 | 1.66964 | |
| 1 3/4-16 or 1.750-16 | UN | 2A | 1.7078 | 1.6807 | 1.7025 | 1.6890 | 1.74840 | 1.73900 | 1.7500 | 1.7094 | 1.7434 | 1.7163 | 1.68200 | 1.69600 | 2B |
| | | | 1.7074 | 1.6801 | 1.7029 | 1.6896 | 1.74824 | 1.73916 | 1.7506 | 1.7098 | 1.7428 | 1.7159 | 1.68216 | 1.69584 | |
| | | 3A | 1.7094 | 1.6823 | 1.7054 | 1.6919 | 1.75000 | 1.74060 | 1.7500 | 1.7094 | 1.7417 | 1.7146 | 1.68200 | 1.69080 | 3B |
| | | | 1.7090 | 1.6817 | 1.7058 | 1.6925 | 1.74984 | 1.74076 | 1.7506 | 1.7098 | 1.7411 | 1.7142 | 1.68216 | 1.69064 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1¾-20 or 1.750-20 | UN | 2A | 1.7160 | 1.6943 | 1.7112 | 1.7004 | 1.74850 | 1.74040 | 1.7500 | 1.7175 | 1.7455 | 1.7238 | 1.69600 | 1.70700 | 2B |
| | | | 1.7156 | 1.6938 | 1.7116 | 1.7009 | 1.74834 | 1.74056 | 1.7505 | 1.7179 | 1.7450 | 1.7234 | 1.69616 | 1.70684 | |
| | | 3A | 1.7175 | 1.6958 | 1.7139 | 1.7031 | 1.75000 | 1.74190 | 1.7500 | 1.7175 | 1.7439 | 1.7222 | 1.69600 | 1.70370 | 3B |
| | | | 1.7171 | 1.6953 | 1.7143 | 1.7036 | 1.74984 | 1.74206 | 1.7505 | 1.7179 | 1.7434 | 1.7218 | 1.69616 | 1.70354 | |
| 1 13/16-6 or 1.8125-6 | UN | 2A | 1.7017 | 1.6295 | 1.6933 | 1.6572 | 1.81000 | 1.79180 | 1.8125 | 1.7042 | 1.7873 | 1.7151 | 1.63200 | 1.66300 | 2B |
| | | | 1.7012 | 1.6287 | 1.6938 | 1.6580 | 1.80984 | 1.79196 | 1.8133 | 1.7047 | 1.7865 | 1.7146 | 1.63216 | 1.66284 | |
| | | 3A | 1.7042 | 1.6320 | 1.6979 | 1.6618 | 1.81250 | 1.79430 | 1.8125 | 1.7042 | 1.7846 | 1.7124 | 1.63200 | 1.65210 | 3B |
| | | | 1.7037 | 1.6312 | 1.6984 | 1.6626 | 1.81234 | 1.79446 | 1.8133 | 1.7047 | 1.7838 | 1.7119 | 1.63216 | 1.65194 | |
| 1 13/16-8 or 1.8125-8 | UN | 2A | 1.7290 | 1.6749 | 1.7214 | 1.6943 | 1.81020 | 1.79520 | 1.8125 | 1.7313 | 1.7953 | 1.7412 | 1.67700 | 1.70200 | 2B |
| | | | 1.7285 | 1.6742 | 1.7219 | 1.6950 | 1.81004 | 1.79536 | 1.8132 | 1.7318 | 1.7946 | 1.7407 | 1.67716 | 1.70184 | |
| | | 3A | 1.7313 | 1.6772 | 1.7256 | 1.6985 | 1.81250 | 1.79750 | 1.8125 | 1.7313 | 1.7928 | 1.7387 | 1.67700 | 1.69220 | 3B |
| | | | 1.7308 | 1.6765 | 1.7261 | 1.6992 | 1.81234 | 1.79766 | 1.8132 | 1.7318 | 1.7921 | 1.7382 | 1.67716 | 1.69204 | |
| 1 13/16-12 or 1.8125-12 | UN | 2A | 1.7566 | 1.7205 | 1.7506 | 1.7326 | 1.81070 | 1.79930 | 1.8125 | 1.7584 | 1.8023 | 1.7662 | 1.72200 | 1.74000 | 2B |
| | | | 1.7562 | 1.7199 | 1.7510 | 1.7332 | 1.81054 | 1.79946 | 1.8131 | 1.7588 | 1.8017 | 1.7658 | 1.72216 | 1.73984 | |
| | | 3A | 1.7584 | 1.7223 | 1.7539 | 1.7359 | 1.81250 | 1.80110 | 1.8125 | 1.7584 | 1.8003 | 1.7642 | 1.72200 | 1.73230 | 3B |
| | | | 1.7580 | 1.7217 | 1.7543 | 1.7365 | 1.81234 | 1.80126 | 1.8131 | 1.7588 | 1.7997 | 1.7638 | 1.72216 | 1.73214 | |
| 1 13/16-16 or 1.8125-16 | UN | 2A | 1.7703 | 1.7432 | 1.7650 | 1.7515 | 1.81090 | 1.80150 | 1.8125 | 1.7719 | 1.8059 | 1.7788 | 1.74500 | 1.75900 | 2B |
| | | | 1.7699 | 1.7426 | 1.7654 | 1.7521 | 1.81074 | 1.80166 | 1.8131 | 1.7723 | 1.8053 | 1.7784 | 1.74516 | 1.75884 | |
| | | 3A | 1.7719 | 1.7448 | 1.7679 | 1.7544 | 1.81250 | 1.80310 | 1.8125 | 1.7719 | 1.8042 | 1.7771 | 1.74500 | 1.75330 | 3B |
| | | | 1.7715 | 1.7442 | 1.7683 | 1.7550 | 1.81234 | 1.80326 | 1.8131 | 1.7723 | 1.8036 | 1.7767 | 1.74516 | 1.75314 | |
| 1 13/16-20 or 1.8125-20 | UN | 2A | 1.7785 | 1.7568 | 1.7737 | 1.7629 | 1.81100 | 1.80290 | 1.8125 | 1.7800 | 1.8080 | 1.7863 | 1.75800 | 1.77000 | 2B |
| | | | 1.7781 | 1.7563 | 1.7741 | 1.7634 | 1.81084 | 1.80306 | 1.8130 | 1.7804 | 1.8075 | 1.7859 | 1.75816 | 1.76984 | |
| | | 3A | 1.7800 | 1.7583 | 1.7764 | 1.7656 | 1.81250 | 1.80440 | 1.8125 | 1.7800 | 1.8064 | 1.7847 | 1.75800 | 1.76620 | 3B |
| | | | 1.7796 | 1.7578 | 1.7768 | 1.7661 | 1.81234 | 1.80456 | 1.8130 | 1.7804 | 1.8059 | 1.7843 | 1.75816 | 1.76604 | |
| 1 7/8-6 or 1.875-6 | UN | 2A | 1.7642 | 1.6920 | 1.7558 | 1.7197 | 1.87250 | 1.85430 | 1.8750 | 1.7667 | 1.8499 | 1.7777 | 1.69500 | 1.72500 | 2B |
| | | | 1.7637 | 1.6912 | 1.7563 | 1.7205 | 1.87234 | 1.85446 | 1.8758 | 1.7672 | 1.8491 | 1.7772 | 1.69516 | 1.72484 | |
| | | 3A | 1.7667 | 1.6945 | 1.7604 | 1.7243 | 1.87500 | 1.85680 | 1.8750 | 1.7667 | 1.8471 | 1.7749 | 1.69500 | 1.71460 | 3B |
| | | | 1.7662 | 1.6937 | 1.7609 | 1.7251 | 1.87484 | 1.85696 | 1.8758 | 1.7672 | 1.8463 | 1.7744 | 1.69516 | 1.71444 | |
| 1 7/8-8 or 1.875-8 | UN | 2A | 1.7915 | 1.7374 | 1.7838 | 1.7567 | 1.87270 | 1.85770 | 1.8750 | 1.7938 | 1.8579 | 1.8038 | 1.74000 | 1.76500 | 2B |
| | | | 1.7910 | 1.7367 | 1.7843 | 1.7574 | 1.87254 | 1.85786 | 1.8757 | 1.7943 | 1.8572 | 1.8033 | 1.74016 | 1.76484 | |
| | | 3A | 1.7938 | 1.7397 | 1.7881 | 1.7610 | 1.87500 | 1.86000 | 1.8750 | 1.7938 | 1.8554 | 1.8013 | 1.74000 | 1.75470 | 3B |
| | | | 1.7933 | 1.7390 | 1.7886 | 1.7617 | 1.87484 | 1.86016 | 1.8757 | 1.7943 | 1.8547 | 1.8008 | 1.74016 | 1.75454 | |
| 1 7/8-12 or 1.875-12 | UN | 2A | 1.8191 | 1.7830 | 1.8131 | 1.7951 | 1.87320 | 1.86180 | 1.8750 | 1.8209 | 1.8648 | 1.8287 | 1.78500 | 1.80300 | 2B |
| | | | 1.8187 | 1.7824 | 1.8135 | 1.7957 | 1.87304 | 1.86196 | 1.8756 | 1.8213 | 1.8642 | 1.8283 | 1.78516 | 1.80284 | |
| | | 3A | 1.8209 | 1.7848 | 1.8164 | 1.7984 | 1.87500 | 1.86360 | 1.8750 | 1.8209 | 1.8628 | 1.8267 | 1.78500 | 1.79480 | 3B |
| | | | 1.8205 | 1.7842 | 1.8168 | 1.7990 | 1.87484 | 1.86376 | 1.8756 | 1.8213 | 1.8622 | 1.8263 | 1.78516 | 1.79464 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1⅞-16 or 1.875-16 | UN | 2A | 1.8328 | 1.8057 | 1.8275 | 1.8140 | 1.87340 | 1.86400 | 1.8750 | 1.8344 | 1.8684 | 1.8413 | 1.80700 | 1.82100 | 2B |
| | | | 1.8324 | 1.8051 | 1.8279 | 1.8146 | 1.87324 | 1.86416 | 1.8756 | 1.8348 | 1.8678 | 1.8409 | 1.80716 | 1.82084 | |
| | | 3A | 1.8344 | 1.8073 | 1.8304 | 1.8169 | 1.87500 | 1.86560 | 1.8750 | 1.8344 | 1.8667 | 1.8396 | 1.80700 | 1.81580 | 3B |
| | | | 1.8340 | 1.8067 | 1.8308 | 1.8175 | 1.87484 | 1.86576 | 1.8756 | 1.8348 | 1.8661 | 1.8392 | 1.80716 | 1.81564 | |
| 1⅞-20 or 1.875-20 | UN | 2A | 1.8410 | 1.8193 | 1.8362 | 1.8254 | 1.87350 | 1.86540 | 1.8750 | 1.8425 | 1.8705 | 1.8488 | 1.82100 | 1.83200 | 2B |
| | | | 1.8406 | 1.8188 | 1.8366 | 1.8259 | 1.87334 | 1.86556 | 1.8755 | 1.8429 | 1.8700 | 1.8484 | 1.82116 | 1.83184 | |
| | | 3A | 1.8425 | 1.8208 | 1.8389 | 1.8281 | 1.87500 | 1.86690 | 1.8750 | 1.8425 | 1.8689 | 1.8472 | 1.82100 | 1.82870 | 3B |
| | | | 1.8421 | 1.8203 | 1.8393 | 1.8286 | 1.87484 | 1.86706 | 1.8755 | 1.8429 | 1.8684 | 1.8468 | 1.82116 | 1.82854 | |
| 1 15/16-6 or 1.9375-6 | UN | 2A | 1.8266 | 1.7544 | 1.8181 | 1.7820 | 1.93490 | 1.91670 | 1.9375 | 1.8292 | 1.9125 | 1.8403 | 1.75700 | 1.78800 | 2B |
| | | | 1.8261 | 1.7536 | 1.8186 | 1.7828 | 1.93474 | 1.91686 | 1.9383 | 1.8297 | 1.9117 | 1.8398 | 1.75716 | 1.78784 | |
| | | 3A | 1.8292 | 1.7570 | 1.8228 | 1.7867 | 1.93750 | 1.91930 | 1.9375 | 1.8292 | 1.9097 | 1.8375 | 1.75700 | 1.77710 | 3B |
| | | | 1.8287 | 1.7562 | 1.8233 | 1.7875 | 1.93734 | 1.91946 | 1.9383 | 1.8297 | 1.9089 | 1.8370 | 1.75716 | 1.77694 | |
| 1 15/16-8 or 1.9375-8 | UN | 2A | 1.8540 | 1.7999 | 1.8463 | 1.8192 | 1.93520 | 1.92020 | 1.9375 | 1.8563 | 1.9204 | 1.8663 | 1.80200 | 1.82700 | 2B |
| | | | 1.8535 | 1.7992 | 1.8468 | 1.9199 | 1.93504 | 1.92036 | 1.9382 | 1.8568 | 1.9197 | 1.8658 | 1.80216 | 1.82684 | |
| | | 3A | 1.8563 | 1.8022 | 1.8505 | 1.8234 | 1.93750 | 1.92250 | 1.9375 | 1.8563 | 1.9179 | 1.8638 | 1.80200 | 1.81720 | 3B |
| | | | 1.8558 | 1.8015 | 1.8510 | 1.8241 | 1.93734 | 1.92266 | 1.9382 | 1.8568 | 1.9172 | 1.8633 | 1.80216 | 1.81704 | |
| 1 15/16-12 or 1.9375-12 | UN | 2A | 1.8816 | 1.8455 | 1.8755 | 1.8575 | 1.93570 | 1.92430 | 1.9375 | 1.8834 | 1.9274 | 1.8913 | 1.84700 | 1.86500 | 2B |
| | | | 1.8812 | 1.8449 | 1.8759 | 1.8581 | 1.93554 | 1.92446 | 1.9381 | 1.8838 | 1.9268 | 1.8909 | 1.84716 | 1.86484 | |
| | | 3A | 1.8834 | 1.8473 | 1.8789 | 1.8609 | 1.93750 | 1.92610 | 1.9375 | 1.8834 | 1.9254 | 1.8893 | 1.84700 | 1.85730 | 3B |
| | | | 1.8830 | 1.8467 | 1.8793 | 1.8615 | 1.93734 | 1.92626 | 1.9381 | 1.8838 | 1.9248 | 1.8889 | 1.84716 | 1.85714 | |
| 1 15/16-16 or 1.9375-16 | UN | 2A | 1.8953 | 1.8682 | 1.8899 | 1.8764 | 1.93590 | 1.92650 | 1.9375 | 1.8969 | 1.9310 | 1.9039 | 1.87000 | 1.88400 | 2B |
| | | | 1.8949 | 1.8676 | 1.8903 | 1.8770 | 1.93574 | 1.92666 | 1.9381 | 1.8973 | 1.9304 | 1.9035 | 1.87016 | 1.88384 | |
| | | 3A | 1.8969 | 1.8698 | 1.8929 | 1.8794 | 1.93750 | 1.92810 | 1.9375 | 1.8969 | 1.9292 | 1.9021 | 1.87000 | 1.87830 | 3B |
| | | | 1.8965 | 1.8692 | 1.8933 | 1.8800 | 1.93734 | 1.92826 | 1.9381 | 1.8973 | 1.9286 | 1.9017 | 1.87016 | 1.87814 | |
| 1 15/16-20 or 1.9375-20 | UN | 2A | 1.9035 | 1.8818 | 1.8986 | 1.8878 | 1.93600 | 1.92790 | 1.9375 | 1.9050 | 1.9331 | 1.9114 | 1.88300 | 1.89500 | 2B |
| | | | 1.9031 | 1.8813 | 1.8990 | 1.8883 | 1.93584 | 1.92806 | 1.9380 | 1.9054 | 1.9326 | 1.9110 | 1.88316 | 1.89484 | |
| | | 3A | 1.9050 | 1.8833 | 1.9013 | 1.8905 | 1.93750 | 1.92940 | 1.9375 | 1.9050 | 1.9315 | 1.9098 | 1.88300 | 1.89120 | 3B |
| | | | 1.9046 | 1.8828 | 1.9017 | 1.8910 | 1.93734 | 1.92956 | 1.9380 | 1.9054 | 1.9310 | 1.9094 | 1.88316 | 1.89104 | |
| 2-4½ or 2.000-4.5 | UNC | 1A | 1.8528 | 1.7566 | 1.8385 | 1.7904 | 1.99710 | 1.96410 | 2.0000 | 1.8557 | 1.9705 | 1.8743 | 1.75900 | 1.79500 | 1B |
| | | | 1.8523 | 1.7558 | 1.8390 | 1.7912 | 1.99694 | 1.96426 | 2.0008 | 1.8562 | 1.9697 | 1.8738 | 1.75916 | 1.79484 | |
| | | 2A | 1.8528 | 1.7566 | 1.8433 | 1.7952 | 1.99710 | 1.97510 | 2.0000 | 1.8557 | 1.9643 | 1.8681 | 1.75900 | 1.78500 | 2B |
| | | | 1.8523 | 1.7558 | 1.8438 | 1.7960 | 1.99694 | 1.97526 | 2.0008 | 1.8562 | 1.9635 | 1.8676 | 1.75916 | 1.79484 | |
| | | 3A | 1.8557 | 1.7595 | 1.8486 | 1.8005 | 2.00000 | 1.97800 | 2.0000 | 1.8557 | 1.9612 | 1.8650 | 1.75900 | 1.78610 | 3B |
| | | | 1.8552 | 1.7587 | 1.8491 | 1.8013 | 1.99984 | 1.97816 | 2.0008 | 1.8562 | 1.9604 | 1.8645 | 1.75916 | 1.78594 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2-6 or 2.000-6 | UN | 2A | 1.8891 | 1.8169 | 1.8805 | 1.8444 | 1.99740 | 1.97920 | 2.0000 | 1.8917 | 1.9750 | 1.9028 | 1.82000 | 1.85000 | 2B |
| | | | 1.8886 | 1.8161 | 1.8810 | 1.8452 | 1.99724 | 1.97936 | 2.0008 | 1.8922 | 1.9742 | 1.9023 | 1.82016 | 1.84984 | |
| | | 3A | 1.8917 | 1.8195 | 1.8853 | 1.8492 | 2.00000 | 1.98180 | 2.0000 | 1.8917 | 1.9722 | 1.9000 | 1.82000 | 1.83960 | 3B |
| | | | 1.8912 | 1.8187 | 1.8858 | 1.8500 | 1.99984 | 1.98196 | 2.0008 | 1.8922 | 1.9714 | 1.8995 | 1.82016 | 1.83944 | |
| 2-8 or 2.000-8 | UN | 2A | 1.9165 | 1.8624 | 1.9087 | 1.8816 | 1.99770 | 1.98270 | 2.0000 | 1.9188 | 1.9830 | 1.9289 | 1.86500 | 1.89000 | 2B |
| | | | 1.9160 | 1.8617 | 1.9092 | 1.8823 | 1.99754 | 1.98286 | 2.0007 | 1.9193 | 1.9823 | 1.9284 | 1.86516 | 1.88984 | |
| | | 3A | 1.9188 | 1.8647 | 1.9130 | 1.8859 | 2.00000 | 1.98500 | 2.0000 | 1.9188 | 1.9805 | 1.9264 | 1.86500 | 1.87970 | 3B |
| | | | 1.9183 | 1.8640 | 1.9135 | 1.8866 | 1.99984 | 1.98516 | 2.0007 | 1.9193 | 1.9798 | 1.9259 | 1.86516 | 1.87954 | |
| 2-12 or 2.000-12 | UN | 2A | 1.9441 | 1.9080 | 1.9380 | 1.9200 | 1.99820 | 1.98680 | 2.0000 | 1.9459 | 1.9899 | 1.9538 | 1.91000 | 1.92800 | 2B |
| | | | 1.9437 | 1.9074 | 1.9384 | 1.9206 | 1.99804 | 1.98696 | 2.0006 | 1.9463 | 1.9893 | 1.9534 | 1.91016 | 1.92784 | |
| | | 3A | 1.9459 | 1.9098 | 1.9414 | 1.9234 | 2.00000 | 1.98860 | 2.0000 | 1.9459 | 1.9879 | 1.9518 | 1.91000 | 1.91980 | 3B |
| | | | 1.9455 | 1.9092 | 1.9418 | 1.9240 | 1.99984 | 1.98876 | 2.0006 | 1.9463 | 1.9873 | 1.9514 | 1.91016 | 1.91964 | |
| 2-16 or 2.000-16 | UN | 2A | 1.9578 | 1.9307 | 1.9524 | 1.9389 | 1.99840 | 1.98900 | 2.0000 | 1.9594 | 1.9935 | 1.9664 | 1.93200 | 1.94600 | 2B |
| | | | 1.9574 | 1.9301 | 1.9528 | 1.9395 | 1.99824 | 1.98916 | 2.0006 | 1.9598 | 1.9929 | 1.9660 | 1.93216 | 1.94584 | |
| | | 3A | 1.9594 | 1.9323 | 1.9554 | 1.9419 | 2.00000 | 1.99060 | 2.0000 | 1.9594 | 1.9917 | 1.9646 | 1.93200 | 1.94080 | 3B |
| | | | 1.9590 | 1.9317 | 1.9558 | 1.9425 | 1.99984 | 1.99076 | 2.0006 | 1.9598 | 1.9911 | 1.9642 | 1.93216 | 1.94064 | |
| 2-20 or 2.000-20 | UN | 2A | 1.9660 | 1.9443 | 1.9611 | 1.9503 | 1.99850 | 1.99040 | 2.0000 | 1.9675 | 1.9956 | 1.9739 | 1.94600 | 1.95700 | 2B |
| | | | 1.9656 | 1.9438 | 1.9615 | 1.9508 | 1.99834 | 1.99056 | 2.0005 | 1.9679 | 1.9951 | 1.9735 | 1.94616 | 1.95684 | |
| | | 3A | 1.9675 | 1.9458 | 1.9638 | 1.9530 | 2.00000 | 1.99190 | 2.0000 | 1.9675 | 1.9940 | 1.9723 | 1.94600 | 1.95370 | 3B |
| | | | 1.9671 | 1.9453 | 1.9642 | 1.9535 | 1.99984 | 1.99206 | 2.0005 | 1.9679 | 1.9935 | 1.9719 | 1.94616 | 1.95354 | |
| 2⅛-6 or 2.125-6 | UN | 2A | 2.0141 | 1.9419 | 2.0054 | 1.9693 | 2.12240 | 2.10420 | 2.1250 | 2.0167 | 2.1002 | 2.0280 | 1.94500 | 1.97500 | 2B |
| | | | 2.0136 | 1.9411 | 2.0059 | 1.9701 | 2.12224 | 2.10436 | 2.1258 | 2.0172 | 2.0994 | 2.0275 | 1.94516 | 1.97484 | |
| | | 3A | 2.0167 | 1.9445 | 2.0102 | 1.9741 | 2.12500 | 2.10680 | 2.1250 | 2.0167 | 2.0973 | 2.0251 | 1.94500 | 1.96460 | 3B |
| | | | 2.0162 | 1.9437 | 2.0107 | 1.9749 | 2.12484 | 2.10696 | 2.1258 | 2.0172 | 2.0965 | 2.0246 | 1.94516 | 1.96444 | |
| 2⅛-8 or 2.125-8 | UN | 2A | 2.0414 | 1.9873 | 2.0335 | 2.0064 | 2.12260 | 2.10760 | 2.1250 | 2.0438 | 2.1081 | 2.0540 | 1.99000 | 2.01500 | 2B |
| | | | 2.0409 | 1.9866 | 2.0340 | 2.0071 | 2.12244 | 2.10776 | 2.1257 | 2.0443 | 2.1074 | 2.0535 | 1.99016 | 2.01484 | |
| | | 3A | 2.0438 | 1.9897 | 2.0379 | 2.0108 | 2.12500 | 2.11000 | 2.1250 | 2.0438 | 2.1056 | 2.0515 | 1.99000 | 2.00470 | 3B |
| | | | 2.0433 | 1.9890 | 2.0384 | 2.0115 | 2.12484 | 2.11016 | 2.1257 | 2.0443 | 2.1049 | 2.0510 | 1.99016 | 2.00454 | |
| 2⅛-12 or 2.125-12 | UN | 2A | 2.0691 | 2.0330 | 2.0630 | 2.0450 | 2.12320 | 2.11180 | 2.1250 | 2.0709 | 2.1149 | 2.0788 | 2.03500 | 2.05300 | 2B |
| | | | 2.0687 | 2.0324 | 2.0634 | 2.0456 | 2.12304 | 2.11196 | 2.1256 | 2.0713 | 2.1143 | 2.0784 | 2.03516 | 2.05284 | |
| | | 3A | 2.0709 | 2.0348 | 2.0664 | 2.0484 | 2.12500 | 2.11360 | 2.1250 | 2.0709 | 2.1129 | 2.0768 | 2.03500 | 2.04480 | 3B |
| | | | 2.0705 | 2.0342 | 2.0668 | 2.0490 | 2.12484 | 2.11376 | 2.1256 | 2.0713 | 2.1123 | 2.0764 | 2.03516 | 2.04464 | |
| 2⅛-16 or 2.125-16 | UN | 2A | 2.0828 | 2.0557 | 2.0774 | 2.0639 | 2.12340 | 2.11400 | 2.1250 | 2.0844 | 2.1185 | 2.0914 | 2.05700 | 2.07100 | 2B |
| | | | 2.0824 | 2.0551 | 2.0778 | 2.0645 | 2.12324 | 2.11416 | 2.1256 | 2.0848 | 2.1179 | 2.0910 | 2.05716 | 2.07084 | |
| | | 3A | 2.0844 | 2.0573 | 2.0804 | 2.0669 | 2.12500 | 2.11560 | 2.1250 | 2.0844 | 2.1167 | 2.0896 | 2.05700 | 2.06580 | 3B |
| | | | 2.0840 | 2.0567 | 2.0808 | 2.0675 | 2.12484 | 2.11576 | 2.1256 | 2.0848 | 2.1161 | 2.0892 | 2.05716 | 2.06564 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2⅛-20 or 2.125-20 | UN | 2A | 2.0910 | 2.0693 | 2.0861 | 2.0753 | 2.12350 | 2.11540 | 2.1250 | 2.0925 | 2.1206 | 2.0989 | 2.07100 | 2.08200 | 2B |
| | | | 2.0906 | 2.0688 | 2.0865 | 2.0758 | 2.12334 | 2.11556 | 2.1255 | 2.0929 | 2.1201 | 2.0985 | 2.07116 | 2.08184 | |
| | | 3A | 2.0925 | 2.0708 | 2.0888 | 2.0780 | 2.12500 | 2.11690 | 2.1250 | 2.0925 | 2.1190 | 2.0973 | 2.07100 | 2.07870 | 3B |
| | | | 2.0921 | 2.0703 | 2.0892 | 2.0785 | 2.12484 | 2.11706 | 2.1255 | 2.0929 | 2.1185 | 2.0969 | 2.07116 | 2.07854 | |
| 2¼-4½ or 2.250-4.5 | UNC | 1A | 2.1028 | 2.0066 | 2.0882 | 2.0401 | 2.24710 | 2.21410 | 2.2500 | 2.1057 | 2.2209 | 2.1247 | 2.00900 | 2.04500 | 1B |
| | | | 2.1023 | 2.0058 | 2.0887 | 2.0409 | 2.24694 | 2.21426 | 2.2508 | 2.1062 | 2.2201 | 2.1242 | 2.00916 | 2.04484 | |
| | | 2A | 2.1028 | 2.0066 | 2.0931 | 2.0450 | 2.44710 | 2.22510 | 2.2500 | 2.1057 | 2.2145 | 2.1183 | 2.00900 | 2.04500 | 2B |
| | | | 2.1023 | 2.0058 | 2.0936 | 2.0458 | 2.24694 | 2.22526 | 2.2508 | 2.1062 | 2.2137 | 2.1178 | 2.00916 | 2.04484 | |
| | | 3A | 2.1057 | 2.0095 | 2.0984 | 2.0503 | 2.25040 | 2.22800 | 2.2500 | 2.1057 | 2.2114 | 2.1152 | 2.00900 | 2.03610 | 3B |
| | | | 2.1052 | 2.0087 | 2.0989 | 2.0511 | 2.24984 | 2.22816 | 2.2508 | 2.1062 | 2.2106 | 2.1147 | 2.00916 | 2.03594 | |
| 2¼-6 or 2.250-6 | UN | 2A | 2.1391 | 2.0669 | 2.1303 | 2.0942 | 2.24740 | 2.22920 | 2.2500 | 2.1417 | 2.2253 | 2.1531 | 2.07000 | 2.10000 | 2B |
| | | | 2.1386 | 2.0661 | 2.1308 | 2.0950 | 2.24724 | 2.22936 | 2.2508 | 2.1422 | 2.2245 | 2.1526 | 2.07016 | 2.09984 | |
| | | 3A | 2.1417 | 2.0695 | 2.1351 | 2.0990 | 2.25000 | 2.23180 | 2.2500 | 2.1417 | 2.2224 | 2.1502 | 2.07000 | 2.08960 | 3B |
| | | | 2.1412 | 2.0687 | 2.1356 | 2.0998 | 2.24984 | 2.23196 | 2.2508 | 2.1422 | 2.2216 | 2.1497 | 2.07016 | 2.08944 | |
| 2¼-8 or 2.250-8 | UN | 2A | 2.1664 | 2.1123 | 2.1584 | 2.1313 | 2.24760 | 2.23260 | 2.2500 | 2.1688 | 2.2333 | 2.1792 | 2.11500 | 2.14000 | 2B |
| | | | 2.1659 | 2.1116 | 2.1589 | 2.1320 | 2.24744 | 2.23276 | 2.2507 | 2.1693 | 2.2326 | 2.1787 | 2.11516 | 2.13984 | |
| | | 3A | 2.1688 | 2.1147 | 2.1628 | 2.1357 | 2.25000 | 2.23500 | 2.2500 | 2.1688 | 2.2307 | 2.1766 | 2.11500 | 2.12970 | 3B |
| | | | 2.1683 | 2.1140 | 2.1633 | 2.1364 | 2.24984 | 2.23516 | 2.2507 | 2.1693 | 2.2300 | 2.1761 | 2.11516 | 2.12954 | |
| 2¼-12 or 2.250-12 | UN | 2A | 2.1941 | 2.1580 | 2.1880 | 2.1700 | 2.24820 | 2.23680 | 2.2500 | 2.1959 | 2.2399 | 2.2038 | 2.16000 | 2.17800 | 2B |
| | | | 2.1937 | 2.1574 | 2.1884 | 2.1706 | 2.24804 | 2.23696 | 2.2506 | 2.1963 | 2.2393 | 2.2034 | 2.16016 | 2.17784 | |
| | | 3A | 2.1959 | 2.1598 | 2.1914 | 2.1734 | 2.25000 | 2.23860 | 2.2500 | 2.1959 | 2.2379 | 2.2018 | 2.16000 | 2.16980 | 3B |
| | | | 2.1955 | 2.1592 | 2.1918 | 2.1740 | 2.24984 | 2.23876 | 2.2506 | 2.1963 | 2.2373 | 2.2014 | 2.16016 | 2.16964 | |
| 2¼-16 or 2.250-16 | UN | 2A | 2.2078 | 2.1807 | 2.2024 | 2.1889 | 2.24840 | 2.23900 | 2.2500 | 2.2094 | 2.2435 | 2.2164 | 2.18200 | 2.19600 | 2B |
| | | | 2.2074 | 2.1801 | 2.2028 | 2.1895 | 2.24824 | 2.23916 | 2.2506 | 2.2098 | 2.2429 | 2.2160 | 2.18216 | 2.19584 | |
| | | 3A | 2.2094 | 2.1823 | 2.2054 | 2.1919 | 2.25000 | 2.24060 | 2.2500 | 2.2094 | 2.2417 | 2.2146 | 2.18200 | 2.19080 | 3B |
| | | | 2.2090 | 2.1817 | 2.2058 | 2.1925 | 2.24984 | 2.24076 | 2.2506 | 2.2098 | 2.2411 | 2.2142 | 2.18216 | 2.19064 | |
| 2¼-20 or 2.250-20 | UN | 2A | 2.2160 | 2.1943 | 2.2111 | 2.2003 | 2.24850 | 2.24040 | 2.2500 | 2.2175 | 2.2456 | 2.2239 | 2.19600 | 2.20700 | 2B |
| | | | 2.2156 | 2.1938 | 2.2115 | 2.2008 | 2.24834 | 2.24056 | 2.2505 | 2.2179 | 2.2451 | 2.2235 | 2.19616 | 2.20684 | |
| | | 3A | 2.2175 | 2.1958 | 2.2138 | 2.2030 | 2.25000 | 2.24190 | 2.2500 | 2.2175 | 2.2440 | 2.2223 | 2.19600 | 2.20370 | 3B |
| | | | 2.2171 | 2.1953 | 2.2142 | 2.2035 | 2.24984 | 2.24206 | 2.2505 | 2.2179 | 2.2435 | 2.2219 | 2.19616 | 2.20354 | |
| 2⅜-6 or 2.375-6 | UN | 2A | 2.2640 | 2.1918 | 2.2551 | 2.2190 | 2.37230 | 2.35410 | 2.3750 | 2.2667 | 2.3504 | 2.2782 | 2.19500 | 2.22600 | 2B |
| | | | 2.2635 | 2.1910 | 2.2556 | 2.2198 | 2.37214 | 2.35426 | 2.3758 | 2.2672 | 2.3496 | 2.2777 | 2.19516 | 2.22584 | |
| | | 3A | 2.2667 | 2.1945 | 2.2601 | 2.2240 | 2.37500 | 2.35680 | 2.3750 | 2.2667 | 2.3475 | 2.2753 | 2.19500 | 2.21460 | 3B |
| | | | 2.2662 | 2.1937 | 2.2606 | 2.2248 | 2.37484 | 2.35696 | 2.3758 | 2.2672 | 2.3467 | 2.2748 | 2.19516 | 2.21444 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2⅜-8 or 2.375-8 | UN | 2A | 2.2914 | 2.2373 | 2.2833 | 2.2562 | 2.37260 | 2.35760 | 2.3750 | 2.2938 | 2.3584 | 2.3043 | 2.24000 | 2.26500 | 2B |
| | | | 2.2909 | 2.2366 | 2.2838 | 2.2569 | 2.37244 | 2.35776 | 2.3757 | 2.2943 | 2.3577 | 2.3038 | 2.24016 | 2.26484 | |
| | | 3A | 2.2938 | 2.2397 | 2.2878 | 2.2607 | 2.37500 | 2.36000 | 2.3750 | 2.2938 | 2.3558 | 2.3017 | 2.24000 | 2.25470 | 3B |
| | | | 2.2933 | 2.2390 | 2.2883 | 2.2614 | 2.37484 | 2.36016 | 2.3757 | 2.2943 | 2.3551 | 2.3012 | 2.24016 | 2.25454 | |
| 2⅜-12 or 2.375-12 | UN | 2A | 2.3190 | 2.2829 | 2.3128 | 2.2948 | 2.37310 | 2.36170 | 2.3750 | 2.3209 | 2.3651 | 2.3290 | 2.28500 | 2.30300 | 2B |
| | | | 2.3186 | 2.2823 | 2.3132 | 2.2954 | 2.37294 | 2.36186 | 2.3756 | 2.3213 | 2.3645 | 2.3286 | 2.28516 | 2.30284 | |
| | | 3A | 2.3209 | 2.2848 | 2.3163 | 2.2983 | 2.37500 | 2.36360 | 2.3750 | 2.3209 | 2.3630 | 2.3269 | 2.28500 | 2.29480 | 3B |
| | | | 2.3205 | 2.2842 | 2.3167 | 2.2989 | 2.37484 | 2.36376 | 2.3756 | 2.3213 | 2.3624 | 2.3265 | 2.28516 | 2.29464 | |
| 2⅜-16 or 2.375-16 | UN | 2A | 2.3327 | 2.3056 | 2.3272 | 2.3137 | 2.37330 | 2.36390 | 2.3750 | 2.3344 | 2.3687 | 2.3416 | 2.30700 | 2.32100 | 2B |
| | | | 2.3323 | 2.3050 | 2.3276 | 2.3143 | 2.37314 | 2.36406 | 2.3756 | 2.3348 | 2.3681 | 2.3412 | 2.30716 | 2.32084 | |
| | | 3A | 2.3344 | 2.3073 | 2.3303 | 2.3168 | 2.37500 | 2.36560 | 2.3750 | 2.3344 | 2.3669 | 2.3398 | 2.30700 | 2.31580 | 3B |
| | | | 2.3340 | 2.3067 | 2.3307 | 2.3174 | 2.37484 | 2.36576 | 2.3756 | 2.3348 | 2.3663 | 2.3394 | 2.30716 | 2.31564 | |
| 2⅜-20 or 2.375-20 | UN | 2A | 2.3410 | 2.3193 | 2.3359 | 2.3251 | 2.37350 | 2.36540 | 2.3750 | 2.3425 | 2.3708 | 2.3491 | 2.32100 | 2.33200 | 2B |
| | | | 2.3406 | 2.3188 | 2.3363 | 2.3256 | 2.37334 | 2.36556 | 2.3755 | 2.3429 | 2.3703 | 2.3487 | 2.32116 | 2.33184 | |
| | | 3A | 2.3425 | 2.3208 | 2.3387 | 2.3279 | 2.37500 | 2.36690 | 2.3750 | 2.3425 | 2.3692 | 2.3475 | 2.32100 | 2.32870 | 3B |
| | | | 2.3421 | 2.3203 | 2.3391 | 2.3284 | 2.37484 | 2.36706 | 2.3755 | 2.3429 | 2.3687 | 2.3471 | 2.32116 | 2.32854 | |
| 2½-4 or 2.500-4 | UNC | 1A | 2.3345 | 2.2262 | 2.3190 | 2.2649 | 2.49690 | 2.46120 | 2.5000 | 2.3376 | 2.4661 | 2.3578 | 2.22900 | 2.26700 | 1B |
| | | | 2.3340 | 2.2253 | 2.3195 | 2.2658 | 2.49674 | 2.46136 | 2.5009 | 2.3381 | 2.4652 | 2.3573 | 2.22916 | 2.26684 | |
| | | 2A | 2.3345 | 2.2262 | 2.3241 | 2.2700 | 2.49690 | 2.47310 | 2.5000 | 2.3376 | 2.4594 | 2.3511 | 2.22900 | 2.26700 | 2B |
| | | | 2.3340 | 2.2253 | 2.3246 | 2.2709 | 2.49674 | 2.47326 | 2.5009 | 2.3381 | 2.4585 | 2.3506 | 2.22916 | 2.26684 | |
| | | 3A | 2.3376 | 2.2293 | 2.3298 | 2.2757 | 2.50000 | 2.47620 | 2.5000 | 2.3376 | 2.4560 | 2.3477 | 2.22900 | 2.25940 | 3B |
| | | | 2.3371 | 2.2284 | 2.3303 | 2.2766 | 2.49984 | 2.47636 | 2.5009 | 2.3381 | 2.4551 | 2.3472 | 2.22916 | 2.25924 | |
| 2½-6 or 2.500-6 | UN | 2A | 2.3890 | 2.3168 | 2.3800 | 2.3439 | 2.49730 | 2.47910 | 2.5000 | 2.3917 | 2.4755 | 2.4033 | 2.32000 | 2.35000 | 2B |
| | | | 2.3885 | 2.3160 | 2.3805 | 2.3447 | 2.49714 | 2.47926 | 2.5008 | 2.3922 | 2.4747 | 2.4028 | 2.32016 | 2.34984 | |
| | | 3A | 2.3917 | 2.3195 | 2.3850 | 2.3489 | 2.50000 | 2.48180 | 2.5000 | 2.3917 | 2.4726 | 2.4004 | 2.32000 | 2.33960 | 3B |
| | | | 2.3912 | 2.3187 | 2.3855 | 2.3497 | 2.49984 | 2.48196 | 2.5008 | 2.3922 | 2.4718 | 2.3999 | 2.32016 | 2.33944 | |
| 2½-8 or 2.500-8 | UN | 2A | 2.4164 | 2.3623 | 2.4082 | 2.3811 | 2.49760 | 2.48260 | 2.5000 | 2.4188 | 2.4835 | 2.4294 | 2.36500 | 2.39000 | 2B |
| | | | 2.4159 | 2.3616 | 2.4087 | 2.3818 | 2.49744 | 2.48276 | 2.5007 | 2.4193 | 2.4828 | 2.4289 | 2.36516 | 2.38984 | |
| | | 3A | 2.4188 | 2.3647 | 2.4127 | 2.3856 | 2.50000 | 2.48500 | 2.5000 | 2.4188 | 2.4809 | 2.4268 | 2.36500 | 2.37970 | 3B |
| | | | 2.4183 | 2.3640 | 2.4132 | 2.3863 | 2.49984 | 2.48516 | 2.5007 | 2.4193 | 2.4802 | 2.4263 | 2.36516 | 2.37954 | |
| 2½-12 or 2.500-12 | UN | 2A | 2.4440 | 2.4079 | 2.4378 | 2.4198 | 2.49810 | 2.48670 | 2.5000 | 2.4459 | 2.4901 | 2.4540 | 2.41000 | 2.42800 | 2B |
| | | | 2.4436 | 2.4073 | 2.4382 | 2.4204 | 2.49794 | 2.48686 | 2.5006 | 2.4463 | 2.4895 | 2.4536 | 2.41016 | 2.42784 | |
| | | 3A | 2.4459 | 2.4098 | 2.4413 | 2.4233 | 2.50000 | 2.48860 | 2.5000 | 2.4459 | 2.4880 | 2.4519 | 2.41000 | 2.41980 | 3B |
| | | | 2.4455 | 2.4092 | 2.4417 | 2.4239 | 2.49984 | 2.48876 | 2.5006 | 2.4463 | 2.4874 | 2.4515 | 2.41016 | 2.41964 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2½-16 or 2.500-16 | UN | 2A | 2.4577 | 2.4306 | 2.4522 | 2.4387 | 2.49830 | 2.48890 | 2.5000 | 2.4594 | 2.4937 | 2.4666 | 2.43200 | 2.44600 | 2B |
| | | | 2.4573 | 2.4300 | 2.4526 | 2.4393 | 2.49814 | 2.48906 | 2.5006 | 2.4598 | 2.4931 | 2.4662 | 2.43216 | 2.44584 | |
| | | 3A | 2.4594 | 2.4323 | 2.4553 | 2.4418 | 2.50000 | 2.49060 | 2.5000 | 2.4594 | 2.4919 | 2.4648 | 2.43200 | 2.44080 | 3B |
| | | | 2.4590 | 2.4317 | 2.4557 | 2.4424 | 2.49984 | 2.49076 | 2.5006 | 2.4598 | 2.4913 | 2.4644 | 2.43216 | 2.44064 | |
| 2½-20 or 2.500-20 | UN | 2A | 2.4660 | 2.4443 | 2.4609 | 2.4501 | 2.49850 | 2.49040 | 2.5000 | 2.4675 | 2.4958 | 2.4741 | 2.44600 | 2.45700 | 2B |
| | | | 2.4656 | 2.4438 | 2.4613 | 2.4506 | 2.49834 | 2.49056 | 2.5005 | 2.4679 | 2.4953 | 2.4737 | 2.44616 | 2.45684 | |
| | | 3A | 2.4675 | 2.4458 | 2.4637 | 2.4529 | 2.50000 | 2.49190 | 2.5000 | 2.4675 | 2.4942 | 2.4725 | 2.44600 | 2.45370 | 3B |
| | | | 2.4671 | 2.4453 | 2.4641 | 2.4534 | 2.49984 | 2.49206 | 2.5005 | 2.4679 | 2.4937 | 2.4721 | 2.44616 | 2.45354 | |
| 2⅝-6 or 2.625-6 | UN | 2A | 2.5140 | 2.4418 | 2.5050 | 2.4689 | 2.6223 | 2.6041 | 2.6250 | 2.5167 | 2.6007 | 2.5285 | 2.4450 | 2.4750 | 2B |
| | | | 2.5135 | 2.4410 | 2.5055 | 2.4697 | 2.6221 | 2.6043 | 2.6258 | 2.5172 | 2.5999 | 2.5280 | 2.4452 | 2.4748 | |
| | | 3A | 2.5167 | 2.4445 | 2.5099 | 2.4738 | 2.6250 | 2.6068 | 2.6250 | 2.5167 | 2.5977 | 2.5255 | 2.4450 | 2.4646 | 3B |
| | | | 2.5162 | 2.4437 | 2.5104 | 2.4746 | 2.6248 | 2.6070 | 2.6258 | 2.5172 | 2.5969 | 2.5250 | 2.4452 | 2.4644 | |
| 2⅝-8 or 2.625-8 | UN | 2A | 2.5413 | 2.4872 | 2.5331 | 2.5060 | 2.6225 | 2.6075 | 2.6250 | 2.5438 | 2.6086 | 2.5545 | 2.4900 | 2.5150 | 2B |
| | | | 2.5408 | 2.4865 | 2.5336 | 2.5067 | 2.6223 | 2.6077 | 2.6257 | 2.5443 | 2.6079 | 2.5540 | 2.4902 | 2.5148 | |
| | | 3A | 2.5438 | 2.4897 | 2.5376 | 2.5105 | 2.6250 | 2.6100 | 2.6250 | 2.5438 | 2.6059 | 2.5518 | 2.4900 | 2.5047 | 3B |
| | | | 2.5433 | 2.4890 | 2.5381 | 2.5112 | 2.6248 | 2.6102 | 2.6257 | 2.5443 | 2.6052 | 2.5513 | 2.4902 | 2.5045 | |
| 2⅝-12 or 2.625-12 | UN | 2A | 2.5690 | 2.5329 | 2.5628 | 2.5448 | 2.6231 | 2.6117 | 2.6250 | 2.5709 | 2.6151 | 2.5790 | 2.5350 | 2.5530 | 2B |
| | | | 2.5686 | 2.5323 | 2.5632 | 2.5454 | 2.6229 | 2.6119 | 2.6256 | 2.5713 | 2.6145 | 2.5786 | 2.5352 | 2.5528 | |
| | | 3A | 2.5709 | 2.5348 | 2.5663 | 2.5483 | 2.6250 | 2.6136 | 2.6250 | 2.5709 | 2.6130 | 2.5769 | 2.5350 | 2.5448 | 3B |
| | | | 2.5705 | 2.5342 | 2.5667 | 2.5489 | 2.6248 | 2.6138 | 2.6256 | 2.5713 | 2.6124 | 2.5765 | 2.5352 | 2.5446 | |
| 2⅝-16 or 2.625-16 | UN | 2A | 2.5827 | 2.5556 | 2.5772 | 2.5637 | 2.6233 | 2.6139 | 2.6250 | 2.5844 | 2.6187 | 2.5916 | 2.5570 | 2.5710 | 2B |
| | | | 2.5823 | 2.5550 | 2.5776 | 2.5643 | 2.6231 | 2.6141 | 2.6256 | 2.5848 | 2.6181 | 2.5912 | 2.5572 | 2.5708 | |
| | | 3A | 2.5844 | 2.5573 | 2.5803 | 2.5668 | 2.6250 | 2.6156 | 2.6250 | 2.5844 | 2.6169 | 2.5898 | 2.5570 | 2.5658 | 3B |
| | | | 2.5840 | 2.5567 | 2.5807 | 2.5674 | 2.6248 | 2.6158 | 2.6256 | 2.5848 | 2.6163 | 2.5894 | 2.5572 | 2.5656 | |
| 2⅝-20 or 2.625-20 | UN | 2A | 2.5910 | 2.5693 | 2.5859 | 2.5751 | 2.6235 | 2.6154 | 2.6250 | 2.5925 | 2.6208 | 2.5991 | 2.5710 | 2.5820 | 2B |
| | | | 2.5906 | 2.5688 | 2.5863 | 2.5756 | 2.6233 | 2.6156 | 2.6255 | 2.5929 | 2.6203 | 2.5987 | 2.5712 | 2.5818 | |
| | | 3A | 2.5925 | 2.5708 | 2.5887 | 2.5779 | 2.6250 | 2.6169 | 2.6250 | 2.5925 | 2.6192 | 2.5975 | 2.5710 | 2.5787 | 3B |
| | | | 2.5921 | 2.5703 | 2.5891 | 2.5784 | 2.6248 | 2.6171 | 2.6255 | 2.5929 | 2.6187 | 2.5971 | 2.5712 | 2.5785 | |
| 2¾-4 or 2.750-4 | UNC | 1A | 2.5844 | 2.4761 | 2.5686 | 2.5145 | 2.7468 | 2.7111 | 2.7500 | 2.5876 | 2.7165 | 2.6082 | 2.4790 | 2.5170 | 1B |
| | | | 2.5839 | 2.4752 | 2.5691 | 2.5154 | 2.7466 | 2.7113 | 2.7509 | 2.5881 | 2.7156 | 2.6077 | 2.4792 | 2.5168 | |
| | | 2A | 2.5844 | .24761 | 2.5739 | 2.5198 | 2.7468 | 2.7230 | 2.7500 | 2.5876 | 2.7096 | 2.6013 | 2.4790 | 2.5170 | 2B |
| | | | 2.5839 | 2.4752 | 2.5744 | 2.5207 | 2.7466 | 2.7232 | 2.7509 | 2.5881 | 2.7087 | 2.6008 | 2.4792 | 2.5168 | |
| | | 3A | 2.5876 | 2.4793 | 2.5797 | 2.5256 | 2.7500 | 2.7262 | 2.7500 | 2.5876 | 2.7062 | 2.5979 | 2.4790 | 2.5094 | 3B |
| | | | 2.5871 | 2.4784 | 2.5802 | 2.5265 | 2.7498 | 2.7264 | 2.7509 | 2.5881 | 2.7053 | 2.5974 | 2.4792 | 2.5092 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2¾-6 or 2.750-6 | UN | 2A | 2.6390 | 2.5668 | 2.6299 | 2.5938 | 2.7473 | 2.7291 | 2.7500 | 2.6417 | 2.7258 | 2.6536 | 2.5700 | 2.6000 | 2B |
| | | | 2.6385 | 2.5660 | 2.6304 | 2.5946 | 2.7471 | 2.7293 | 2.7508 | 2.6422 | 2.7250 | 2.6531 | 2.5702 | 2.5998 | |
| | | 3A | 2.6417 | 2.5695 | 2.6349 | 2.5988 | 2.7500 | 2.7318 | 2.7500 | 2.6417 | 2.7228 | 2.6506 | 2.5700 | 2.5896 | 3B |
| | | | 2.6412 | 2.5687 | 2.6354 | 2.5996 | 2.7498 | 2.7320 | 2.7508 | 2.6422 | 2.7220 | 2.6501 | 2.5702 | 2.5894 | |
| 2¾-8 or 2.750-8 | UN | 2A | 2.6663 | 2.6122 | 2.6580 | 2.6309 | 2.7475 | 2.7325 | 2.7500 | 2.6688 | 2.7337 | 2.6796 | 2.6150 | 2.6400 | 2B |
| | | | 2.6658 | 2.6115 | 2.6585 | 2.6316 | 2.7473 | 2.7327 | 2.7507 | 2.6693 | 2.7330 | 2.6791 | 2.6152 | 2.6398 | |
| | | 3A | 2.6688 | 2.6147 | 2.6625 | 2.6354 | 2.7500 | 2.7350 | 2.7500 | 2.6688 | 2.7310 | 2.6769 | 2.6150 | 2.6297 | 3B |
| | | | 2.6683 | 2.6140 | 2.6630 | 2.6361 | 2.7498 | 2.7352 | 2.7507 | 2.6693 | 2.7303 | 2.6764 | 2.6152 | 2.6295 | |
| 2¾-12 or 2.750-12 | UN | 2A | 2.6940 | 2.6579 | 2.6878 | 2.6698 | 2.7481 | 2.7367 | 2.7500 | 2.6959 | 2.7401 | 2.7040 | 2.6600 | 2.6780 | 2B |
| | | | 2.6936 | 2.6573 | 2.6882 | 2.6704 | 2.7479 | 2.7369 | 2.7506 | 2.6963 | 2.7395 | 2.7036 | 2.6602 | 2.6778 | |
| | | 3A | 2.6959 | 2.6598 | 2.6913 | 2.6733 | 2.7500 | 2.7386 | 2.7500 | 2.6959 | 2.7380 | 2.7019 | 2.6600 | 2.6698 | 3B |
| | | | 2.6955 | 2.6592 | 2.6917 | 2.6739 | 2.7498 | 2.7388 | 2.7506 | 2.6963 | 2.7374 | 2.7015 | 2.6602 | 2.6696 | |
| 2¾-16 or 2.750-16 | UN | 2A | 2.7077 | 2.6806 | 2.7022 | 2.6887 | 2.7483 | 2.7389 | 2.7500 | 2.7094 | 2.7137 | 2.7166 | 2.6820 | 2.6960 | 2B |
| | | | 2.7073 | 2.6800 | 2.7026 | 2.6893 | 2.7481 | 2.7391 | 2.7506 | 2.7098 | 2.7431 | 2.7162 | 2.6822 | 2.6958 | |
| | | 3A | 2.7094 | 2.6823 | 2.7053 | 2.6918 | 2.7500 | 2.7406 | 2.7500 | 2.7094 | 2.7419 | 2.7148 | 2.6820 | 2.6908 | 3B |
| | | | 2.7090 | 2.6817 | 2.7057 | 2.6924 | 2.7498 | 2.7408 | 2.7506 | 2.7098 | 2.7413 | 2.7144 | 2.6822 | 2.6906 | |
| 2¾-20 or 2.750-20 | UN | 2A | 2.7160 | 2.6943 | 2.7109 | 2.7001 | 2.7485 | 2.7404 | 2.7500 | 2.7175 | 2.7458 | 2.7241 | 2.6960 | 2.7070 | 2B |
| | | | 2.7156 | 2.6938 | 2.7113 | 2.7006 | 2.7483 | 2.7406 | 2.7505 | 2.7179 | 2.7453 | 2.7237 | 2.6962 | 2.7068 | |
| | | 3A | 2.7175 | 2.6958 | 2.7137 | 2.7029 | 2.7500 | 2.7419 | 2.7500 | 2.7175 | 2.7442 | 2.7225 | 2.6960 | 2.7037 | 3B |
| | | | 2.7171 | 2.6953 | 2.7141 | 2.7034 | 2.7498 | 2.7421 | 2.7505 | 2.7179 | 2.7437 | 2.7221 | 2.6962 | 2.7035 | |
| 2⅞-6 or 2.875-6 | UN | 2A | 2.7639 | 2.6917 | 2.7547 | 2.7186 | 2.8722 | 2.8540 | 2.8750 | 2.7667 | 2.8509 | 2.7787 | 2.6950 | 2.7250 | 2B |
| | | | 2.7634 | 2.6909 | 2.7552 | 2.7194 | 2.8720 | 2.8542 | 2.8758 | 2.7672 | 2.8501 | 2.7782 | 2.6952 | 2.7248 | |
| | | 3A | 2.7667 | 2.6945 | 2.7598 | 2.7237 | 2.8750 | 2.8568 | 2.8750 | 2.7667 | 2.8479 | 2.7757 | 2.6950 | 2.7146 | 3B |
| | | | 2.7662 | 2.6937 | 2.7603 | 2.7245 | 2.8748 | 2.8570 | 2.8758 | 2.7672 | 2.8471 | 2.7752 | 2.6952 | 2.7144 | |
| 2⅞-8 or 2.875-8 | UN | 2A | 2.7913 | 2.7372 | 2.7829 | 2.7558 | 2.8725 | 2.8575 | 2.8750 | 2.7938 | 2.8589 | 2.8048 | 2.7400 | 2.7650 | 2B |
| | | | 2.7908 | 2.7365 | 2.7834 | 2.7565 | 2.8723 | 2.8577 | 2.8757 | 2.7943 | 2.8582 | 2.8043 | 2.7402 | 2.7648 | |
| | | 3A | 2.7938 | 2.7397 | 2.7875 | 2.7604 | 2.8750 | 2.8600 | 2.8750 | 2.7938 | 2.8561 | 2.8020 | 2.7400 | 2.7547 | 3B |
| | | | 2.7933 | 2.7390 | 2.7880 | 2.7611 | 2.8748 | 2.8602 | 2.8757 | 2.7943 | 2.8554 | 2.8015 | 2.7402 | 2.7545 | |
| 2⅞-12 or 2.875-12 | UN | 2A | 2.8190 | 2.7829 | 2.8127 | 2.7947 | 2.8731 | 2.8617 | 2.8750 | 2.8209 | 2.8652 | 2.8291 | 2.7850 | 2.8030 | 2B |
| | | | 2.8186 | 2.7823 | 2.8131 | 2.7953 | 2.8729 | 2.8619 | 2.8756 | 2.8213 | 2.8646 | 2.8287 | 2.7852 | 2.8028 | |
| | | 3A | 2.8209 | 2.7848 | 2.8162 | 2.7982 | 2.8750 | 2.8636 | 2.8750 | 2.8209 | 2.8632 | 2.8271 | 2.7850 | 2.7948 | 3B |
| | | | 2.8205 | 2.8742 | 2.8166 | 2.7988 | 2.8748 | 2.8638 | 2.8756 | 2.8213 | 2.8626 | 2.8267 | 2.7852 | 2.7946 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2⅞-16 or 2.875-16 | UN | 2A | 2.8327 | 2.8056 | 2.8271 | 2.8136 | 2.8733 | 2.8639 | 2.8750 | 2.8344 | 2.8688 | 2.8417 | 2.8070 | 2.8210 | 2B |
| | | | 2.8323 | 2.8050 | 2.8275 | 2.8142 | 2.8731 | 2.8641 | 2.8756 | 2.8348 | 2.8682 | 2.8413 | 2.8072 | 2.8208 | |
| | | 3A | 2.8344 | 2.8073 | 2.8302 | 2.8167 | 2.8750 | 2.8656 | 2.8750 | 2.8344 | 2.8670 | 2.8399 | 2.8070 | 2.8158 | 3B |
| | | | 2.8340 | 2.8067 | 2.8306 | 2.8173 | 2.8748 | 2.8658 | 2.8756 | 2.8348 | 2.8664 | 2.8395 | 2.8072 | 2.8156 | |
| 2⅞-20 or 2.875-20 | UN | 2A | 2.8409 | 2.8192 | 2.8357 | 2.8249 | 2.8734 | 2.8653 | 2.8750 | 2.8425 | 2.8710 | 2.8493 | 2.8210 | 2.8320 | 2B |
| | | | 2.8405 | 2.8187 | 2.8361 | 2.8254 | 2.8732 | 2.8655 | 2.8755 | 2.8429 | 2.8705 | 2.8489 | 2.8212 | 2.8318 | |
| | | 3A | 2.8425 | 2.8208 | 2.8386 | 2.8278 | 2.8750 | 2.8669 | 2.8750 | 2.8425 | 2.8693 | 2.8476 | 2.8210 | 2.8287 | 3B |
| | | | 2.8421 | 2.8203 | 2.8390 | 2.8283 | 2.8748 | 2.8671 | 2.8755 | 2.8429 | 2.8688 | 2.8472 | 2.8212 | 2.8285 | |
| 3-4 or 3.000-4 | UNC | 1A | 2.8344 | 2.7261 | 2.8183 | 2.7642 | 2.9968 | 2.9611 | 3.0000 | 2.8376 | 2.9668 | 2.8585 | 2.7290 | 2.7670 | 1B |
| | | | 2.8339 | 2.7252 | 2.8188 | 2.7651 | 2.9966 | 2.9613 | 3.0009 | 2.8381 | 2.9659 | 2.8580 | 2.7292 | 2.7668 | |
| | | 2A | 2.8344 | 2.7261 | 2.8237 | 2.7696 | 2.9968 | 2.9730 | 3.0000 | 2.8376 | 2.9598 | 2.8515 | 2.7290 | 2.7670 | 2B |
| | | | 2.8339 | 2.7252 | 2.8242 | 2.7705 | 2.9966 | 2.9732 | 3.0009 | 2.8381 | 2.9589 | 2.8510 | 2.7292 | 2.7668 | |
| | | 3A | 2.8376 | 2.7293 | 2.8296 | 2.7755 | 3.0000 | 2.9762 | 3.0000 | 2.8376 | 2.9563 | 2.8480 | 2.7290 | 2.7594 | 3B |
| | | | 2.8371 | 2.7284 | 2.8301 | 2.7764 | 2.9998 | 2.9764 | 3.0009 | 2.8381 | 2.9554 | 2.8475 | 2.7292 | 2.7592 | |
| 3-6 or 3.000-6 | UN | 2A | 2.8889 | 2.8167 | 2.8796 | 2.8435 | 2.9972 | 2.9790 | 3.0000 | 2.8917 | 2.9760 | 2.9038 | 2.8200 | 2.8500 | 2B |
| | | | 2.8884 | 2.8159 | 2.8801 | 2.8443 | 2.9970 | 2.9792 | 3.0008 | 2.8922 | 2.9752 | 2.9033 | 2.8202 | 2.8498 | |
| | | 3A | 2.8917 | 2.8195 | 2.8847 | 2.8486 | 3.0000 | 2.9818 | 3.0000 | 2.8917 | 2.9730 | 2.9008 | 2.8200 | 2.8396 | 3B |
| | | | 2.8912 | 2.8187 | 2.8852 | 2.8494 | 2.9998 | 2.9820 | 3.0008 | 2.8922 | 2.9722 | 2.9003 | 2.8202 | 2.8394 | |
| 3-8 or 3.000-8 | UN | 2A | 2.9162 | 2.8621 | 2.9077 | 2.8806 | 2.9974 | 2.9824 | 3.0000 | 2.9188 | 2.9840 | 2.9299 | 2.8650 | 2.8900 | 2B |
| | | | 2.9157 | 2.8614 | 2.9082 | 2.8813 | 2.9972 | 2.9826 | 3.0007 | 2.9193 | 2.9833 | 2.9294 | 2.8652 | 2.8898 | |
| | | 3A | 2.9188 | 2.8647 | 2.9124 | 2.8853 | 3.0000 | 2.9850 | 3.0000 | 2.9188 | 2.9812 | 2.9271 | 2.8650 | 2.8797 | 3B |
| | | | 2.9183 | 2.8640 | 2.9129 | 2.8860 | 2.9998 | 2.9852 | 3.0007 | 2.9193 | 2.9805 | 2.9266 | 2.8652 | 2.8795 | |
| 3-12 or 3.000-12 | UN | 2A | 2.9440 | 2.9079 | 2.9377 | 2.9197 | 2.9981 | 2.9867 | 3.0000 | 2.9459 | 2.9902 | 2.9541 | 2.9100 | 2.9280 | 2B |
| | | | 2.9436 | 2.9073 | 2.9381 | 2.9203 | 2.9979 | 2.9869 | 3.0006 | 2.9463 | 2.9896 | 2.9537 | 2.9102 | 2.9278 | |
| | | 3A | 2.9459 | 2.9098 | 2.9412 | 2.9232 | 3.0000 | 2.9886 | 3.0000 | 2.9459 | 2.9882 | 2.9521 | 2.9100 | 2.9198 | 3B |
| | | | 2.9455 | 2.9092 | 2.9416 | 2.9238 | 2.9998 | 2.9888 | 3.0006 | 2.9463 | 2.9876 | 2.9517 | 2.9102 | 2.9196 | |
| 3-16 or 3.000-16 | UN | 2A | 2.9577 | 2.9306 | 2.9521 | 2.9386 | 2.9983 | 2.9889 | 3.0000 | 2.9594 | 2.9938 | 2.9667 | 2.9320 | 2.9460 | 2B |
| | | | 2.9573 | 2.9300 | 2.9525 | 2.9392 | 2.9981 | 2.9891 | 3.0006 | 2.9598 | 2.9932 | 2.9663 | 2.9322 | 2.9458 | |
| | | 3A | 2.9594 | 2.9323 | 2.9552 | 2.9417 | 3.0000 | 2.9906 | 3.0000 | 2.9594 | 2.9920 | 2.9649 | 2.9320 | 2.9408 | 3B |
| | | | 2.9590 | 2.9317 | 2.9556 | 2.9423 | 2.9998 | 2.9908 | 3.0006 | 2.9598 | 2.9914 | 2.9645 | 2.9322 | 2.9406 | |
| 3-20 or 3.000-20 | UN | 2A | 2.9659 | 2.9442 | 2.9607 | 2.9499 | 2.9984 | 2.9903 | 3.0000 | 2.9675 | 2.9960 | 2.9743 | 2.9460 | 2.9570 | 2B |
| | | | 2.9655 | 2.9437 | 2.9611 | 2.9504 | 2.9982 | 2.9905 | 3.0005 | 2.9679 | 2.9955 | 2.9739 | 2.9462 | 2.9568 | |
| | | 3A | 2.9675 | 2.9458 | 2.9636 | 2.9528 | 3.0000 | 2.9919 | 3.0000 | 2.9675 | 2.9943 | 2.9726 | 2.9460 | 2.9537 | 3B |
| | | | 2.9671 | 2.9453 | 2.9640 | 2.9533 | 2.9998 | 2.9921 | 3.0005 | 2.9679 | 2.9938 | 2.9722 | 2.9462 | 2.9535 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3⅛-6 or 3.125-6 | UN | 2A | 3.0139 | 2.9417 | 3.0045 | 2.9684 | 3.1222 | 3.1040 | 3.1250 | 3.0167 | 3.1011 | 3.0289 | 2.9450 | 2.9750 | 2B |
| | | | 3.0134 | 2.9409 | 3.0050 | 2.9692 | 3.1220 | 3.1042 | 3.1258 | 3.0172 | 3.1003 | 3.0284 | 2.9452 | 2.9748 | |
| | | 3A | 3.0167 | 2.9445 | 3.0097 | 2.9736 | 3.1250 | 3.1068 | 3.1250 | 3.0167 | 3.0981 | 3.0259 | 2.9450 | 2.9646 | 3B |
| | | | 3.0162 | 2.9437 | 3.0102 | 2.9744 | 3.1248 | 3.1070 | 3.1258 | 3.0172 | 3.0973 | 3.0254 | 2.9452 | 2.9644 | |
| 3⅛-8 or 3.125-8 | UN | 2A | 3.0412 | 2.9871 | 3.0326 | 3.0055 | 3.1224 | 3.1074 | 3.1250 | 3.0438 | 3.1091 | 3.0550 | 2.9900 | 3.0150 | 2B |
| | | | 3.0407 | 2.9864 | 3.0331 | 3.0062 | 3.1222 | 3.1076 | 3.1257 | 3.0443 | 3.1084 | 3.0545 | 2.9902 | 3.0148 | |
| | | 3A | 3.0438 | 2.9897 | 3.0374 | 3.0103 | 3.1250 | 3.1100 | 3.1250 | 3.0438 | 3.1063 | 3.0522 | 2.9900 | 3.0047 | 3B |
| | | | 3.0433 | 2.9890 | 3.0379 | 3.0110 | 3.1248 | 3.1102 | 3.1257 | 3.0443 | 3.1056 | 3.0517 | 2.9902 | 3.0045 | |
| 3⅛-12 or 3.125-12 | UN | 2A | 3.0690 | 3.0329 | 3.0627 | 3.0447 | 3.1231 | 3.1117 | 3.1250 | 3.0709 | 3.1152 | 3.0791 | 3.0350 | 3.0530 | 2B |
| | | | 3.0686 | 3.0323 | 3.0631 | 3.0453 | 3.1229 | 3.1119 | 3.1256 | 3.0713 | 3.1146 | 3.0787 | 3.0352 | 3.0528 | |
| | | 3A | 3.0709 | 3.0348 | 3.0662 | 3.0482 | 3.1250 | 3.1136 | 3.1250 | 3.0709 | 3.1132 | 3.0771 | 3.0350 | 3.0448 | 3B |
| | | | 3.0705 | 3.0342 | 3.0666 | 3.0488 | 3.1248 | 3.1138 | 3.1256 | 3.0713 | 3.1126 | 3.0767 | 3.0352 | 3.0446 | |
| 3⅛-16 or 3.125-16 | UN | 2A | 3.0827 | 3.0556 | 3.0771 | 3.0636 | 3.1233 | 3.1139 | 3.1250 | 3.0844 | 3.1188 | 3.0917 | 3.0570 | 3.0710 | 2B |
| | | | 3.0823 | 3.0550 | 3.0775 | 3.0642 | 3.1231 | 3.1141 | 3.1256 | 3.0848 | 3.1182 | 3.0913 | 3.0572 | 3.0708 | |
| | | 3A | 3.0844 | 3.0573 | 3.0802 | 3.0667 | 3.1250 | 3.1156 | 3.1250 | 3.0844 | 3.1170 | 3.0899 | 3.0570 | 3.0658 | 3B |
| | | | 3.0840 | 3.0567 | 3.0806 | 3.0673 | 3.1248 | 3.1158 | 3.1256 | 3.0848 | 3.1164 | 3.0895 | 3.0572 | 3.0656 | |
| 3¼-4 or 3.250-4 | UNC | 1A | 3.0843 | 2.9760 | 3.0680 | 3.0139 | 3.2467 | 3.2110 | 3.2500 | 3.0876 | 3.2171 | 3.1088 | 2.9790 | 3.0170 | 1B |
| | | | 3.0838 | 2.9751 | 3.0685 | 3.0148 | 3.2465 | 3.2112 | 3.2509 | 3.0881 | 3.2162 | 3.1083 | 2.9792 | 3.0168 | |
| | | 2A | 3.0843 | 2.9760 | 3.0734 | 3.0193 | 3.2467 | 3.2229 | 3.2500 | 3.0876 | 3.2100 | 3.1017 | 2.9790 | 3.0170 | 2B |
| | | | 3.0838 | 2.9751 | 3.0739 | 3.0202 | 3.2465 | 3.2231 | 3.2509 | 3.0881 | 3.2091 | 3.1012 | 2.9792 | 3.0168 | |
| | | 3A | 3.0876 | 2.9793 | 3.0794 | 3.0253 | 3.2500 | 3.2262 | 3.2500 | 3.0876 | 3.2065 | 3.0982 | 2.9790 | 3.0094 | 3B |
| | | | 3.0871 | 2.9784 | 3.0799 | 3.0262 | 3.2498 | 3.2264 | 3.2509 | 3.0881 | 3.2056 | 3.0977 | 2.9792 | 3.0092 | |
| 3¼-6 or 3.250-6 | UN | 2A | 3.1389 | 3.0667 | 3.1294 | 3.0933 | 3.2472 | 3.2290 | 3.2500 | 3.1417 | 3.2262 | 3.1540 | 3.0700 | 3.1000 | 2B |
| | | | 3.1384 | 3.0659 | 3.1299 | 3.0941 | 3.2470 | 3.2292 | 3.2508 | 3.1422 | 3.2254 | 3.1535 | 3.0702 | 3.0998 | |
| | | 3A | 3.1417 | 3.0695 | 3.1346 | 3.0985 | 3.2500 | 3.2318 | 3.2500 | 3.1417 | 3.2231 | 3.1509 | 3.0700 | 3.0896 | 3B |
| | | | 3.1412 | 3.0687 | 3.1351 | 3.0993 | 3.2498 | 3.2320 | 3.2508 | 3.1422 | 3.2223 | 3.1504 | 3.0702 | 3.0894 | |
| 3¼-8 or 3.250-8 | UN | 2A | 3.1662 | 3.1121 | 3.1575 | 3.1304 | 3.2474 | 3.2324 | 3.2500 | 3.1688 | 3.2342 | 3.1801 | 3.1150 | 3.1400 | 2B |
| | | | 3.1657 | 3.1114 | 3.1580 | 3.1311 | 3.2472 | 3.2326 | 3.2507 | 3.1693 | 3.2335 | 3.1796 | 3.1152 | 3.1398 | |
| | | 3A | 3.1688 | 3.1147 | 3.1623 | 3.1352 | 3.2500 | 3.2350 | 3.2500 | 3.1688 | 3.2314 | 3.1773 | 3.1150 | 3.1297 | 3B |
| | | | 3.1683 | 3.1140 | 3.1628 | 3.1359 | 3.2498 | 3.2352 | 3.2507 | 3.1693 | 3.2307 | 3.1768 | 3.1152 | 3.1295 | |
| 3¼-12 or 3.250-12 | UN | 2A | 3.1940 | 3.1579 | 3.1877 | 3.1697 | 3.2481 | 3.2367 | 3.2500 | 3.1959 | 3.2402 | 3.2041 | 3.1600 | 3.1780 | 2B |
| | | | 3.1936 | 3.1573 | 3.1881 | 3.1703 | 3.2479 | 3.2369 | 3.2506 | 3.1963 | 3.2396 | 3.2037 | 3.1602 | 3.1778 | |
| | | 3A | 3.1959 | 3.1598 | 3.1912 | 3.1732 | 3.2500 | 3.2386 | 3.2500 | 3.1959 | 3.2382 | 3.2021 | 3.1600 | 3.1698 | 3B |
| | | | 3.1955 | 3.1592 | 3.1916 | 3.1738 | 3.2498 | 3.2388 | 3.2506 | 3.1963 | 3.2376 | 3.2017 | 3.1602 | 3.1696 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3¼-16 or 3.250-16 | UN | 2A | 3.2077 | 3.1806 | 3.2021 | 3.1886 | 3.2483 | 3.2389 | 3.2500 | 3.2094 | 3.2438 | 3.2167 | 3.1820 | 3.1960 | 2B |
| | | | 3.2073 | 3.1800 | 3.2025 | 3.1892 | 3.2481 | 3.2391 | 3.2506 | 3.2098 | 3.2432 | 3.2163 | 3.1822 | 3.1958 | |
| | | 3A | 3.2094 | 3.1823 | 3.2052 | 3.1917 | 3.2500 | 3.2406 | 3.2500 | 3.2094 | 3.2420 | 3.2149 | 3.1820 | 3.1908 | 3B |
| | | | 3.2090 | 3.1817 | 3.2056 | 3.1923 | 3.2498 | 3.2408 | 3.2506 | 3.2098 | 3.2414 | 3.2145 | 3.1822 | 3.1906 | |
| 3⅜-6 or 3.375-6 | UN | 2A | 3.2638 | 3.1916 | 3.2543 | 3.2182 | 3.3721 | 3.3539 | 3.3750 | 3.2667 | 3.3513 | 3.2791 | 3.1950 | 3.2250 | 2B |
| | | | 3.2633 | 3.1908 | 3.2548 | 3.2190 | 3.3719 | 3.3541 | 3.3758 | 3.2672 | 3.3505 | 3.2786 | 3.1952 | 3.2248 | |
| | | 3A | 3.2667 | 3.1945 | 3.2595 | 3.2234 | 3.3750 | 3.3568 | 3.3750 | 3.2667 | 3.3482 | 3.2760 | 3.1950 | 3.2146 | 3B |
| | | | 3.2662 | 3.1937 | 3.2600 | 3.2242 | 3.3748 | 3.3570 | 3.3758 | 3.2672 | 3.3474 | 3.2755 | 3.1952 | 3.2144 | |
| 3⅜-8 or 3.375-8 | UN | 2A | 3.2912 | 3.2371 | 3.2824 | 3.2553 | 3.3724 | 3.3574 | 3.3750 | 3.2938 | 3.3593 | 3.3052 | 3.2400 | 3.2650 | 2B |
| | | | 3.2907 | 3.2364 | 3.2829 | 3.2560 | 3.3722 | 3.3576 | 3.3757 | 3.2943 | 3.3586 | 3.3047 | 3.2402 | 3.2648 | |
| | | 3A | 3.2938 | 3.2397 | 3.2872 | 3.2601 | 3.3750 | 3.3600 | 3.3750 | 3.2938 | 3.3564 | 3.3023 | 3.2400 | 3.2547 | 3B |
| | | | 3.2933 | 3.2390 | 3.2877 | 3.2608 | 3.3748 | 3.3602 | 3.3757 | 3.2943 | 3.3557 | 3.3018 | 3.2402 | 3.2545 | |
| 3⅜-12 or 3.375-12 | UN | 2A | 3.3190 | 3.2829 | 3.3126 | 3.2946 | 3.3731 | 3.3617 | 3.3750 | 3.3209 | 3.3654 | 3.3293 | 3.2850 | 3.3030 | 2B |
| | | | 3.3186 | 3.2823 | 3.3130 | 3.2952 | 3.3729 | 3.3619 | 3.3756 | 3.3213 | 3.3648 | 3.3289 | 3.2852 | 3.3028 | |
| | | 3A | 3.3209 | 3.2848 | 3.3161 | 3.2981 | 3.3750 | 3.3636 | 3.3750 | 3.3209 | 3.3633 | 3.3272 | 3.2850 | 3.2948 | 3B |
| | | | 3.3205 | 3.2842 | 3.3165 | 3.2987 | 3.3748 | 3.3638 | 3.3756 | 3.3213 | 3.3627 | 3.3268 | 3.2852 | 3.2946 | |
| 3⅜-16 or 3.375-16 | UN | 2A | 3.3327 | 3.3056 | 3.3269 | 3.3134 | 3.3733 | 3.3639 | 3.3750 | 3.3344 | 3.3690 | 3.3419 | 3.3070 | 3.3210 | 2B |
| | | | 3.3323 | 3.3050 | 3.3273 | 3.3140 | 3.3731 | 3.3641 | 3.3756 | 3.3348 | 3.3684 | 3.3415 | 3.3072 | 3.3208 | |
| | | 3A | 3.3344 | 3.3073 | 3.3301 | 3.3166 | 3.3750 | 3.3656 | 3.3750 | 3.3344 | 3.3671 | 3.3400 | 3.3070 | 3.3158 | 3B |
| | | | 3.3340 | 3.3067 | 3.3305 | 3.3172 | 3.3748 | 3.3658 | 3.3756 | 3.3348 | 3.3665 | 3.3396 | 3.3072 | 3.3156 | |
| 3½-4 or 3.500-4 | UNC | 1A | 3.3343 | 3.2260 | 3.3177 | 3.2636 | 3.4967 | 3.4610 | 3.5000 | 3.3376 | 3.4674 | 3.3591 | 3.2290 | 3.2670 | 1B |
| | | | 3.3338 | 3.2251 | 3.3182 | 3.2645 | 3.4965 | 3.4612 | 3.5009 | 3.3381 | 3.4665 | 3.3586 | 3.2292 | 3.2668 | |
| | | 2A | 3.3343 | 3.2260 | 3.3233 | 3.2692 | 3.4967 | 3.4729 | 3.5000 | 3.3376 | 3.4602 | 3.3519 | 3.2290 | 3.2670 | 2B |
| | | | 3.3338 | 3.2251 | 3.3238 | 3.2701 | 3.4965 | 3.4731 | 3.5009 | 3.3381 | 3.4593 | 3.3514 | 3.2292 | 3.2668 | |
| | | 3A | 3.3376 | 3.2293 | 3.3293 | 3.2752 | 3.5000 | 3.4762 | 3.5000 | 3.3376 | 3.4567 | 3.3484 | 3.2290 | 3.2594 | 3B |
| | | | 3.3371 | 3.2284 | 3.3298 | 3.2761 | 3.4998 | 3.4764 | 3.5009 | 3.3381 | 3.4558 | 3.3479 | 3.2292 | 3.2592 | |
| 3½-6 or 3.500-6 | UN | 2A | 3.3888 | 3.3166 | 3.3792 | 3.3431 | 3.4971 | 3.4789 | 3.5000 | 3.3917 | 3.4764 | 3.4042 | 3.3200 | 3.3500 | 2B |
| | | | 3.3883 | 3.3158 | 3.3797 | 3.3439 | 3.4969 | 3.4791 | 3.5008 | 3.3922 | 3.4756 | 3.4037 | 3.3202 | 3.3498 | |
| | | 3A | 3.3917 | 3.3195 | 3.3845 | 3.3484 | 3.5000 | 3.4818 | 3.5000 | 3.3917 | 3.4733 | 3.4011 | 3.3200 | 3.3396 | 3B |
| | | | 3.3912 | 3.3187 | 3.3850 | 3.3492 | 3.4998 | 3.4820 | 3.5008 | 3.3922 | 3.4725 | 3.4006 | 3.3202 | 3.3394 | |
| 3½-8 or 3.500-8 | UN | 2A | 3.4162 | 3.3621 | 3.4074 | 3.3803 | 3.4974 | 3.4824 | 3.5000 | 3.4188 | 3.4844 | 3.4303 | 3.3650 | 3.3900 | 2B |
| | | | 3.4157 | 3.3614 | 3.4079 | 3.3810 | 3.4972 | 3.4826 | 3.5007 | 3.4193 | 3.4837 | 3.4298 | 3.3652 | 3.3898 | |
| | | 3A | 3.4188 | 3.3647 | 3.4122 | 3.3851 | 3.5000 | 3.4850 | 3.5000 | 3.4188 | 3.4815 | 3.4274 | 3.3650 | 3.3797 | 3B |
| | | | 3.4183 | 3.3640 | 3.4127 | 3.3858 | 3.4998 | 3.4852 | 3.5007 | 3.4193 | 3.4808 | 3.4269 | 3.3652 | 3.3795 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3½-12 or 3.500-12 | UN | 2A | 3.4440 | 3.4079 | 3.4376 | 3.4196 | 3.4981 | 3.4867 | 3.5000 | 3.4459 | 3.4904 | 3.4543 | 3.4100 | 3.4280 | 2B |
| | | | 3.4436 | 3.4073 | 3.4380 | 3.4202 | 3.4979 | 3.4869 | 3.5006 | 3.4463 | 3.4898 | 3.4539 | 3.4102 | 3.4278 | |
| | | 3A | 3.4459 | 3.4098 | 3.4411 | 3.4231 | 3.5000 | 3.4886 | 3.5000 | 3.4459 | 3.4883 | 3.4522 | 3.4100 | 3.4198 | 3B |
| | | | 3.4455 | 3.4092 | 3.4415 | 3.4237 | 3.4998 | 3.4888 | 3.5006 | 3.4463 | 3.4877 | 3.4518 | 3.4102 | 3.4196 | |
| 3½-16 or 3.500-16 | UN | 2A | 3.4577 | 3.4306 | 3.4519 | 3.4384 | 3.4983 | 3.4889 | 3.5000 | 3.4594 | 3.4940 | 3.4669 | 3.4320 | 3.4460 | 2B |
| | | | 3.4573 | 3.4300 | 3.4523 | 3.4390 | 3.4981 | 3.4891 | 3.5006 | 3.4598 | 3.4934 | 3.4665 | 3.4322 | 3.4458 | |
| | | 3A | 3.4594 | 3.4323 | 3.4551 | 3.4416 | 3.5000 | 3.4906 | 3.5000 | 3.4594 | 3.4921 | 3.4650 | 3.4320 | 3.4408 | 3B |
| | | | 3.4590 | 3.4317 | 3.4555 | 3.4422 | 3.4998 | 3.4908 | 3.5006 | 3.4598 | 3.4915 | 3.4646 | 3.4322 | 3.4406 | |
| 3⅝-6 or 3.625-6 | UN | 2A | 3.5138 | 3.4416 | 3.5041 | 3.4680 | 3.6221 | 3.6039 | 3.6250 | 3.5167 | 3.6015 | 3.5293 | 3.4450 | 3.4750 | 2B |
| | | | 3.5133 | 3.4408 | 3.5046 | 3.4688 | 3.6219 | 3.6041 | 3.6258 | 3.5172 | 3.6007 | 3.5288 | 3.4452 | 3.4748 | |
| | | 3A | 3.5167 | 3.4445 | 3.5094 | 3.4733 | 3.6250 | 3.6068 | 3.6250 | 3.5167 | 3.5984 | 3.5262 | 3.4450 | 3.4646 | 3B |
| | | | 3.5162 | 3.4437 | 3.5099 | 3.4741 | 3.6248 | 3.6070 | 3.6258 | 3.5172 | 3.5976 | 3.5257 | 3.4452 | 3.4644 | |
| 3⅝-8 or 3.625-8 | UN | 2A | 3.5411 | 3.4870 | 3.5322 | 3.5051 | 3.6223 | 3.6073 | 3.6250 | 3.5438 | 3.6095 | 3.5554 | 3.4900 | 3.5150 | 2B |
| | | | 3.5406 | 3.4863 | 3.5327 | 3.5058 | 3.6221 | 3.6075 | 3.6257 | 3.5443 | 3.6088 | 3.5549 | 3.4902 | 3.5148 | |
| | | 3A | 3.5438 | 3.4897 | 3.5371 | 3.5100 | 3.6250 | 3.6100 | 3.6250 | 3.5438 | 3.6066 | 3.5525 | 3.4900 | 3.5047 | 3B |
| | | | 3.5433 | 3.4890 | 3.5376 | 3.5107 | 3.6248 | 3.6102 | 3.6257 | 3.5443 | 3.6059 | 3.5520 | 3.4902 | 3.5045 | |
| 3⅝-12 or 3.625-12 | UN | 2A | 3.5690 | 3.5329 | 3.5626 | 3.5446 | 3.6231 | 3.6117 | 3.6250 | 3.5709 | 3.6154 | 3.5793 | 3.5350 | 3.5530 | 2B |
| | | | 3.5686 | 3.5323 | 3.5630 | 3.5452 | 3.6229 | 3.6119 | 3.6256 | 3.5713 | 3.6148 | 3.5789 | 3.5352 | 3.5528 | |
| | | 3A | 3.5709 | 3.5348 | 3.5661 | 3.5481 | 3.6250 | 3.6136 | 3.6250 | 3.5709 | 3.6133 | 3.5772 | 3.5350 | 3.5448 | 3B |
| | | | 3.5705 | 3.5342 | 3.5665 | 3.5487 | 3.6248 | 3.6138 | 3.6256 | 3.5713 | 3.6127 | 3.5768 | 3.5352 | 3.5446 | |
| 3⅝-16 or 3.625-16 | UN | 2A | 3.5827 | 3.5556 | 3.5769 | 3.5634 | 3.6233 | 3.6139 | 3.6250 | 3.5844 | 3.6190 | 3.5919 | 3.5570 | 3.5710 | 2B |
| | | | 3.5823 | 3.5550 | 3.5773 | 3.5640 | 3.6231 | 3.6141 | 3.6256 | 3.5848 | 3.6184 | 3.5915 | 3.5572 | 3.5708 | |
| | | 3A | 3.5844 | 3.5573 | 3.5801 | 3.5666 | 3.6250 | 3.6156 | 3.6250 | 3.5844 | 3.6171 | 3.5900 | 3.5570 | 3.5658 | 3B |
| | | | 3.5840 | 3.5567 | 3.5805 | 3.5672 | 3.6248 | 3.6158 | 3.6256 | 3.5848 | 3.6165 | 3.5896 | 3.5572 | 3.5656 | |
| 3¾-4 or 3.750-4 | UNC | 1A | 3.5842 | 3.4759 | 3.5674 | 3.5133 | 3.7466 | 3.7109 | 3.7500 | 3.5876 | 3.7177 | 3.6094 | 3.4790 | 3.5170 | 1B |
| | | | 3.5837 | 3.4750 | 3.5679 | 3.5142 | 3.7464 | 3.7111 | 3.7509 | 3.5881 | 3.7168 | 3.6089 | 3.4792 | 3.5168 | |
| | | 2A | 3.5842 | 3.4759 | 3.5730 | 3.5189 | 3.7466 | 3.7228 | 3.7500 | 3.5876 | 3.7104 | 3.6021 | 3.4790 | 3.5170 | 2B |
| | | | 3.5837 | 3.4750 | 3.5735 | 3.5198 | 3.7464 | 3.7230 | 3.7509 | 3.5881 | 3.7095 | 3.6016 | 3.4792 | 3.5168 | |
| | | 3A | 3.5876 | 3.4793 | 3.5792 | 3.5251 | 3.7500 | 3.7262 | 3.7500 | 3.5876 | 3.7068 | 3.5985 | 3.4790 | 3.5094 | 3B |
| | | | 3.5871 | 3.4784 | 3.5797 | 3.5260 | 3.7498 | 3.7264 | 3.7509 | 3.5881 | 3.7059 | 3.5980 | 3.4792 | 3.5092 | |
| 3¾-6 or 3.750-6 | UN | 2A | 3.6388 | 3.5666 | 3.6290 | 3.5929 | 3.7471 | 3.7289 | 3.7500 | 3.6417 | 3.7266 | 3.6544 | 3.5700 | 3.6000 | 2B |
| | | | 3.6383 | 3.5658 | 3.6295 | 3.5937 | 3.7469 | 3.7291 | 3.7508 | 3.6422 | 3.7258 | 3.6539 | 3.5702 | 3.5998 | |
| | | 3A | 3.6417 | 3.5695 | 3.6344 | 3.5983 | 3.7500 | 3.7318 | 3.7500 | 3.6417 | 3.7234 | 3.6512 | 3.5700 | 3.5896 | 3B |
| | | | 3.6412 | 3.5687 | 3.6349 | 3.5991 | 3.7498 | 3.7320 | 3.7508 | 3.6422 | 3.7226 | 3.6507 | 3.5702 | 3.5894 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3¾-8 or 3.750-8 | UN | 2A | 3.6661 | 3.6120 | 3.6571 | 3.6300 | 3.7473 | 3.7323 | 3.7500 | 3.6688 | 3.7346 | 3.6805 | 3.6150 | 3.6400 | 2B |
| | | | 3.6656 | 3.6113 | 3.6576 | 3.6307 | 3.7471 | 3.7325 | 3.7507 | 3.6693 | 3.7339 | 3.6800 | 3.6152 | 3.6398 | |
| | | 3A | 3.6688 | 3.6147 | 3.6621 | 3.6350 | 3.7500 | 3.7350 | 3.7500 | 3.6688 | 3.7317 | 3.6776 | 3.6150 | 3.6297 | 3B |
| | | | 3.6683 | 3.6140 | 3.6626 | 3.6357 | 3.7498 | 3.7352 | 3.7507 | 3.6693 | 3.7310 | 3.6771 | 3.6152 | 3.6295 | |
| 3¾-12 or 3.750-12 | UN | 2A | 3.6940 | 3.6579 | 3.6876 | 3.6696 | 3.7481 | 3.7367 | 3.7500 | 3.6959 | 3.7404 | 3.7043 | 3.6600 | 3.6780 | 2B |
| | | | 3.6936 | 3.6573 | 3.6880 | 3.6702 | 3.7479 | 3.7369 | 3.7506 | 3.6963 | 3.7398 | 3.7039 | 3.6602 | 3.6778 | |
| | | 3A | 3.6959 | 3.6598 | 3.6911 | 3.6731 | 3.7500 | 3.7386 | 3.7500 | 3.6959 | 3.7383 | 3.7022 | 3.6600 | 3.6698 | 3B |
| | | | 3.6955 | 3.6592 | 3.6915 | 3.6737 | 3.7498 | 3.7388 | 3.7506 | 3.6963 | 3.7377 | 3.7018 | 3.6602 | 3.6696 | |
| 3¾-16 or 3.750-16 | UN | 2A | 3.7077 | 3.6806 | 3.7019 | 3.6884 | 3.7483 | 3.7389 | 3.7500 | 3.7094 | 3.7440 | 3.7169 | 3.6820 | 3.6960 | 2B |
| | | | 3.7073 | 3.6800 | 3.7023 | 3.6890 | 3.7481 | 3.7391 | 3.7506 | 3.7098 | 3.7434 | 3.7165 | 3.6822 | 3.6958 | |
| | | 3A | 3.7094 | 3.6823 | 3.7051 | 3.6916 | 3.7500 | 3.7406 | 3.7500 | 3.7094 | 3.7421 | 3.7150 | 3.6820 | 3.6908 | 3B |
| | | | 3.7090 | 3.6817 | 3.7055 | 3.6922 | 3.7498 | 3.7408 | 3.7506 | 3.7098 | 3.7415 | 3.7146 | 3.6822 | 3.6906 | |
| 3⅞-6 or 3.875-6 | UN | 2A | 3.7637 | 3.6915 | 3.7538 | 3.7177 | 3.8720 | 3.8538 | 3.8750 | 3.7667 | 3.8517 | 3.7795 | 3.6950 | 3.7250 | 2B |
| | | | 3.7632 | 3.6907 | 3.7543 | 3.7185 | 3.8718 | 3.8540 | 3.8758 | 3.7672 | 3.8509 | 3.7790 | 3.6952 | 3.7248 | |
| | | 3A | 3.7667 | 3.6945 | 3.7593 | 3.7232 | 3.8750 | 3.8568 | 3.8750 | 3.7667 | 3.8485 | 3.7763 | 3.6950 | 3.7146 | 3B |
| | | | 3.7662 | 3.6937 | 3.7598 | 3.7240 | 3.8748 | 3.8570 | 3.8758 | 3.7672 | 3.8477 | 3.7758 | 3.6952 | 3.7144 | |
| 3⅞-8 or 3.875-8 | UN | 2A | 3.7911 | 3.7370 | 3.7820 | 3.7549 | 3.8723 | 3.8573 | 3.8750 | 3.7938 | 3.8597 | 3.8056 | 3.7400 | 3.7650 | 2B |
| | | | 3.7906 | 3.7363 | 3.7825 | 3.7556 | 3.8721 | 3.8575 | 3.8757 | 3.7943 | 3.8590 | 3.8051 | 3.7402 | 3.7648 | |
| | | 3A | 3.7938 | 3.7397 | 3.7870 | 3.7599 | 3.8750 | 3.8600 | 3.8750 | 3.7938 | 3.8567 | 3.8026 | 3.7400 | 3.7547 | 3B |
| | | | 3.7933 | 3.7390 | 3.7875 | 3.7606 | 3.8748 | 3.8602 | 3.8757 | 3.7943 | 3.8560 | 3.8021 | 3.7402 | 3.7545 | |
| 3⅞-12 or 3.875-12 | UN | 2A | 3.8189 | 3.7828 | 3.8124 | 3.7944 | 3.8730 | 3.8616 | 3.8750 | 3.8209 | 3.8655 | 3.8294 | 3.7850 | 3.8030 | 2B |
| | | | 3.8185 | 3.7822 | 3.8128 | 3.7950 | 3.8728 | 3.8618 | 3.8756 | 3.8213 | 3.8649 | 3.8290 | 3.7852 | 3.8028 | |
| | | 3A | 3.8209 | 3.7848 | 3.8160 | 3.7980 | 3.8750 | 3.8636 | 3.8750 | 3.8209 | 3.8634 | 3.8273 | 3.7850 | 3.7948 | 3B |
| | | | 3.8205 | 3.7842 | 3.8164 | 3.7986 | 3.8748 | 3.8638 | 3.8756 | 3.8213 | 3.8628 | 3.8269 | 3.7852 | 3.7946 | |
| 3⅞-16 or 3.875-16 | UN | 2A | 3.8326 | 3.8055 | 3.8267 | 3.8132 | 3.8732 | 3.8638 | 3.8750 | 3.8344 | 3.8691 | 3.8420 | 3.8070 | 3.8210 | 2B |
| | | | 3.8322 | 3.8049 | 3.8271 | 3.8138 | 3.8730 | 3.8640 | 3.8756 | 3.8348 | 3.8685 | 3.8416 | 3.8072 | 3.8208 | |
| | | 3A | 3.8344 | 3.8073 | 3.8300 | 3.8165 | 3.8750 | 3.8656 | 3.8750 | 3.8344 | 3.8672 | 3.8401 | 3.8070 | 3.8158 | 3B |
| | | | 3.8340 | 3.8067 | 3.8304 | 3.8171 | 3.8748 | 3.8658 | 3.8756 | 3.8348 | 3.8666 | 3.8397 | 3.8072 | 3.8156 | |
| 4-4 or 4.000-4 | UNC | 1A | 3.8342 | 3.7259 | 3.8172 | 3.7631 | 3.9966 | 3.9609 | 4.0000 | 3.8376 | 3.9680 | 3.8597 | 3.7290 | 3.7670 | 1B |
| | | | 3.8337 | 3.7250 | 3.8177 | 3.7640 | 3.9964 | 3.9611 | 4.0009 | 3.8381 | 3.9671 | 3.8592 | 3.7292 | 3.7668 | |
| | | 2A | 3.8342 | 3.7259 | 3.8229 | 3.7688 | 3.9966 | 3.9728 | 4.0000 | 3.8376 | 3.9606 | 3.8523 | 3.7290 | 3.7670 | 2B |
| | | | 3.8337 | 3.7250 | 3.8234 | 3.7697 | 3.9964 | 3.9730 | 4.0009 | 3.8381 | 3.9597 | 3.8518 | 3.7292 | 3.7668 | |
| | | 3A | 3.8376 | 3.7293 | 3.8291 | 3.7750 | 4.0000 | 3.9762 | 4.0000 | 3.8376 | 3.9570 | 3.8487 | 3.7290 | 3.7594 | 3B |
| | | | 3.8371 | 3.7284 | 3.8296 | 3.7759 | 3.9998 | 3.9764 | 4.0009 | 3.8381 | 3.9561 | 3.8482 | 3.7292 | 3.7592 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4-6 or 4.000-6 | UN | 2A | 3.8887 | 3.8165 | 3.8788 | 3.8427 | 3.9970 | 3.9788 | 4.0000 | 3.8917 | 3.9768 | 3.9045 | 3.8200 | 3.8500 | 2B |
| | | | 3.8882 | 3.8157 | 3.8793 | 3.8435 | 3.9968 | 3.9790 | 4.0008 | 3.8922 | 3.9760 | 3.9041 | 3.8202 | 3.8498 | |
| | | 3A | 3.8917 | 3.8195 | 3.8843 | 3.8482 | 4.0000 | 3.9818 | 4.0000 | 3.8917 | 3.9736 | 3.9014 | 3.8200 | 3.8396 | 3B |
| | | | 3.8912 | 3.8187 | 3.8848 | 3.8490 | 3.9998 | 3.9820 | 4.0008 | 3.8922 | 3.9728 | 3.9009 | 3.8202 | 3.8394 | |
| 4-8 or 4.000-8 | UN | 2A | 3.9161 | 3.8620 | 3.9070 | 3.8799 | 3.9973 | 3.9823 | 4.0000 | 3.9188 | 3.9848 | 3.9307 | 3.8650 | 3.8900 | 2B |
| | | | 3.9156 | 3.8613 | 3.9075 | 3.8806 | 3.9971 | 3.9825 | 4.0007 | 3.9193 | 3.9841 | 3.9302 | 3.8652 | 3.8898 | |
| | | 3A | 3.9188 | 3.8647 | 3.9120 | 3.8849 | 4.0000 | 3.9850 | 4.0000 | 3.9188 | 3.9818 | 3.9277 | 3.8650 | 3.8797 | 3B |
| | | | 3.9183 | 3.8640 | 3.9125 | 3.8856 | 3.9998 | 3.9852 | 4.0007 | 3.9193 | 3.9811 | 3.9272 | 3.8652 | 3.8795 | |
| 4-12 or 4.000-12 | UN | 2A | 3.9439 | 3.9078 | 3.9374 | 3.9194 | 3.9980 | 3.9866 | 4.0000 | 3.9459 | 3.9905 | 3.9544 | 3.9100 | 3.9280 | 2B |
| | | | 3.9435 | 3.9072 | 3.9378 | 3.9200 | 3.9978 | 3.9868 | 4.0006 | 3.9463 | 3.9899 | 3.9540 | 3.9102 | 3.9278 | |
| | | 3A | 3.9459 | 3.9098 | 3.9410 | 3.9230 | 4.0000 | 3.9886 | 4.0000 | 3.9459 | 3.9884 | 3.9523 | 3.9100 | 3.9198 | 3B |
| | | | 3.9455 | 3.9092 | 3.9414 | 3.9236 | 3.9998 | 3.9888 | 4.0006 | 3.9463 | 3.9878 | 3.9519 | 3.9102 | 3.9196 | |
| 4-16 or 4.000-16 | UN | 2A | 3.9576 | 3.9305 | 3.9517 | 3.9382 | 3.9982 | 3.9888 | 4.0000 | 3.9594 | 3.9941 | 3.9670 | 3.9320 | 3.9460 | 2B |
| | | | 3.9572 | 3.9299 | 3.9521 | 3.9388 | 3.9980 | 3.9890 | 4.0006 | 3.9598 | 3.9935 | 3.9666 | 3.9322 | 3.9458 | |
| | | 3A | 3.9594 | 3.9323 | 3.9550 | 3.9415 | 4.0000 | 3.9906 | 4.0000 | 3.9594 | 3.9922 | 3.9651 | 3.9320 | 3.9408 | 3B |
| | | | 3.9590 | 3.9317 | 3.9554 | 3.9421 | 3.9998 | 3.9908 | 4.0006 | 3.9598 | 3.9916 | 3.9647 | 3.9322 | 3.9406 | |
| 4⅛-6 or 4.125-6 | UN | 2A | 4.0137 | 3.9415 | 4.0037 | 3.9676 | 4.1220 | 4.1038 | 4.1250 | 4.0167 | 4.1019 | 4.0297 | 3.9450 | 3.9750 | 2B |
| | | | 4.0131 | 3.9402 | 4.0043 | 3.9689 | 4.1218 | 4.1040 | 4.1263 | 4.0173 | 4.1006 | 4.0291 | 3.9452 | 3.9748 | |
| | | 3A | 4.0167 | 3.9445 | 4.0092 | 3.9731 | 4.1250 | 4.1068 | 4.1250 | 4.0167 | 4.0986 | 4.0264 | 3.9450 | 3.9646 | 3B |
| | | | 4.0161 | 3.9432 | 4.0098 | 3.9744 | 4.1248 | 4.1070 | 4.1263 | 4.0173 | 4.0973 | 4.0258 | 3.9452 | 3.9644 | |
| 4⅛-12 or 4.125-12 | UN | 2A | 4.0689 | 4.0328 | 4.0624 | 4.0444 | 4.1230 | 4.1116 | 4.1250 | 4.0709 | 4.1155 | 4.0794 | 4.0350 | 4.0530 | 2B |
| | | | 4.0683 | 4.0319 | 4.0630 | 4.0453 | 4.1228 | 4.1118 | 4.1259 | 4.0715 | 4.1146 | 4.0788 | 4.0352 | 4.0528 | |
| | | 3A | 4.0709 | 4.0348 | 4.0660 | 4.0480 | 4.1250 | 4.1136 | 4.1250 | 4.0709 | 4.1134 | 4.0773 | 4.0350 | 4.0448 | 3B |
| | | | 4.0703 | 4.0339 | 4.0666 | 4.0489 | 4.1248 | 4.1138 | 4.1259 | 4.0715 | 4.1125 | 4.0767 | 4.0352 | 4.0446 | |
| 4⅛-16 or 4.125-16 | UN | 2A | 4.0826 | 4.0555 | 4.0767 | 4.0632 | 4.1232 | 4.1138 | 4.1250 | 4.0844 | 4.1191 | 4.0920 | 4.0570 | 4.0710 | 2B |
| | | | 4.0820 | 4.0546 | 4.0773 | 4.0641 | 4.1230 | 4.1140 | 4.1259 | 4.0850 | 4.1182 | 4.0914 | 4.0572 | 4.0708 | |
| | | 3A | 4.0844 | 4.0573 | 4.0800 | 4.0665 | 4.1250 | 4.1156 | 4.1250 | 4.0844 | 4.1172 | 4.0901 | 4.0570 | 4.0658 | 3B |
| | | | 4.0838 | 4.0564 | 4.0806 | 4.0674 | 4.1248 | 4.1158 | 4.1259 | 4.0850 | 4.1163 | 4.0895 | 4.0572 | 4.0656 | |
| 4¼-4 or 4.250-4 | UN | 2A | 4.0842 | 3.9759 | 4.0727 | 4.0186 | 4.2466 | 4.2228 | 4.2500 | 4.0876 | 4.2108 | 4.1025 | 3.9790 | 4.0170 | 2B |
| | | | 4.0836 | 3.9744 | 4.0733 | 4.0201 | 4.2464 | 4.2230 | 4.2515 | 4.0882 | 4.2093 | 4.1019 | 3.9792 | 4.0168 | |
| | | 3A | 4.0876 | 3.9793 | 4.0790 | 4.0249 | 4.2500 | 4.2262 | 4.2500 | 4.0876 | 4.2071 | 4.0988 | 3.9790 | 4.0094 | 3B |
| | | | 4.0870 | 3.9778 | 4.0796 | 4.0264 | 4.2498 | 4.2264 | 4.2515 | 4.0882 | 4.2056 | 4.0982 | 3.9792 | 4.0092 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4¼-6 or 4.250-6 | UN | 2A | 4.1387 | 4.0665 | 4.1286 | 4.0925 | 4.2470 | 4.2500 | 4.1417 | 4.2270 | 4.1548 | 4.0700 | 4.1000 | 2B |
| | | | 4.1381 | 4.0652 | 4.1292 | 4.0938 | 4.2468 | 4.2513 | 4.1423 | 4.2257 | 4.1542 | 4.0702 | 4.0998 | |
| | | 3A | 4.1417 | 4.0695 | 4.1342 | 4.0981 | 4.2500 | 4.2500 | 4.1417 | 4.2237 | 4.1515 | 4.0700 | 4.0896 | 3B |
| | | | 4.1411 | 4.0682 | 4.1348 | 4.0994 | 4.2498 | 4.2513 | 4.1423 | 4.2224 | 4.1509 | 4.0702 | 4.0894 | |
| 4¼-12 or 4.250-12 | UN | 2A | 4.1939 | 4.1578 | 4.1874 | 4.1694 | 4.2480 | 4.2500 | 4.1959 | 4.2405 | 4.2044 | 4.1600 | 4.1780 | 2B |
| | | | 4.1933 | 4.1569 | 4.1880 | 4.1703 | 4.2478 | 4.2509 | 4.1965 | 4.2396 | 4.2038 | 4.1602 | 4.1778 | |
| | | 3A | 4.1959 | 4.1598 | 4.1910 | 4.1730 | 4.2500 | 4.2500 | 4.1959 | 4.2384 | 4.2023 | 4.1600 | 4.1698 | 3B |
| | | | 4.1953 | 4.1589 | 4.1916 | 4.1739 | 4.2498 | 4.2509 | 4.1965 | 4.2375 | 4.2017 | 4.1602 | 4.1696 | |
| 4¼-16 or 4.250-16 | UN | 2A | 4.2076 | 4.1805 | 4.2017 | 4.1882 | 4.2482 | 4.2500 | 4.2094 | 4.2441 | 4.2170 | 4.1820 | 4.1960 | 2B |
| | | | 4.2070 | 4.1796 | 4.2023 | 4.1891 | 4.2480 | 4.2509 | 4.2100 | 4.2432 | 4.2164 | 4.1822 | 4.1958 | |
| | | 3A | 4.2094 | 4.1823 | 4.2050 | 4.1915 | 4.2500 | 4.2500 | 4.2094 | 4.2422 | 4.2151 | 4.1820 | 4.1908 | 3B |
| | | | 4.2088 | 4.1814 | 4.2056 | 4.1924 | 4.2498 | 4.2509 | 4.2100 | 4.2413 | 4.2145 | 4.1822 | 4.1906 | |
| 4⅜-6 or 4.375-6 | UN | 2A | 4.2637 | 4.1915 | 4.2536 | 4.2175 | 4.3720 | 4.3750 | 4.2667 | 4.3521 | 4.2799 | 4.1950 | 4.2250 | 2B |
| | | | 4.2631 | 4.1902 | 4.2542 | 4.2188 | 4.3718 | 4.3763 | 4.2673 | 4.3508 | 4.2793 | 4.1952 | 4.2248 | |
| | | 3A | 4.2667 | 4.1945 | 4.2591 | 4.2230 | 4.3750 | 4.3750 | 4.2667 | 4.3488 | 4.2766 | 4.1950 | 4.2146 | 3B |
| | | | 4.2661 | 4.1932 | 4.2597 | 4.2243 | 4.3748 | 4.3763 | 4.2673 | 4.3475 | 4.2760 | 4.1952 | 4.2144 | |
| 4⅜-12 or 4.375-12 | UN | 2A | 4.3189 | 4.2828 | 4.3124 | 4.2944 | 4.3730 | 4.3750 | 4.3209 | 4.3655 | 4.3294 | 4.2850 | 4.3030 | 2B |
| | | | 4.3183 | 4.2819 | 4.3130 | 4.2953 | 4.3728 | 4.3759 | 4.3215 | 4.3646 | 4.3288 | 4.2852 | 4.3028 | |
| | | 3A | 4.3209 | 4.2848 | 4.3160 | 4.2980 | 4.3750 | 4.3750 | 4.3209 | 4.3634 | 4.3273 | 4.2850 | 4.2948 | 3B |
| | | | 4.3203 | 4.2839 | 4.3166 | 4.2989 | 4.3748 | 4.3759 | 4.3215 | 4.3625 | 4.3267 | 4.2852 | 4.2946 | |
| 4⅜-16 or 4.375-16 | UN | 2A | 4.3326 | 4.3055 | 4.3267 | 4.3132 | 4.3732 | 4.3750 | 4.3344 | 4.3691 | 4.3420 | 4.3070 | 4.3210 | 2B |
| | | | 4.3320 | 4.3046 | 4.3273 | 4.3141 | 4.3730 | 4.3759 | 4.3350 | 4.3682 | 4.3414 | 4.3072 | 4.3208 | |
| | | 3A | 4.3344 | 4.3073 | 4.3300 | 4.3165 | 4.3750 | 4.3750 | 4.3344 | 4.3672 | 4.3401 | 4.3070 | 4.3158 | 3B |
| | | | 4.3338 | 4.3064 | 4.3306 | 4.3174 | 4.3748 | 4.3759 | 4.3350 | 4.3663 | 4.3395 | 4.3072 | 4.3156 | |
| 4½-4 or 4.500-4 | UN | 2A | 4.3341 | 4.2258 | 4.3225 | 4.2684 | 4.4965 | 4.4727 | 4.5000 | 4.3376 | 4.4610 | 4.3527 | 4.2290 | 2B |
| | | | 4.3335 | 4.2243 | 4.3231 | 4.2699 | 4.4963 | 4.4729 | 4.5015 | 4.3382 | 4.4595 | 4.3521 | 4.2292 | |
| | | 3A | 4.3376 | 4.2293 | 4.3289 | 4.2748 | 4.5000 | 4.4762 | 4.5000 | 4.3376 | 4.4572 | 4.3489 | 4.2290 | 3B |
| | | | 4.3370 | 4.2278 | 4.3295 | 4.2763 | 4.4998 | 4.4764 | 4.5015 | 4.3382 | 4.4557 | 4.3483 | 4.2292 | |
| 4½-6 or 4.500-6 | UN | 2A | 4.3886 | 4.3164 | 4.3784 | 4.3423 | 4.4969 | 4.4787 | 4.5000 | 4.3917 | 4.4772 | 4.4050 | 4.3200 | 4.3500 | 2B |
| | | | 4.3880 | 4.3151 | 4.3790 | 4.3436 | 4.4967 | 4.4789 | 4.5013 | 4.3923 | 4.4759 | 4.4044 | 4.3202 | 4.3498 | |
| | | 3A | 4.3917 | 4.3195 | 4.3840 | 4.3479 | 4.5000 | 4.4818 | 4.5000 | 4.3917 | 4.4738 | 4.4016 | 4.3200 | 4.3396 | 3B |
| | | | 4.3911 | 4.3182 | 4.3846 | 4.3492 | 4.4998 | 4.4820 | 4.5013 | 4.3923 | 4.4725 | 4.4010 | 4.3202 | 4.3394 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4½-12 or 4.500-12 | UN | 2A | 4.4439 | 4.4078 | 4.4374 | 4.4194 | 4.4980 | 4.4866 | 4.5000 | 4.4459 | 4.4905 | 4.4544 | 4.4100 | 4.4280 | 2B |
| | | | 4.4433 | 4.4069 | 4.4380 | 4.4203 | 4.4978 | 4.4868 | 4.5009 | 4.4465 | 4.4896 | 4.4538 | 4.4102 | 4.4278 | |
| | | 3A | 4.4459 | 4.4098 | 4.4410 | 4.4230 | 4.5000 | 4.4886 | 4.5000 | 4.4459 | 4.4884 | 4.4523 | 4.4100 | 4.4198 | 3B |
| | | | 4.4453 | 4.4089 | 4.4416 | 4.4239 | 4.4998 | 4.4888 | 4.5009 | 4.4465 | 4.4875 | 4.4517 | 4.4102 | 4.4196 | |
| 4½-16 or 4.500-16 | UN | 2A | 4.4576 | 4.4305 | 4.4517 | 4.4382 | 4.4982 | 4.4888 | 4.5000 | 4.4594 | 4.4941 | 4.4670 | 4.4320 | 4.4460 | 2B |
| | | | 4.4570 | 4.4296 | 4.4523 | 4.4391 | 4.4980 | 4.4890 | 4.5009 | 4.4600 | 4.4932 | 4.4664 | 4.4322 | 4.4458 | |
| | | 3A | 4.4594 | 4.4323 | 4.4550 | 4.4415 | 4.5000 | 4.4906 | 4.5000 | 4.4594 | 4.4922 | 4.4651 | 4.4320 | 4.4408 | 3B |
| | | | 4.4588 | 4.4314 | 4.4556 | 4.4424 | 4.4998 | 4.4908 | 4.5009 | 4.4600 | 4.4913 | 4.4645 | 4.4322 | 4.4406 | |
| 4⅝-6 or 4.625-6 | UN | 2A | 4.5136 | 4.4414 | 4.5033 | 4.4672 | 4.62190 | 4.60370 | 4.6250 | 4.5167 | 4.6022 | 4.5300 | 4.44500 | 4.47500 | 2B |
| | | | 4.5130 | 4.4401 | 4.5039 | 4.4685 | 4.62165 | 4.60395 | 4.6263 | 4.5173 | 4.6009 | 4.5294 | 4.44525 | 4.47475 | |
| | | 3A | 4.5167 | 4.4445 | 4.5090 | 4.4729 | 4.62500 | 4.60680 | 4.6250 | 4.5167 | 4.5989 | 4.5267 | 4.44500 | 4.46460 | 3B |
| | | | 4.5161 | 4.4432 | 4.5096 | 4.4742 | 4.62475 | 4.60705 | 4.6263 | 4.5173 | 4.5976 | 4.5261 | 4.44525 | 4.46435 | |
| 4⅝-12 or 4.625-12 | UN | 2A | 4.5689 | 4.5328 | 4.5622 | 4.5442 | 4.62300 | 4.61160 | 4.6250 | 4.5709 | 4.6157 | 4.5796 | 4.53500 | 4.55300 | 2B |
| | | | 4.5683 | 4.5319 | 4.5628 | 4.5451 | 4.62275 | 4.61185 | 4.6259 | 4.5715 | 4.6148 | 4.5790 | 4.53525 | 4.55275 | |
| | | 3A | 4.5709 | 4.5348 | 4.5659 | 4.5479 | 4.62500 | 4.61360 | 4.6250 | 4.5709 | 4.6136 | 4.5775 | 4.53500 | 4.54480 | 3B |
| | | | 4.5703 | 4.5339 | 4.5665 | 4.5488 | 4.62475 | 4.61385 | 4.6259 | 4.5715 | 4.6127 | 4.5769 | 4.53525 | 4.54455 | |
| 4⅝-16 or 4.625-16 | UN | 2A | 4.5826 | 4.5555 | 4.5765 | 4.5630 | 4.62320 | 4.61380 | 4.6250 | 4.5844 | 4.6194 | 4.5923 | 4.55700 | 4.57100 | 2B |
| | | | 4.5820 | 4.5546 | 4.5771 | 4.5639 | 4.62295 | 4.61405 | 4.6259 | 4.5850 | 4.6185 | 4.5917 | 4.55725 | 4.57075 | |
| | | 3A | 4.5844 | 4.5573 | 4.5799 | 4.5664 | 4.62500 | 4.61560 | 4.6250 | 4.5844 | 4.6174 | 4.5903 | 4.55700 | 4.56580 | 3B |
| | | | 4.5838 | 4.5564 | 4.5805 | 4.5673 | 4.62475 | 4.61585 | 4.6259 | 4.5850 | 4.6165 | 4.5897 | 4.55725 | 4.56555 | |
| 4¾-4 or 4.750-4 | UN | 2A | 4.5841 | 4.4758 | 4.5724 | 4.5183 | 4.74650 | 4.72270 | 4.7500 | 4.5876 | 4.7112 | 4.6029 | 4.47900 | 4.51700 | 2B |
| | | | 4.5835 | 4.4743 | 4.5730 | 4.5198 | 4.74625 | 4.72295 | 4.7515 | 4.5882 | 4.7097 | 4.6023 | 4.47925 | 4.51675 | |
| | | 3A | 4.5876 | 4.4793 | 4.5788 | 4.5247 | 4.75000 | 4.72620 | 4.7500 | 4.5876 | 4.7073 | 4.5990 | 4.47900 | 4.50940 | 3B |
| | | | 4.5870 | 4.4778 | 4.5794 | 4.5262 | 4.74975 | 4.72645 | 4.7515 | 4.5882 | 4.7058 | 4.5984 | 4.47925 | 4.50915 | |
| 4¾-6 or 4.750-6 | UN | 2A | 4.6386 | 4.5664 | 4.6283 | 4.5922 | 4.74690 | 4.72870 | 4.7500 | 4.6417 | 4.7273 | 4.6551 | 4.57000 | 4.60000 | 2B |
| | | | 4.6380 | 4.5651 | 4.6289 | 4.5935 | 4.74665 | 4.72895 | 4.7513 | 4.6423 | 4.7260 | 4.6545 | 4.57025 | 4.59975 | |
| | | 3A | 4.6417 | 4.5695 | 4.6340 | 4.5979 | 4.75000 | 4.73180 | 4.7500 | 4.6417 | 4.7240 | 4.6518 | 4.57000 | 4.58960 | 3B |
| | | | 4.6411 | 4.5682 | 4.6346 | 4.5992 | 4.74975 | 4.73205 | 4.7513 | 4.6423 | 4.7227 | 4.6512 | 4.57025 | 4.58935 | |
| 4¾-12 or 4.750-12 | UN | 2A | 4.6939 | 4.6578 | 4.6872 | 4.6692 | 4.74800 | 4.73660 | 4.7500 | 4.6959 | 4.7407 | 4.7046 | 4.66000 | 4.67800 | 2B |
| | | | 4.6933 | 4.6569 | 4.6878 | 4.6701 | 4.74775 | 4.73685 | 4.7509 | 4.6965 | 4.7398 | 4.7040 | 4.66025 | 4.67775 | |
| | | 3A | 4.6959 | 4.6598 | 4.6909 | 4.6729 | 4.75000 | 4.73860 | 4.7500 | 4.6959 | 4.7386 | 4.7025 | 4.66000 | 4.66980 | 3B |
| | | | 4.6953 | 4.6589 | 4.6915 | 4.6738 | 4.74975 | 4.73885 | 4.7509 | 4.6965 | 4.7377 | 4.7019 | 4.66025 | 4.66955 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/In. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4¾-16 or 4.750-16 | UN | 2A | 4.7076 | 4.6805 | 4.7015 | 4.6880 | 4.74820 | 4.73880 | 4.7500 | 4.7094 | 4.7444 | 4.7173 | 4.68200 | 4.69600 | 2B |
| | | | 4.7070 | 4.6796 | 4.7021 | 4.6889 | 4.74795 | 4.73905 | 4.7509 | 4.7100 | 4.7435 | 4.7167 | 4.68225 | 4.69575 | |
| | | 3A | 4.7094 | 4.6823 | 4.7049 | 4.6914 | 4.75000 | 4.74060 | 4.7500 | 4.7094 | 4.7424 | 4.7153 | 4.68200 | 4.69080 | 3B |
| | | | 4.7088 | 4.6814 | 4.7055 | 4.6923 | 4.74975 | 4.74085 | 4.7509 | 4.7100 | 4.7415 | 4.7147 | 4.68225 | 4.69055 | |
| 4⅞-6 or 4.875-6 | UN | 2A | 4.7636 | 4.6914 | 4.7532 | 4.7171 | 4.87190 | 4.85370 | 4.8750 | 4.7667 | 4.8524 | 4.7802 | 4.69500 | 4.72500 | 2B |
| | | | 4.7630 | 4.6901 | 4.7538 | 4.7184 | 4.87165 | 4.85395 | 4.8763 | 4.7673 | 4.8511 | 4.7796 | 4.69525 | 4.72475 | |
| | | 3A | 4.7667 | 4.6945 | 4.7589 | 4.7228 | 4.87500 | 4.85680 | 4.8750 | 4.7667 | 4.8490 | 4.7768 | 4.69500 | 4.71460 | 3B |
| | | | 4.7661 | 4.6932 | 4.7595 | 4.7241 | 4.87475 | 4.85705 | 4.8763 | 4.7673 | 4.8477 | 4.7762 | 4.69525 | 4.71435 | |
| 4⅞-12 or 4.875-12 | UN | 2A | 4.8189 | 4.7828 | 4.8122 | 4.7942 | 4.87300 | 4.86160 | 4.8750 | 4.8209 | 4.8657 | 4.8296 | 4.78500 | 4.80300 | 2B |
| | | | 4.8183 | 4.7819 | 4.8128 | 4.7951 | 4.87275 | 4.86185 | 4.8759 | 4.8215 | 4.8648 | 4.8290 | 4.78525 | 4.80275 | |
| | | 3A | 4.8209 | 4.7848 | 4.8159 | 4.7979 | 4.87500 | 4.86360 | 4.8750 | 4.8209 | 4.8636 | 4.8275 | 4.78500 | 4.79480 | 3B |
| | | | 4.8203 | 4.7839 | 4.8165 | 4.7988 | 4.87475 | 4.86385 | 4.8759 | 4.8215 | 4.8627 | 4.8269 | 4.78525 | 4.79455 | |
| 4⅞-16 or 4.875-16 | UN | 2A | 4.8326 | 4.8055 | 4.8265 | 4.8130 | 4.87320 | 4.86380 | 4.8750 | 4.8344 | 4.8694 | 4.8423 | 4.80700 | 4.82100 | 2B |
| | | | 4.8320 | 4.8046 | 4.8271 | 4.8139 | 4.87295 | 4.86405 | 4.8759 | 4.8350 | 4.8685 | 4.8417 | 4.80725 | 4.82075 | |
| | | 3A | 4.8344 | 4.8073 | 4.8299 | 4.8164 | 4.87500 | 4.86560 | 4.8750 | 4.8344 | 4.8674 | 4.8403 | 4.80700 | 4.81580 | 3B |
| | | | 4.8338 | 4.8064 | 4.8305 | 4.8173 | 4.87475 | 4.86585 | 4.8759 | 4.8350 | 4.8665 | 4.8397 | 4.80725 | 4.81555 | |
| 5-4 or 5.000-4 | UN | 2A | 4.8340 | 4.7257 | 4.8221 | 4.7680 | 4.99640 | 4.97260 | 5.0000 | 4.8376 | 4.9613 | 4.8530 | 4.72900 | 4.76700 | 2B |
| | | | 4.8334 | 4.7242 | 4.8227 | 4.7695 | 4.99615 | 4.97285 | 5.0015 | 4.8382 | 4.9598 | 4.8524 | 4.72925 | 4.76675 | |
| | | 3A | 4.8376 | 4.7293 | 4.8287 | 4.7746 | 5.00000 | 4.97620 | 5.0000 | 4.8376 | 4.9575 | 4.8492 | 4.72900 | 4.75940 | 3B |
| | | | 4.8370 | 4.7278 | 4.8293 | 4.7761 | 4.99975 | 4.97645 | 5.0015 | 4.8382 | 4.9560 | 4.8486 | 4.72925 | 4.75915 | |
| 5-6 or 5.000-6 | UN | 2A | 4.8886 | 4.8164 | 4.8781 | 4.8420 | 4.99690 | 4.97870 | 5.0000 | 4.8917 | 4.9775 | 4.9053 | 4.82000 | 4.85000 | 2B |
| | | | 4.8880 | 4.8151 | 4.8787 | 4.8433 | 4.99665 | 4.97895 | 5.0013 | 4.8923 | 4.9762 | 4.9047 | 4.82025 | 4.84975 | |
| | | 3A | 4.8917 | 4.8195 | 4.8839 | 4.8478 | 5.00000 | 4.98180 | 5.0000 | 4.8917 | 4.9741 | 4.9019 | 4.82000 | 4.83960 | 3B |
| | | | 4.8911 | 4.8182 | 4.8845 | 4.8491 | 4.99975 | 4.98205 | 5.0013 | 4.8923 | 4.9728 | 4.9013 | 4.82025 | 4.83935 | |
| 5-12 or 5.000-12 | UN | 2A | 4.9439 | 4.9078 | 4.9372 | 4.9192 | 4.99800 | 4.98660 | 5.0000 | 4.9459 | 4.9907 | 4.9546 | 4.91000 | 4.92800 | 2B |
| | | | 4.9433 | 4.9069 | 4.9378 | 4.9201 | 4.99775 | 4.98685 | 5.0009 | 4.9465 | 4.9898 | 4.9540 | 4.91025 | 4.92775 | |
| | | 3A | 4.9459 | 4.9098 | 4.9409 | 4.9229 | 5.00000 | 4.98860 | 5.0000 | 4.9459 | 4.9886 | 4.9525 | 4.91000 | 4.91980 | 3B |
| | | | 4.9453 | 4.9089 | 4.9415 | 4.9238 | 4.99975 | 4.98885 | 5.0009 | 4.9465 | 4.9877 | 4.9519 | 4.91025 | 4.91955 | |
| 5-16 or 5.000-16 | UN | 2A | 4.9576 | 4.9305 | 4.9515 | 4.9380 | 4.99820 | 4.98880 | 5.0000 | 4.9594 | 4.9944 | 4.9673 | 4.93200 | 4.94600 | 2B |
| | | | 4.9570 | 4.9296 | 4.9521 | 4.9389 | 4.99795 | 4.98905 | 5.0009 | 4.9600 | 4.9935 | 4.9667 | 4.93225 | 4.94575 | |
| | | 3A | 4.9594 | 4.9323 | 4.9549 | 4.9414 | 5.00000 | 4.99060 | 5.0000 | 4.9594 | 4.9924 | 4.9653 | 4.93200 | 4.94080 | 3B |
| | | | 4.9588 | 4.9314 | 4.9555 | 4.9423 | 4.99975 | 4.99085 | 5.0009 | 4.9600 | 4.9915 | 4.9647 | 4.93225 | 4.94055 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5⅛-6 or 5.125-6 | UN | 2A | 5.0135 | 4.9413 | 5.0030 | 4.9669 | 5.12180 | 5.10360 | 5.1250 | 5.0167 | 5.1026 | 5.0304 | 4.94500 | 4.97500 | 2B |
| | | | 5.0129 | 4.9400 | 5.0036 | 4.9682 | 5.12155 | 5.10385 | 5.1263 | 5.0173 | 5.1013 | 5.0298 | 4.94525 | 4.97475 | |
| | | 3A | 5.0167 | 4.9445 | 5.0088 | 4.9727 | 5.12500 | 5.10680 | 5.1250 | 5.0167 | 5.0992 | 5.0270 | 4.94500 | 4.96460 | 3B |
| | | | 5.0161 | 4.9432 | 5.0094 | 4.9740 | 5.12475 | 5.10705 | 5.1263 | 5.0173 | 5.0979 | 5.0264 | 4.94525 | 4.96435 | |
| 5⅛-12 or 5.125-12 | UN | 2A | 5.0689 | 5.0328 | 5.0622 | 5.0442 | 5.12300 | 5.11160 | 5.1250 | 5.0709 | 5.1157 | 5.0796 | 5.03500 | 5.05300 | 2B |
| | | | 5.0683 | 5.0319 | 5.0628 | 5.0451 | 5.12275 | 5.11185 | 5.1259 | 5.0715 | 5.1148 | 5.0790 | 5.03525 | 5.05275 | |
| | | 3A | 5.0709 | 5.0348 | 5.0659 | 5.0479 | 5.12500 | 5.11360 | 5.1250 | 5.0709 | 5.1136 | 5.0775 | 5.03500 | 5.04480 | 3B |
| | | | 5.0703 | 5.0339 | 5.0665 | 5.0488 | 5.12475 | 5.11385 | 5.1259 | 5.0715 | 5.1127 | 5.0769 | 5.03525 | 5.04455 | |
| 5⅛-16 or 5.125-16 | UN | 2A | 5.0826 | 5.0555 | 5.0765 | 5.0630 | 5.12320 | 5.11380 | 5.1250 | 5.0844 | 5.1194 | 5.0923 | 5.05700 | 5.07100 | 2B |
| | | | 5.0820 | 5.0546 | 5.0771 | 5.0639 | 5.12295 | 5.11405 | 5.1259 | 5.0850 | 5.1185 | 5.0917 | 5.05725 | 5.07075 | |
| | | 3A | 5.0844 | 5.0573 | 5.0799 | 5.0664 | 5.12500 | 5.11560 | 5.1250 | 5.0844 | 5.1174 | 5.0903 | 5.05700 | 5.06580 | 3B |
| | | | 5.0838 | 5.0564 | 5.0805 | 5.0673 | 5.12475 | 5.11585 | 5.1259 | 5.0850 | 5.1165 | 5.0897 | 5.05725 | 5.06555 | |
| 5¼-4 or 5.250-4 | UN | 2A | 5.0840 | 4.9757 | 5.0720 | 5.0179 | 5.24640 | 5.22260 | 5.2500 | 5.0876 | 5.2115 | 5.1032 | 4.97900 | 5.01700 | 2B |
| | | | 5.0834 | 4.9742 | 5.0726 | 5.0194 | 5.24615 | 5.22285 | 5.2515 | 5.0882 | 5.2100 | 5.1026 | 4.97925 | 5.01675 | |
| | | 3A | 5.0876 | 4.9793 | 5.0786 | 5.0245 | 5.25000 | 5.22620 | 5.2500 | 5.0876 | 5.2076 | 5.0993 | 4.97900 | 5.00940 | 3B |
| | | | 5.0870 | 4.9778 | 5.0792 | 5.0260 | 5.24975 | 5.22645 | 5.2515 | 5.0882 | 5.2061 | 5.0987 | 4.97925 | 5.00915 | |
| 5¼-6 or 5.250-6 | UN | 2A | 5.1385 | 5.0663 | 5.1279 | 5.0918 | 5.24680 | 5.22860 | 5.2500 | 5.1417 | 5.2277 | 5.1555 | 5.07000 | 5.10000 | 2B |
| | | | 5.1379 | 5.0650 | 5.1285 | 5.0931 | 5.24655 | 5.22885 | 5.2513 | 5.1423 | 5.2264 | 5.1549 | 5.07025 | 5.09975 | |
| | | 3A | 5.1417 | 5.0695 | 5.1338 | 5.0977 | 5.25000 | 5.23180 | 5.2500 | 5.1417 | 5.2242 | 5.1520 | 5.07000 | 5.08960 | 3B |
| | | | 5.1411 | 5.0682 | 5.1344 | 5.0990 | 5.25975 | 5.23205 | 5.2513 | 5.1423 | 5.2229 | 5.1514 | 5.07025 | 5.08935 | |
| 5¼-12 or 5.250-12 | UN | 2A | 5.1939 | 5.1578 | 5.1872 | 5.1692 | 5.24800 | 5.23660 | 5.2500 | 5.1959 | 5.2407 | 5.2046 | 5.16000 | 5.17800 | 2B |
| | | | 5.1933 | 5.1569 | 5.1878 | 5.1701 | 5.24775 | 5.23685 | 5.2509 | 5.1965 | 5.2398 | 5.2040 | 5.16025 | 5.17775 | |
| | | 3A | 5.1959 | 5.1598 | 5.1909 | 5.1729 | 5.25000 | 5.23860 | 5.2500 | 5.1959 | 5.2386 | 5.2025 | 5.16000 | 5.16980 | 3B |
| | | | 5.1953 | 5.1589 | 5.1915 | 5.1738 | 5.24975 | 5.23885 | 5.2509 | 5.1965 | 5.2377 | 5.2019 | 5.16025 | 5.16955 | |
| 5¼-16 or 5.250-16 | UN | 2A | 5.2076 | 5.1805 | 5.2015 | 5.1880 | 5.24820 | 5.23880 | 5.2500 | 5.2094 | 5.2444 | 5.2173 | 5.18200 | 5.19600 | 2B |
| | | | 5.2070 | 5.1796 | 5.2021 | 5.1889 | 5.24795 | 5.23905 | 5.2509 | 5.2100 | 5.2435 | 5.2167 | 5.18225 | 5.19575 | |
| | | 3A | 5.2094 | 5.1823 | 5.2049 | 5.1914 | 5.25000 | 5.24060 | 5.2500 | 5.2094 | 5.2424 | 5.2153 | 5.18200 | 5.19080 | 3B |
| | | | 5.2088 | 5.1814 | 5.2055 | 5.1923 | 5.24975 | 5.24085 | 5.2509 | 5.2100 | 5.2415 | 5.2147 | 5.18225 | 5.19055 | |
| 5⅜-6 or 5.375-6 | UN | 2A | 5.2635 | 5.1913 | 5.2529 | 5.2168 | 5.37180 | 5.35360 | 5.3750 | 5.2667 | 5.3527 | 5.2805 | 5.19500 | 5.22500 | 2B |
| | | | 5.2629 | 5.1900 | 5.2535 | 5.2181 | 5.37155 | 5.35385 | 5.3763 | 5.2673 | 5.3514 | 5.2799 | 5.19525 | 5.22475 | |
| | | 3A | 5.2667 | 5.1945 | 5.2587 | 5.2226 | 5.37500 | 5.35680 | 5.3750 | 5.2667 | 5.3493 | 5.2771 | 5.19500 | 5.21460 | 3B |
| | | | 5.2661 | 5.1932 | 5.2593 | 5.2239 | 5.37475 | 5.35705 | 5.3763 | 5.2673 | 5.3480 | 5.2765 | 5.19525 | 5.21435 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5⅜-12 or 5.375-12 | UN | 2A | 5.3189 | 5.2828 | 5.3122 | 5.2942 | 5.37300 | 5.36160 | 5.3750 | 5.3209 | 5.3657 | 5.3296 | 5.28500 | 5.30300 | 2B |
| | | | 5.3183 | 5.2819 | 5.3128 | 5.2951 | 5.37275 | 5.36185 | 5.3759 | 5.3215 | 5.3648 | 5.3290 | 5.28525 | 5.30275 | |
| | | 3A | 5.3209 | 5.2848 | 5.3159 | 5.2979 | 5.37500 | 5.36360 | 5.3750 | 5.3209 | 5.3636 | 5.3275 | 5.28500 | 5.29480 | 3B |
| | | | 5.3203 | 5.2839 | 5.3165 | 5.2988 | 5.37475 | 5.36385 | 5.3759 | 5.3215 | 5.3627 | 5.3269 | 5.28525 | 5.29455 | |
| 5⅜-16 or 5.375-16 | UN | 2A | 5.3326 | 5.3055 | 5.3265 | 5.3130 | 5.37320 | 5.36380 | 5.3750 | 5.3344 | 5.3694 | 5.3423 | 5.30700 | 5.32100 | 2B |
| | | | 5.3320 | 5.3046 | 5.3271 | 5.3139 | 5.37295 | 5.36405 | 5.3759 | 5.3350 | 5.3685 | 5.3417 | 5.30725 | 5.32075 | |
| | | 3A | 5.3344 | 5.3073 | 5.3299 | 5.3164 | 5.37500 | 5.36560 | 5.3750 | 5.3344 | 5.3674 | 5.3403 | 5.30700 | 5.31580 | 3B |
| | | | 5.3338 | 5.3064 | 5.3305 | 5.3173 | 5.37475 | 5.36585 | 5.3759 | 5.3350 | 5.3665 | 5.3397 | 5.30725 | 5.31555 | |
| 5½-4 or 5.500-4 | UN | 2A | 5.3340 | 5.2257 | 5.3219 | 5.2678 | 5.49640 | 5.47260 | 5.5000 | 5.3376 | 5.4617 | 5.3534 | 5.22900 | 5.26700 | 2B |
| | | | 5.3334 | 5.2242 | 5.3225 | 5.2693 | 5.49615 | 5.47285 | 5.5015 | 5.3382 | 5.4602 | 5.3528 | 5.22925 | 5.26675 | |
| | | 3A | 5.3376 | 5.2293 | 5.3285 | 5.2744 | 5.50000 | 5.47620 | 5.5000 | 5.3376 | 5.4577 | 5.3494 | 5.22900 | 5.25940 | 3B |
| | | | 5.3370 | 5.2278 | 5.3291 | 5.2759 | 5.49975 | 5.47645 | 5.5015 | 5.3382 | 5.4562 | 5.3488 | 5.22925 | 5.25915 | |
| 5½-6 or 5.500-6 | UN | 2A | 5.3885 | 5.3163 | 5.3778 | 5.3417 | 5.49680 | 5.47860 | 5.5000 | 5.3917 | 5.4778 | 5.4056 | 5.32000 | 5.35000 | 2B |
| | | | 5.3879 | 5.3150 | 5.3784 | 5.3430 | 5.49655 | 5.47885 | 5.5013 | 5.3923 | 5.4765 | 5.4050 | 5.32025 | 5.34975 | |
| | | 3A | 5.3917 | 5.3195 | 5.3837 | 5.3476 | 5.50000 | 5.48180 | 5.5000 | 5.3917 | 5.4743 | 5.4021 | 5.32000 | 5.33960 | 3B |
| | | | 5.3911 | 5.3182 | 5.3843 | 5.3489 | 5.49975 | 5.48205 | 5.5013 | 5.3923 | 5.4730 | 5.4015 | 5.32025 | 5.33935 | |
| 5½-12 or 5.500-12 | UN | 2A | 5.4439 | 5.4078 | 5.4372 | 5.4192 | 5.49800 | 5.48660 | 5.5000 | 5.4459 | 5.4907 | 5.4546 | 5.41000 | 5.42800 | 2B |
| | | | 5.4433 | 5.4069 | 5.4378 | 5.4201 | 5.49775 | 5.48685 | 5.5009 | 5.4465 | 5.4898 | 5.4540 | 5.41025 | 5.42775 | |
| | | 3A | 5.4459 | 5.4098 | 5.4409 | 5.4229 | 5.50000 | 5.48860 | 5.5000 | 5.4459 | 5.4886 | 5.4525 | 5.41000 | 5.41980 | 3B |
| | | | 5.4453 | 5.4089 | 5.4415 | 5.4238 | 5.49975 | 5.48885 | 5.5009 | 5.4465 | 5.4877 | 5.4519 | 5.41025 | 5.41955 | |
| 5½-16 or 5.500-16 | UN | 2A | 5.4576 | 5.4305 | 5.4515 | 5.4380 | 5.49820 | 5.48880 | 5.5000 | 5.4594 | 5.4944 | 5.4673 | 5.43200 | 5.44600 | 2B |
| | | | 5.4570 | 5.4296 | 5.4521 | 5.4389 | 5.49795 | 5.48905 | 5.5009 | 5.4600 | 5.4935 | 5.4667 | 5.43225 | 5.44575 | |
| | | 3A | 5.4594 | 5.4323 | 5.4549 | 5.4414 | 5.50000 | 5.49060 | 5.5000 | 5.4594 | 5.4924 | 5.4653 | 5.43200 | 5.44080 | 3B |
| | | | 5.4588 | 5.4314 | 5.4555 | 5.4423 | 5.49975 | 5.49085 | 5.5009 | 5.4600 | 5.4915 | 5.4647 | 5.43225 | 5.44055 | |
| 5⅝-6 or 5.625-6 | UN | 2A | 5.5135 | 5.4413 | 5.5027 | 5.4666 | 5.62180 | 5.60360 | 5.6250 | 5.5167 | 5.6029 | 5.5307 | 5.44500 | 5.47500 | 2B |
| | | | 5.5129 | 5.4400 | 5.5033 | 5.4679 | 5.62155 | 5.60385 | 5.6263 | 5.5173 | 5.6016 | 5.5301 | 5.44525 | 5.47475 | |
| | | 3A | 5.5167 | 5.4445 | 5.5086 | 5.4725 | 5.62500 | 5.60680 | 5.6250 | 5.5167 | 5.5994 | 5.5272 | 5.44500 | 5.46460 | 3B |
| | | | 5.5161 | 5.4432 | 5.5092 | 5.4738 | 5.62475 | 5.60705 | 5.6263 | 5.5173 | 5.5981 | 5.5266 | 5.44525 | 5.46435 | |
| 5⅝-12 or 5.625-12 | UN | 2A | 5.5688 | 5.5327 | 5.5619 | 5.5439 | 5.62290 | 5.61150 | 5.6250 | 5.5709 | 5.6160 | 5.5799 | 5.53500 | 5.55300 | 2B |
| | | | 5.5682 | 5.5318 | 5.5625 | 5.5448 | 5.62265 | 5.61175 | 5.6259 | 5.5715 | 5.6151 | 5.5793 | 5.53525 | 5.55275 | |
| | | 3A | 5.5709 | 5.5348 | 5.5657 | 5.5477 | 5.62500 | 5.61360 | 5.6250 | 5.5709 | 5.6137 | 5.5776 | 5.53500 | 5.54480 | 3B |
| | | | 5.5703 | 5.5339 | 5.5663 | 5.5486 | 5.62475 | 5.61385 | 5.6259 | 5.5715 | 5.6128 | 5.5770 | 5.53525 | 5.54455 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | GO | NOT GO | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5⅛-16 or 5.625-16 | UN | 2A | 5.5825 | 5.5554 | 5.5763 | 5.5628 | 5.62310 | 5.61370 | 5.6250 | 5.5844 | 5.6196 | 5.5925 | 5.55700 | 5.57100 | 2B |
| | | | 5.5819 | 5.5545 | 5.5769 | 5.5637 | 5.62285 | 5.61395 | 5.6259 | 5.5850 | 5.6187 | 5.5919 | 5.55725 | 5.57075 | |
| | | 3A | 5.5844 | 5.5573 | 5.5797 | 5.5662 | 5.62500 | 5.61560 | 5.6250 | 5.5844 | 5.6176 | 5.5905 | 5.55700 | 5.56580 | 3B |
| | | | 5.5838 | 5.5564 | 5.5803 | 5.5671 | 5.62475 | 5.61585 | 5.6259 | 5.5850 | 5.6167 | 5.5899 | 5.55725 | 5.56555 | |
| 5¼-4 or 5.750-4 | UN | 2A | 5.5839 | 5.4756 | 5.5717 | 5.5176 | 5.74630 | 5.72250 | 5.7500 | 5.5876 | 5.7118 | 5.6035 | 5.47900 | 5.51700 | 2B |
| | | | 5.5833 | 5.4741 | 5.5723 | 5.5191 | 5.74605 | 5.72275 | 5.7515 | 5.5882 | 5.7103 | 5.6029 | 5.47925 | 5.51675 | |
| | | 3A | 5.5876 | 5.4793 | 5.5784 | 5.5243 | 5.75000 | 5.72620 | 5.7500 | 5.5876 | 5.7078 | 5.5995 | 5.47900 | 5.50940 | 3B |
| | | | 5.5870 | 5.4778 | 5.5790 | 5.5258 | 5.74975 | 5.72645 | 5.7515 | 5.5882 | 5.7063 | 5.5989 | 5.47925 | 5.50915 | |
| 5¼-6 or 5.750-6 | UN | 2A | 5.6385 | 5.5663 | 5.6277 | 5.5916 | 5.74680 | 5.72860 | 5.7500 | 5.6417 | 5.7280 | 5.6558 | 5.57000 | 5.60000 | 2B |
| | | | 5.6379 | 5.5650 | 5.6283 | 5.5929 | 5.74655 | 5.72885 | 5.7513 | 5.6423 | 5.7267 | 5.6552 | 5.57025 | 5.59975 | |
| | | 3A | 5.6417 | 5.5695 | 5.6336 | 5.5975 | 5.75000 | 5.73180 | 5.7500 | 5.6417 | 5.7245 | 5.6523 | 5.57000 | 5.58960 | 3B |
| | | | 5.6411 | 5.5682 | 5.6342 | 5.5988 | 5.74975 | 5.73205 | 5.7513 | 5.6423 | 5.7232 | 5.6517 | 5.57025 | 5.58935 | |
| 5¼-12 or 5.750-12 | UN | 2A | 5.6938 | 5.6577 | 5.6869 | 5.6689 | 5.74790 | 5.73650 | 5.7500 | 5.6959 | 5.7410 | 5.7049 | 5.66000 | 5.67800 | 2B |
| | | | 5.6932 | 5.6568 | 5.6875 | 5.6698 | 5.74765 | 5.73675 | 5.7509 | 5.6965 | 5.7401 | 5.7043 | 5.66025 | 5.67775 | |
| | | 3A | 5.6959 | 5.6698 | 5.6907 | 5.6727 | 5.75000 | 5.73860 | 5.7500 | 5.6959 | 5.7387 | 5.7026 | 5.66000 | 5.66980 | 3B |
| | | | 5.6953 | 5.6589 | 5.6913 | 5.6736 | 5.74975 | 5.73885 | 5.7509 | 5.6965 | 5.7378 | 5.7020 | 5.66025 | 5.66955 | |
| 5¼-16 or 5.750-16 | UN | 2A | 5.7075 | 5.6804 | 5.7013 | 5.6878 | 5.74810 | 5.73870 | 5.7500 | 5.7094 | 5.7446 | 5.7175 | 5.68200 | 5.69600 | 2B |
| | | | 5.7069 | 5.6795 | 5.7019 | 5.6887 | 5.74785 | 5.73895 | 5.7509 | 5.7100 | 5.7437 | 5.7169 | 5.68225 | 5.69575 | |
| | | 3A | 5.7094 | 5.6823 | 5.7047 | 5.6912 | 5.75000 | 5.74060 | 5.7500 | 5.7094 | 5.7426 | 5.7155 | 5.68200 | 5.69080 | 3B |
| | | | 5.7088 | 5.6814 | 5.7053 | 5.6921 | 5.74975 | 5.74085 | 5.7509 | 5.7100 | 5.7417 | 5.7149 | 5.68225 | 5.69055 | |
| 5⅞-6 or 5.875-6 | UN | 2A | 5.7634 | 5.6912 | 5.7525 | 5.7164 | 5.87170 | 5.85350 | 5.8750 | 5.7667 | 5.8531 | 5.7809 | 5.69500 | 5.72500 | 2B |
| | | | 5.7628 | 5.6899 | 5.7531 | 5.7177 | 5.87145 | 5.85375 | 5.8763 | 5.7673 | 5.8518 | 5.7803 | 5.69525 | 5.72475 | |
| | | 3A | 5.7667 | 5.6945 | 5.7585 | 5.7224 | 5.87500 | 5.85680 | 5.8750 | 5.7667 | 5.8495 | 5.7773 | 5.69500 | 5.71460 | 3B |
| | | | 5.7661 | 5.6932 | 5.7591 | 5.7237 | 5.87475 | 5.85705 | 5.8763 | 5.7673 | 5.8482 | 5.7767 | 5.69525 | 5.71435 | |

## TABLE 10 GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | Gages for External Threads | | | | | Gages for Internal Threads | | | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | X Thread Gages | | | | Z Plain Gages for Major Diameter | X Thread Gages | | | | Z Plain Gages for Minor Diameter | | |
| | | | GO | | NOT GO (LO) | | | GO | | NOT GO (HI) | | | | |
| | | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | GO | NOT GO | Major Diam. | Pitch Diam. | Major Diam. | Pitch Diam. | GO | NOT GO | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5/8-12 or 5.875-12 | UN | 2A | 5.8188 | 5.7827 | 5.8119 | 5.7939 | 5.87290 | 5.86150 | 5.8750 | 5.8209 | 5.8660 | 5.8299 | 5.78500 | 5.80300 | 2B |
| | | | 5.8182 | 5.7818 | 5.8125 | 5.7948 | 5.87265 | 5.86175 | 5.8759 | 5.8215 | 5.8651 | 5.8293 | 5.78525 | 5.80275 | |
| | | 3A | 5.8209 | 5.7848 | 5.8157 | 5.7977 | 5.87500 | 5.86360 | 5.8750 | 5.8209 | 5.8637 | 5.8276 | 5.78500 | 5.79480 | 3B |
| | | | 5.8203 | 5.7839 | 5.8163 | 5.7986 | 5.87475 | 5.86385 | 5.8759 | 5.8215 | 5.8628 | 5.8270 | 5.78525 | 5.79455 | |
| 5/8-16 or 5.875-16 | UN | 2A | 5.8325 | 5.8054 | 5.8263 | 5.8128 | 5.87310 | 5.86370 | 5.8750 | 5.8344 | 5.8696 | 5.8425 | 5.80700 | 5.82100 | 2B |
| | | | 5.8319 | 5.8045 | 5.8269 | 5.8137 | 5.87285 | 5.86395 | 5.8759 | 5.8350 | 5.8687 | 5.8419 | 5.80725 | 5.82075 | |
| | | 3A | 5.8344 | 5.8073 | 5.8297 | 5.8162 | 5.87500 | 5.86560 | 5.8750 | 5.8344 | 5.8676 | 5.8405 | 5.80700 | 5.81580 | 3B |
| | | | 5.8338 | 5.8064 | 5.8303 | 5.8171 | 5.87475 | 5.86585 | 5.8759 | 5.8350 | 5.8667 | 5.8399 | 5.80725 | 5.81555 | |
| 6-4 or 6.000-4 | UN | 2A | 5.8339 | 5.7256 | 5.8215 | 5.7674 | 5.99630 | 5.97250 | 6.0000 | 5.8376 | 5.9620 | 5.8537 | 5.72900 | 5.76700 | 2B |
| | | | 5.8333 | 5.7241 | 5.8221 | 5.7689 | 5.99605 | 5.97275 | 6.0015 | 5.8382 | 5.9605 | 5.8531 | 5.72925 | 5.76675 | |
| | | 3A | 5.8376 | 5.7293 | 5.8283 | 5.7742 | 6.00000 | 5.97620 | 6.0000 | 5.8376 | 5.9579 | 5.8496 | 5.72900 | 5.75940 | 3B |
| | | | 5.8370 | 5.7278 | 5.8289 | 5.7757 | 5.99975 | 5.97645 | 6.0015 | 5.8382 | 5.9564 | 5.8490 | 5.72925 | 5.75915 | |
| 6-6 or 6.000-6 | UN | 2A | 5.8884 | 5.8162 | 5.8775 | 5.8414 | 5.99670 | 5.97850 | 6.0000 | 5.8917 | 5.9781 | 5.9059 | 5.82000 | 5.85000 | 2B |
| | | | 5.8878 | 5.8149 | 5.8781 | 5.8427 | 5.99645 | 5.97875 | 6.0013 | 5.8923 | 5.9768 | 5.9053 | 5.82025 | 5.84975 | |
| | | 3A | 5.8917 | 5.8195 | 5.8835 | 5.8474 | 6.00000 | 5.98180 | 6.0000 | 5.8917 | 5.9746 | 5.9024 | 5.82000 | 5.83960 | 3B |
| | | | 5.8911 | 5.8182 | 5.8841 | 5.8487 | 5.99975 | 5.98205 | 6.0013 | 5.8923 | 5.9733 | 5.9018 | 5.82025 | 5.83935 | |
| 6-12 or 6.000-12 | UN | 2A | 5.9438 | 5.9077 | 5.9369 | 5.9189 | 5.99790 | 5.98650 | 6.0000 | 5.9459 | 5.9910 | 5.9549 | 5.91000 | 5.92800 | 2B |
| | | | 5.9432 | 5.9068 | 5.9375 | 5.9198 | 5.99765 | 5.98675 | 6.0009 | 5.9465 | 5.9901 | 5.9543 | 5.91025 | 5.92775 | |
| | | 3A | 5.9459 | 5.9098 | 5.9407 | 5.9227 | 6.00000 | 5.98860 | 6.0000 | 5.9459 | 5.9887 | 5.9526 | 5.91000 | 5.91980 | 3B |
| | | | 5.9453 | 5.9089 | 5.9413 | 5.9236 | 5.99975 | 5.98885 | 6.0009 | 5.9465 | 5.9878 | 5.9520 | 5.91025 | 5.91955 | |
| 6-16 or 6.000-16 | UN | 2A | 5.9575 | 5.9304 | 5.9513 | 5.9378 | 5.99810 | 5.98870 | 6.0000 | 5.9594 | 5.9946 | 5.9675 | 5.93200 | 5.94600 | 2B |
| | | | 5.9569 | 5.9295 | 5.9519 | 5.9387 | 5.99785 | 5.98895 | 6.0009 | 5.9600 | 5.9937 | 5.9669 | 5.93225 | 5.94575 | |
| | | 3A | 5.9594 | 5.9323 | 5.9547 | 5.9412 | 6.00000 | 5.99060 | 6.0000 | 5.9594 | 5.9926 | 5.9655 | 5.93200 | 5.94080 | 3B |
| | | | 5.9588 | 5.9314 | 5.9553 | 5.9421 | 5.99975 | 5.99085 | 6.0009 | 5.9600 | 5.9917 | 5.9649 | 5.93225 | 5.94055 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 0-80 or 0.060-80 | UNF | 2A | 0.0561 | 0.0595 | 0.0514 | 0.0550 | 0.0584 | 0.0496 | ... | ... | ... | ... | ... |
| | | | .0558 | .0598 | .0513 | .0547 | .0587 | .0497 | ... | ... | ... | ... | ... |
| | | 3A | .0566 | .0600 | .0519 | .0560 | .0594 | .0506 | ... | ... | ... | ... | ... |
| | | | .0563 | .0603 | .0518 | .0557 | .0597 | .0507 | ... | ... | ... | ... | ... |
| 1-64 or 0.073-64 | UNC | 2A | .0684 | .0724 | .0623 | .0671 | .0718 | .0603 | ... | ... | ... | ... | ... |
| | | | .0681 | .0727 | .0622 | .0668 | .0721 | .0604 | ... | ... | ... | ... | ... |
| | | 3A | .0690 | .0730 | .0629 | .0682 | .0729 | .0614 | ... | ... | ... | ... | ... |
| | | | .0687 | .0733 | .0628 | .0679 | .0732 | .0615 | ... | ... | ... | ... | ... |
| 1-72 or 0.073-72 | UNF | 2A | .0687 | .0724 | .0634 | .0675 | .0715 | .0615 | ... | ... | ... | ... | ... |
| | | | .0684 | .0727 | .0633 | .0672 | .0718 | .0616 | ... | ... | ... | ... | ... |
| | | 3A | .0693 | .0730 | .0640 | .0686 | .0726 | .0626 | ... | ... | ... | ... | ... |
| | | | .0690 | .0733 | .0639 | .0683 | .0729 | .0627 | ... | ... | ... | ... | ... |
| 2-56 or 0.086-56 | UNC | 2A | .0810 | .0854 | .0738 | .0794 | .0852 | .0717 | ... | ... | ... | ... | ... |
| | | | .0807 | .0857 | .0737 | .0791 | .0855 | .0718 | ... | ... | ... | ... | ... |
| | | 3A | .0816 | .0860 | .0744 | .0805 | .0860 | .0728 | ... | ... | ... | ... | ... |
| | | | .0813 | .0863 | .0743 | .0802 | .0863 | .0729 | ... | ... | ... | ... | ... |
| 2-64 or 0.086-64 | UNF | 2A | 0.814 | .0854 | .0753 | .0801 | .0848 | .0733 | ... | ... | ... | ... | ... |
| | | | .0811 | .0857 | .0752 | .0798 | .0851 | .0734 | ... | ... | ... | ... | ... |
| | | 3A | .0820 | .0860 | .0759 | .0812 | .0859 | .0744 | ... | ... | ... | ... | ... |
| | | | .0817 | .0863 | .0758 | .0809 | .0862 | .0745 | ... | ... | ... | ... | ... |
| 3-48 or 0.099-48 | UNC | 2A | .0934 | .0983 | .0848 | .0915 | .0983 | .0825 | ... | ... | ... | ... | ... |
| | | | .0931 | .0986 | .0847 | .0912 | .0986 | .0826 | ... | ... | ... | ... | ... |
| | | 3A | .0941 | .0990 | .0855 | .0928 | .0990 | .0838 | ... | ... | ... | ... | ... |
| | | | .0938 | .0993 | .0854 | .0925 | .0993 | .0839 | ... | ... | ... | ... | ... |
| 3-56 or 0.099-56 | UNF | 2A | .0939 | .0983 | .0867 | .0922 | .0980 | .0845 | ... | ... | ... | ... | ... |
| | | | .0936 | .0986 | .0866 | .0919 | .0983 | .0846 | ... | ... | ... | ... | ... |
| | | 3A | .0946 | .0990 | .0874 | .0935 | .0990 | .0858 | ... | ... | ... | ... | ... |
| | | | .0943 | .0993 | .0873 | .0932 | .0993 | .0859 | ... | ... | ... | ... | ... |
| 4-40 or 0.112-40 | UNC | 2A | .1056 | .1112 | .0950 | .1033 | .1112 | .0925 | ... | ... | ... | ... | ... |
| | | | .1053 | .1115 | .0949 | .1030 | .1115 | .0926 | ... | ... | ... | ... | ... |
| | | 3A | .1064 | .1120 | .0958 | .1047 | .1120 | .0939 | ... | ... | ... | ... | ... |
| | | | .1061 | .1123 | .0957 | .1044 | .1123 | .0940 | ... | ... | ... | ... | ... |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4-48 or 0.112-48 | UNF | 2A | 0.1064 | 0.1113 | 0.0978 | 0.1044 | 0.1113 | 0.0954 | ... | ... | ... | ... | ... |
| | | | .1061 | .1116 | .0977 | .1041 | .1116 | .0955 | ... | ... | ... | ... | ... |
| | | 3A | .1071 | .1120 | .0985 | .1057 | .1120 | .0967 | ... | ... | ... | ... | ... |
| | | | .1068 | .1123 | .0984 | .1054 | .1123 | .0968 | ... | ... | ... | ... | ... |
| 5-40 or 0.125-40 | UNC | 2A | .1186 | .1242 | .1080 | .1162 | .1242 | .1054 | ... | ... | ... | ... | ... |
| | | | .1183 | .1245 | .1079 | .1159 | .1245 | .1055 | ... | ... | ... | ... | ... |
| | | 3A | .1194 | .1250 | .1088 | .1177 | .1250 | .1069 | ... | ... | ... | ... | ... |
| | | | .1191 | .1253 | .1087 | .1174 | .1253 | .1070 | ... | ... | ... | ... | ... |
| 5-44 or 0.125-44 | UNF | 2A | .1191 | .1243 | .1095 | .1168 | .1243 | .1070 | ... | ... | ... | ... | ... |
| | | | .1183 | .1246 | .1094 | .1165 | .1246 | .1071 | ... | ... | ... | ... | ... |
| | | 3A | .1198 | .1250 | .1102 | .1181 | .1250 | .1083 | ... | ... | ... | ... | ... |
| | | | .1195 | .1253 | .1101 | .1178 | .1253 | .1084 | ... | ... | ... | ... | ... |
| 6-32 or 0.138-32 | UNC | 2A | .1307 | .1372 | .1169 | .1276 | .1372 | .1141 | ... | ... | ... | ... | ... |
| | | | .1304 | .1375 | .1168 | .1273 | .1375 | .1142 | ... | ... | ... | ... | ... |
| | | 3A | .1315 | .1380 | .1177 | .1291 | .1380 | .1156 | ... | ... | ... | ... | ... |
| | | | .1312 | .1383 | .1176 | .1288 | .1383 | .1157 | ... | ... | ... | ... | ... |
| 6-40 or 0.138-40 | UNF | 2A | .1316 | .1372 | .1210 | .1292 | .1372 | .1184 | ... | ... | ... | ... | ... |
| | | | .1313 | .1375 | .1209 | .1289 | .1375 | .1185 | ... | ... | ... | ... | ... |
| | | 3A | .1324 | .1380 | .1218 | .1306 | .1380 | .1198 | ... | ... | ... | ... | ... |
| | | | .1321 | .1383 | .1217 | .1303 | .1383 | .1199 | ... | ... | ... | ... | ... |
| 8-32 or 0.164-32 | UNC | 2A | .1566 | .1631 | .1428 | .1534 | .1631 | .1399 | ... | ... | ... | ... | ... |
| | | | .1563 | .1634 | .1427 | .1531 | .1634 | .1400 | ... | ... | ... | ... | ... |
| | | 3A | .1575 | .1640 | .1437 | .1550 | .1640 | .1415 | ... | ... | ... | ... | ... |
| | | | .1572 | .1643 | .1436 | .1547 | .1643 | .1416 | ... | ... | ... | ... | ... |
| 8-36 or 0.164-36 | UNF | 2A | .1572 | .1632 | .1452 | .1544 | .1632 | .1424 | ... | ... | ... | ... | ... |
| | | | .1569 | .1635 | .1451 | .1541 | .1635 | .1425 | ... | ... | ... | ... | ... |
| | | 3A | .1580 | .1640 | .1460 | .1559 | .1640 | .1439 | ... | ... | ... | ... | ... |
| | | | .1577 | .1643 | .1459 | .1556 | .1643 | .1440 | ... | ... | ... | ... | ... |
| 10-24 or 0.190-24 | UNC | 2A | .1811 | .1890 | .1619 | .1766 | .1890 | .1586 | .1629 | .1450 | .1672 | .1560 | 2B |
| | | | .1806 | .1895 | .1618 | .1761 | .1895 | .1587 | .1630 | .1445 | .1671 | .1555 | |
| | | 3A | .1821 | .1900 | .1629 | .1784 | .1900 | .1604 | .1629 | .1450 | .1661 | .1555 | 3B |
| | | | .1816 | .1905 | .1628 | .1779 | .1905 | .1605 | .1630 | .1445 | .1660 | .1550 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 10-32 or 0.190-32 | UNF | 2A | 0.1826 | 0.1891 | 0.1688 | 0.1793 | 0.1891 | 0.1658 | 0.1697 | 0.1560 | 0.1736 | 0.1640 | 2B |
| | | | .1823 | .1894 | .1687 | .1790 | .1894 | .1659 | .1698 | .1557 | .1735 | .1637 | |
| | | 3A | .1835 | .1900 | .1697 | .1809 | .1900 | .1674 | .1697 | .1560 | .1726 | .1641 | 3B |
| | | | .1832 | .1903 | .1696 | .1806 | .1903 | .1675 | .1698 | .1557 | .1725 | .1638 | |
| 12-24 or 0.216-24 | UNC | 2A | .2071 | .2150 | .1879 | .2025 | .2150 | .1845 | .1889 | .1710 | .1933 | .1810 | 2B |
| | | | .2066 | .2155 | .1878 | .2020 | .2155 | .1846 | .1890 | .1705 | .1932 | .1805 | |
| | | 3A | .2081 | .2160 | .1889 | .2043 | .2160 | .1863 | .1889 | .1710 | .1922 | .1807 | 3B |
| | | | .2076 | .2165 | .1888 | .2038 | .2165 | .1864 | .1890 | .1705 | .1921 | .1802 | |
| 12-28 or 0.216-28 | UNF | 2A | .2079 | .2150 | .1918 | .2041 | .2150 | .1886 | .1928 | .1770 | .1970 | .1860 | 2B |
| | | | .2074 | .2155 | .1917 | .2036 | .2155 | .1887 | .1929 | .1765 | .1969 | .1855 | |
| | | 3A | .2089 | .2160 | .1928 | .2059 | .2160 | .1904 | .1928 | .1770 | .1959 | .1857 | 3B |
| | | | .2084 | .2165 | .1927 | .2054 | .2165 | .1905 | .1929 | .1765 | .1958 | .1852 | |
| 12-32 or 0.216-32 | UNEF | 2A | .2086 | .2151 | .1948 | .2052 | .2151 | .1917 | .1957 | .1820 | .1998 | .1900 | 2B |
| | | | .2083 | .2154 | .1947 | .2049 | .2154 | .1918 | .1958 | .1817 | .1997 | .1897 | |
| | | 3A | .2095 | .2160 | .1957 | .2068 | .2160 | .1933 | .1957 | .1820 | .1988 | .1895 | 3B |
| | | | .2092 | .2163 | .1956 | .2065 | .2163 | .1934 | .1958 | .1817 | .1987 | .1892 | |
| 1/4-20 or 0.250-20 | UNC | 1A | .2399 | .2489 | .2164 | .2325 | .2489 | .2108 | .2175 | .1960 | .2248 | .2070 | 1B |
| | | | .2394 | .2494 | .2163 | .2320 | .2494 | .2109 | .2176 | .1955 | .2247 | .2065 | |
| | | 2A | .2399 | .2489 | .2164 | .2344 | .2489 | .2127 | .2175 | .1960 | .2224 | .2070 | 2B |
| | | | .2394 | .2494 | .2163 | .2339 | .2494 | .2128 | .2176 | .1955 | .2223 | .2065 | |
| | | 3A | .2410 | .2500 | .2175 | .2364 | .2500 | .2147 | .2175 | .1960 | .2211 | .2067 | 3B |
| | | | .2405 | .2505 | .2174 | .2359 | .2505 | .2148 | .2176 | .1955 | .2210 | .2062 | |
| 1/4-28 or 0.250-28 | UNF | 1A | .2419 | .2490 | .2258 | .2363 | .2490 | .2208 | .2268 | .2110 | .2333 | .2200 | 1B |
| | | | .2414 | .2495 | .2257 | .2358 | .2495 | .2209 | .2269 | .2105 | .2332 | .2195 | |
| | | 2A | .2419 | .2490 | .2258 | .2380 | .2490 | .2225 | .2268 | .2110 | .2311 | .2200 | 2B |
| | | | .2414 | .2495 | .2257 | .2375 | .2495 | .2226 | .2269 | .2105 | .2310 | .2195 | |
| | | 3A | .2429 | .2500 | .2268 | .2398 | .2500 | .2243 | .2268 | .2110 | .2300 | .2190 | 3B |
| | | | .2424 | .2505 | .2267 | .2393 | .2505 | .2244 | .2269 | .2105 | .2299 | .2185 | |
| 1/4-32 or 0.250-32 | UNEF | 2A | .2425 | .2490 | .2287 | .2390 | .2490 | .2255 | .2297 | .2160 | .2339 | .2240 | 2B |
| | | | .2422 | .2493 | .2286 | .2387 | .2493 | .2256 | .2298 | .2157 | .2338 | .2237 | |
| | | 3A | .2435 | .2500 | .2297 | .2408 | .2500 | .2273 | .2297 | .2160 | .2328 | .2229 | 3B |
| | | | .2432 | .2503 | .2296 | .2405 | .2503 | .2274 | .2298 | .2157 | .2327 | .2226 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5/16-18 or 0.3125-18 | UNC | 1A | 0.3016 | 0.3113 | 0.2752 | 0.2932 | 0.3113 | 0.2691 | 0.2764 | 0.2520 | 0.2843 | 0.2650 | 1B |
| | | | .3011 | .3118 | .2751 | .2927 | .3118 | .2692 | .2765 | .2515 | .2842 | .2645 | |
| | | 2A | .3016 | .3113 | .2752 | .2953 | .3113 | .2712 | .2764 | .2520 | .2817 | .2650 | 2B |
| | | | .3011 | .3118 | .2751 | .2948 | .3118 | .2713 | .2765 | .2515 | .2816 | .2645 | |
| | | 3A | .3028 | .3125 | .2764 | .2975 | .3125 | .2734 | .2764 | .2520 | .2803 | .2630 | 3B |
| | | | .3023 | .3130 | .2763 | .2970 | .3130 | .2735 | .2765 | .2515 | .2802 | .2625 | |
| 5/16-20 or 0.3125-20 | UN | 2A | .3023 | .3113 | .2788 | .2965 | .3113 | .2748 | .2800 | .2580 | .2852 | .2700 | 2B |
| | | | .3018 | .3118 | .2787 | .2960 | .3118 | .2749 | .2801 | .2575 | .2851 | .2695 | |
| | | 3A | .3035 | .3125 | .2800 | .2987 | .3125 | .2770 | .2800 | .2580 | .2839 | .2680 | 3B |
| | | | .3030 | .3130 | .2799 | .2982 | .3130 | .2771 | .2801 | .2575 | .2838 | .2675 | |
| 5/16-24 or 0.3125-24 | UNF | 1A | .3035 | .3114 | .2843 | .2968 | .3114 | .2788 | .2854 | .2670 | .2925 | .2770 | 1B |
| | | | .3030 | .3119 | .2842 | .2963 | .3119 | .2789 | .2855 | .2665 | .2924 | .2765 | |
| | | 2A | .3035 | .3114 | .2843 | .2986 | .3114 | .2806 | .2854 | .2670 | .2902 | .2770 | 2B |
| | | | .3030 | .3119 | .2842 | .2981 | .3119 | .2807 | .2855 | .2665 | .2901 | .2765 | |
| | | 3A | .3046 | .3125 | .2854 | .3007 | .3125 | .2827 | .2854 | .2670 | .2890 | .2754 | 3B |
| | | | .3041 | .3130 | .2853 | .3002 | .3130 | .2828 | .2855 | .2665 | .2889 | .2749 | |
| 5/16-28 or 0.3125-28 | UN | 2A | .3044 | .3115 | .2883 | .3004 | .3115 | .2849 | .2893 | .2740 | .2937 | .2820 | 2B |
| | | | .3039 | .3120 | .2882 | .2999 | .3120 | .2850 | .2894 | .2735 | .2936 | .2815 | |
| | | 3A | .3054 | .3125 | .2893 | .3022 | .3125 | .2867 | .2893 | .2740 | .2926 | .2807 | 3B |
| | | | .3049 | .3130 | .2892 | .3017 | .3130 | .2868 | .2894 | .2735 | .2925 | .2802 | |
| 5/16-32 or 0.3125-32 | UNEF | 2A | .3050 | .3115 | .2912 | .3015 | .3115 | .2880 | .2922 | .2790 | .2964 | .2860 | 2B |
| | | | .3047 | .3118 | .2911 | .3012 | .3118 | .2881 | .2923 | .2787 | .2963 | .2857 | |
| | | 3A | .3060 | .3125 | .2922 | .3033 | .3125 | .2898 | .2922 | .2790 | .2953 | .2847 | 3B |
| | | | .3057 | .3128 | .2921 | .3030 | .3128 | .2899 | .2923 | .2787 | .2952 | .2844 | |
| 3/8-16 or 0.375-16 | UNC | 1A | .3632 | .3737 | .3331 | .3537 | .3737 | .3266 | .3344 | .3070 | .3429 | .3210 | 1B |
| | | | .3626 | .3743 | .3330 | .3531 | .3743 | .3267 | .3345 | .3064 | .3428 | .3204 | |
| | | 2A | .3632 | .3737 | .3331 | .3558 | .3737 | .3287 | .3344 | .3070 | .3401 | .3210 | 2B |
| | | | .3626 | .3743 | .3330 | .3552 | .3743 | .3288 | .3345 | .3064 | .3400 | .3204 | |
| | | 3A | .3645 | .3750 | .3344 | .3582 | .3750 | .3311 | .3344 | .3070 | .3387 | .3182 | 3B |
| | | | .3639 | .3756 | .3343 | .3576 | .3756 | .3312 | .3345 | .3064 | .3386 | .3176 | |
| 3/8-20 or 0.375-20 | UN | 2A | .3648 | .3738 | .3413 | .3589 | .3738 | .3372 | .3425 | .3210 | .3479 | .3320 | 2B |
| | | | .3643 | .3743 | .3412 | .3584 | .3743 | .3373 | .3426 | .3205 | .3478 | .3315 | |
| | | 3A | .3660 | .3750 | .3425 | .3611 | .3750 | .3394 | .3425 | .3210 | .3465 | .3297 | 3B |
| | | | .3655 | .3755 | .3424 | .3606 | .3755 | .3395 | .3426 | .3205 | .3464 | .3292 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3/8-24 or 0.375-24 | UNF | 1A | .3660 | .3739 | .3468 | .3591 | .3739 | .3411 | .3479 | .3300 | .3553 | 3400 | 1B |
| | | | .3655 | .3744 | .3467 | .3586 | .3744 | .3412 | .3480 | .3295 | .3552 | .3395 | |
| | | 2A | .3660 | .3739 | .3468 | .3610 | .3739 | .3430 | .3479 | .3300 | .3528 | .3400 | 2B |
| | | | .3655 | .3744 | .3467 | .3605 | .3744 | .3431 | .3480 | .3295 | .3527 | .3395 | |
| | | 3A | .3671 | .3750 | .3479 | .3630 | .3750 | .3450 | .3479 | .3300 | .3516 | .3372 | 3B |
| | | | .3666 | .3755 | .3478 | .3625 | .3755 | .3451 | .3480 | .3295 | .3515 | .3367 | |
| 3/8-28 or 0.375-28 | UN | 2A | .3668 | .3739 | .3507 | .3626 | .3739 | .3471 | .3518 | .3360 | .3564 | .3450 | 2B |
| | | | .3663 | .3744 | .3506 | .3621 | .3744 | .3472 | .3519 | .3355 | .3563 | .3445 | |
| | | 3A | .3679 | .3750 | .3518 | .3646 | .3750 | .3491 | .3518 | .3360 | .3553 | .3426 | 3B |
| | | | .3674 | .3755 | .3517 | .3641 | .3755 | .3492 | .3519 | .3355 | .3552 | .3421 | |
| 3/8-32 or 0.375-32 | UNEF | 2A | .3675 | .3740 | .3537 | .3638 | .3740 | .3503 | .3547 | .3410 | .3591 | .3490 | 2B |
| | | | .3672 | .3743 | .3536 | .3635 | .3743 | .3504 | .3548 | .3407 | .3590 | .3487 | |
| | | 3A | .3685 | .3750 | .3547 | .3657 | .3750 | .3522 | .3547 | .3410 | .3580 | .3469 | 3B |
| | | | .3682 | .3753 | .3546 | .3654 | .3753 | .3523 | .3548 | .3407 | .3579 | .3466 | |
| 7/16-14 or 0.4375-14 | UNC | 1A | .4246 | .4361 | .38970 | .4135 | .4361 | .38260 | .39110 | .3600 | .40030 | .3760 | 1B |
| | | | .4240 | .4367 | .38955 | .4129 | .4367 | .38275 | .39125 | .3594 | .40015 | .3754 | |
| | | 2A | .4246 | .4361 | .38970 | .4159 | .4361 | .38500 | .39110 | .3600 | .39720 | .3760 | 2B |
| | | | .4240 | .4367 | .38955 | .4153 | .4367 | .38515 | .39125 | .3594 | .39705 | .3754 | |
| | | 3A | .4260 | .4375 | .39110 | .4185 | .4375 | .38760 | .39110 | .3600 | .39570 | .3717 | 3B |
| | | | .4254 | .4381 | .39095 | .4179 | .4381 | .38775 | .39125 | .3594 | .39555 | .3711 | |
| 7/16-16 or 0.4375-16 | UN | 2A | .4256 | .4361 | .3955 | .4180 | .4361 | .3909 | .3969 | .3700 | .4028 | .3840 | 2B |
| | | | .4250 | .4367 | .3954 | .4174 | .4367 | .3910 | .3970 | .3694 | .4027 | .3834 | |
| | | 3A | .4270 | .4375 | .3969 | .4206 | .4375 | .3935 | .3969 | .3700 | .4014 | .3800 | 3B |
| | | | .4264 | .4381 | .3968 | .4200 | .4381 | .3936 | .3970 | .3694 | .4013 | .3794 | |
| 7/16-20 or 0.4375-20 | UNF | 1A | .4272 | .4362 | .4037 | .4191 | .4362 | .3974 | .4050 | .3830 | .4131 | .3950 | 1B |
| | | | .4267 | .4367 | .4036 | .4186 | .4367 | .3975 | .4051 | .3825 | .4130 | .3945 | |
| | | 2A | .4272 | .4362 | .4037 | .4212 | .4362 | .3995 | .4050 | .3830 | .4104 | .3950 | 2B |
| | | | .4267 | .4367 | .4036 | .4207 | .4367 | .3996 | .4051 | .3825 | .4103 | .3945 | |
| | | 3A | .4285 | .4375 | .4050 | .4236 | .4375 | .4019 | .4050 | .3830 | .4091 | .3916 | 3B |
| | | | .4280 | .4380 | .4049 | .4231 | .4380 | .4020 | .4051 | .3825 | .4090 | .3911 | |
| 7/16-28 or 0.4375-28 | UNEF | 2A | .4293 | .4364 | .4132 | .4251 | .4364 | .4096 | .4143 | .3990 | .4189 | .4070 | 2B |
| | | | .4288 | .4369 | .4131 | .4246 | .4369 | .4097 | .4144 | .3985 | .4188 | .4065 | |
| | | 3A | .4304 | .4375 | .4143 | .4271 | .4375 | .4116 | .4143 | .3990 | .4178 | .4051 | 3B |
| | | | .4299 | .4380 | .4142 | .4266 | .4380 | .4117 | .4144 | .3985 | .4177 | .4046 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 7/16-32 or 0.4375-32 | UN | 2A | 0.4300 | 0.4365 | 0.4162 | 0.4263 | 0.4365 | 0.4128 | 0.4172 | 0.4040 | 0.4216 | 0.4110 | 2B |
| | | | .4297 | .4368 | .4161 | .4260 | .4368 | .4129 | .4173 | .4035 | .4215 | .4105 | |
| | | 3A | .4310 | .4375 | .4172 | .4282 | .4375 | .4147 | .4172 | .4040 | .4205 | .4094 | 3B |
| | | | .4307 | .4378 | .4171 | .4279 | .4378 | .4148 | .4173 | .4035 | .4204 | .4089 | |
| 1/2-13 or 0.500-13 | UNC | 1A | .4863 | .4985 | .44850 | .4744 | .4985 | .44110 | .45000 | .4170 | .45970 | .4340 | 1B |
| | | | .4857 | .4991 | .44835 | .4738 | .4991 | .44125 | .45015 | .4164 | .45955 | .4334 | |
| | | 2A | .4863 | .4985 | .44850 | .4768 | .4985 | .44350 | .45000 | .4170 | .45650 | .4340 | 2B |
| | | | .4857 | .4991 | .44835 | .4762 | .4991 | .44365 | .45015 | .4164 | .45635 | .4334 | |
| | | 3A | .4878 | .5000 | .45000 | .4796 | .5000 | .44630 | .45000 | .4170 | .45480 | .4284 | 3B |
| | | | .4872 | .5006 | .44985 | .4790 | .5006 | .44645 | .45015 | .4164 | .45465 | .4278 | |
| 1/2-16 or 0.500-16 | UN | 2A | .4881 | .4986 | .4580 | .4804 | .4986 | .4533 | .4594 | .4320 | .4655 | .4460 | 2B |
| | | | .4875 | .4992 | .4579 | .4798 | .4992 | .4534 | .4595 | .4314 | .4654 | .4454 | |
| | | 3A | .4895 | .5000 | .4594 | .4830 | .5000 | .4559 | .4594 | .4320 | .4640 | .4419 | 3B |
| | | | .4889 | .5006 | .4593 | .4824 | .5006 | .4560 | .4595 | .4314 | .4639 | .4413 | |
| 1/2-20 or 0.500-20 | UNF | 1A | .4897 | .4987 | .4662 | .4815 | .4987 | .4598 | .4675 | .4460 | .4759 | .4570 | 1B |
| | | | .4892 | .4992 | .4661 | .4810 | .4992 | .4599 | .4676 | .4455 | .4758 | .4565 | |
| | | 2A | .4897 | .4987 | .4662 | .4836 | .4987 | .4619 | .4675 | .4460 | .4731 | .4570 | 2B |
| | | | .4892 | .4992 | .4661 | .4831 | .4992 | .4620 | .4676 | .4455 | .4730 | .4565 | |
| | | 3A | .4910 | .5000 | .4675 | .4860 | .5000 | .4643 | .4675 | .4460 | .4717 | .4537 | 3B |
| | | | .4905 | .5005 | .4674 | .4855 | .5005 | .4644 | .4676 | .4455 | .4716 | .4532 | |
| 1/2-28 or 0.500-28 | UNEF | 2A | .4918 | .4989 | .4757 | .4875 | .4989 | .4720 | .4768 | .4610 | .4816 | .4700 | 2B |
| | | | .4913 | .4994 | .4756 | .4870 | .4994 | .4721 | .4769 | .4605 | .4815 | .4695 | |
| | | 3A | .4929 | .5000 | .4768 | .4895 | .5000 | .4740 | .4768 | .4610 | .4804 | .4676 | 3B |
| | | | .4924 | .5005 | .4767 | .4890 | .5005 | .4741 | .4769 | .4605 | .4803 | .4671 | |
| 1/2-32 or 0.500-32 | UN | 2A | .4925 | .4990 | .4787 | .4887 | .4990 | .4752 | .4797 | .4660 | .4842 | .4740 | 2B |
| | | | .4922 | .4993 | .4786 | .4884 | .4993 | .4753 | .4798 | .4657 | .4841 | .4737 | |
| | | 3A | .4935 | .5000 | .4797 | .4906 | .5000 | .4771 | .4797 | .4660 | .4831 | .4719 | 3B |
| | | | .4932 | .5003 | .4796 | .4903 | .5005 | .4772 | .4798 | .4657 | .4830 | .4716 | |
| 9/16-12 or 0.5625-12 | UNC | 1A | .5480 | .5609 | .5068 | .5351 | .5609 | .4990 | .5084 | .4720 | .5186 | .4900 | 1B |
| | | | .5474 | .5615 | .5066 | .5345 | .5615 | .4992 | .5086 | .4714 | .5184 | .4894 | |
| | | 2A | .5480 | .5609 | .5068 | .5377 | .5609 | .5016 | .5084 | .4720 | .5152 | .4900 | 2B |
| | | | .5474 | .5615 | .5066 | .5371 | .5615 | .5018 | .5086 | .4714 | .5150 | .4894 | |
| | | 3A | .5496 | .5625 | .5084 | .5406 | .5625 | .5045 | .5084 | .4720 | .5135 | .4843 | 3B |
| | | | .5490 | .5631 | .5082 | .5400 | .5631 | .5047 | .5086 | .4714 | .5133 | .4837 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 9/16-16 or 0.5625-16 | UN | 2A | 0.5506 | 0.5611 | 0.5205 | 0.5429 | 0.5611 | 0.5158 | 0.5219 | 0.4950 | 0.5280 | 0.5090 | 2B |
| | | | .5500 | .5617 | .5203 | .5423 | .5617 | .5160 | .5221 | .4944 | .5278 | .5084 | |
| | | 3A | .5520 | .5625 | .5219 | .5455 | .5625 | .5184 | .5219 | .4950 | .5265 | .5040 | 3B |
| | | | .5514 | .5631 | .5217 | .5449 | .5631 | .5186 | .5221 | .4944 | .5263 | .5034 | |
| 9/16-18 or 0.5625-18 | UNF | 1A | .5514 | .5611 | .52500 | .5423 | .5611 | .51820 | .52640 | .5020 | .53530 | .5150 | 1B |
| | | | .5509 | .5616 | .52485 | .5418 | .5616 | .51835 | .52655 | .5015 | .53515 | .5145 | |
| | | 2A | .5514 | .5611 | .52500 | .5446 | .5611 | .52050 | .52640 | .5020 | .53230 | .5150 | 2B |
| | | | .5509 | .5616 | .52485 | .5441 | .5616 | .52065 | .52655 | .5015 | .53215 | .5145 | |
| | | 3A | .5528 | .5625 | .52640 | .5471 | .5625 | .52300 | .52640 | .5020 | .53080 | .5106 | 3B |
| | | | .5523 | .5630 | .52625 | .5466 | .5630 | .52315 | .52655 | .5015 | .53065 | .5101 | |
| 9/16-20 or 0.5625-20 | UN | 2A | .5522 | .5612 | .52870 | .5462 | .5612 | .52450 | .53000 | .5080 | .53550 | .5200 | 2B |
| | | | .5517 | .5617 | .52855 | .5457 | .5617 | .52465 | .53015 | .5075 | .53535 | .5195 | |
| | | 3A | .5535 | .5625 | .53000 | .5485 | .5625 | .52680 | .53000 | .5080 | .53410 | .5162 | 3B |
| | | | .5530 | .5630 | .52985 | .5480 | .5630 | .52695 | .53015 | .5075 | .53395 | .5157 | |
| 9/16-24 or 0.5625-24 | UNEF | 2A | .5534 | .5613 | .53420 | .5483 | .5613 | .53030 | .53540 | .5170 | .54050 | .5270 | 2B |
| | | | .5529 | .5618 | .53405 | .5478 | .5618 | .53045 | .53555 | .5165 | .54035 | .5265 | |
| | | 3A | .5546 | .5625 | .53540 | .5505 | .5625 | .53250 | .53540 | .5170 | .53920 | .5244 | 3B |
| | | | .5541 | .5630 | .53525 | .5500 | .5630 | .53265 | .53555 | .5165 | .53905 | .5239 | |
| 9/16-28 or 0.5625-28 | UN | 2A | .5543 | .5614 | .53820 | .5500 | .5614 | .53450 | .53930 | .5240 | .54410 | .5320 | 2B |
| | | | .5538 | .5619 | .53805 | .5495 | .5619 | .53465 | .53945 | .5235 | .54395 | .5315 | |
| | | 3A | .5554 | .5625 | .53930 | .5520 | .5625 | .53650 | .53930 | .5240 | .54290 | .5301 | 3B |
| | | | .5549 | .5630 | .53915 | .5515 | .5630 | .53665 | .53945 | .5235 | .54275 | .5296 | |
| 9/16-32 or 0.5625-32 | UN | 2A | .5550 | .5615 | .54120 | .5512 | .5615 | .53770 | .54220 | .5290 | .54670 | .5360 | 2B |
| | | | .5545 | .5620 | .54105 | .5507 | .5620 | .53785 | .54235 | .5285 | .54655 | .5355 | |
| | | 3A | .5560 | .5625 | .54220 | .5531 | .5625 | .53960 | .54220 | .5290 | .54560 | .5344 | 3B |
| | | | .5555 | .5630 | .54205 | .5526 | .5630 | .53975 | .54235 | .5285 | .54545 | .5339 | |
| 5/8-11 or 0.625-11 | UNC | 1A | .6097 | .6234 | .5644 | .5955 | .6234 | .5561 | .5660 | .5270 | .5767 | .5460 | 1B |
| | | | .6091 | .6240 | .5642 | .5949 | .6240 | .5563 | .5662 | .5264 | .5765 | .5454 | |
| | | 2A | .6097 | .6234 | .5644 | .5983 | .6234 | .5589 | .5660 | .5270 | .5732 | .5460 | 2B |
| | | | .6091 | .6240 | .5642 | .5977 | .6240 | .5591 | .5662 | .5264 | .5730 | .5454 | |
| | | 3A | .6113 | .6250 | .5660 | .6013 | .6250 | .5619 | .5660 | .5270 | .5714 | .5391 | 3B |
| | | | .6107 | .6256 | .5658 | .6007 | .6256 | .5621 | .5662 | .5264 | .5712 | .5385 | |
| 5/8-12 or 0.625-12 | UN | 2A | .6105 | .6234 | .5693 | .6000 | .6234 | .5639 | .5709 | .5350 | .5780 | .5530 | 2B |
| | | | .6099 | .6240 | .5691 | .5994 | .6240 | .5641 | .5711 | .5344 | .5778 | .5524 | |
| | | 3A | .6121 | .6250 | .5709 | .6029 | .6250 | .5668 | .5709 | .5350 | .5762 | .5463 | 3B |
| | | | .6115 | .6256 | .5707 | .6023 | .6256 | .5670 | .5711 | .5344 | .5760 | .5457 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5/8-16 or 0.625-16 | UN | 2A | 0.6131 | 0.6236 | 0.5830 | 0.6053 | 0.6236 | 0.5782 | 0.5844 | 0.5570 | 0.5906 | 0.5710 | 2B |
| | | | .6125 | .6242 | .5828 | .6047 | .6242 | .5784 | .5846 | .5564 | .5904 | .5704 | |
| | | 3A | .6145 | .6250 | .5844 | .6079 | .6250 | .5808 | .5844 | .5570 | 5890 | .5662 | 3B |
| | | | .6139 | .6256 | .5842 | .6073 | .6256 | .5810 | .5846 | .5564 | .5888 | .5656 | |
| 5/8-18 or 0.625-18 | UNF | 1A | .6139 | .6236 | .58750 | .6046 | .6236 | .58050 | .58890 | .5650 | .59800 | .5780 | 1B |
| | | | .6134 | .6241 | .58735 | .6041 | .6241 | .58065 | .58905 | .5645 | .59785 | .5775 | |
| | | 2A | .6139 | .6236 | .58750 | .6069 | .6236 | .58280 | .58890 | .5650 | .59490 | .5780 | 2B |
| | | | .6134 | .6241 | .58735 | .6064 | .6241 | .58295 | .58905 | .5645 | .59475 | .5775 | |
| | | 3A | .6153 | .6250 | .58890 | .6095 | .6250 | .58540 | .58890 | .5650 | .59340 | .5730 | 3B |
| | | | .6148 | .6255 | .58875 | .6090 | .6255 | .58555 | .58905 | .5645 | .59325 | .5725 | |
| 5/8-20 or 0.625-20 | UN | 2A | .6147 | .6237 | .59120 | .6086 | .6237 | .58690 | .59250 | .5710 | .59810 | .5820 | 2B |
| | | | .6142 | .6242 | .59105 | .6081 | .6242 | .58705 | .59265 | .5705 | .59795 | .5815 | |
| | | 3A | .6160 | .6250 | .59250 | .6110 | .6250 | .58930 | .59250 | .5710 | .59670 | .5787 | 3B |
| | | | .6155 | .6255 | .59235 | .6105 | .6255 | .58945 | .59265 | .5705 | .59655 | .5782 | |
| 5/8-24 or 0.625-24 | UNEF | 2A | .6159 | .6238 | .59670 | .6107 | .6238 | .59270 | .59790 | .5800 | .60310 | .5900 | 2B |
| | | | .6154 | .6243 | .59655 | .6102 | .6243 | .59285 | .59805 | .5795 | .60295 | .5895 | |
| | | 3A | .6171 | .6250 | .59790 | .6129 | .6250 | .59490 | .59790 | .5800 | .60180 | .5869 | 3B |
| | | | .6166 | .6255 | .59775 | .6124 | .6255 | .59505 | .59805 | .5795 | .60165 | .5864 | |
| 5/8-28 or 0.625-28 | UN | 2A | .6168 | .6239 | .60070 | .6124 | .6239 | .59690 | .60180 | .5860 | .60670 | .5950 | 2B |
| | | | .6163 | .6244 | .60055 | .6119 | .6244 | .59705 | .60195 | .5855 | .60655 | .5945 | |
| | | 3A | .6179 | .6250 | .60180 | .6145 | .6250 | .59900 | .60180 | .5860 | .60550 | .5926 | 3B |
| | | | .6174 | .6255 | .60165 | .6140 | .6255 | .59915 | .60195 | .5855 | .60535 | .5921 | |
| 5/8-32 or 0.625-32 | UN | 2A | .6174 | .6239 | .60360 | .6135 | .6239 | .60000 | .60470 | .5910 | .60930 | .5990 | 2B |
| | | | .6169 | .6244 | .60345 | .6130 | .6244 | .60015 | .60485 | .5905 | .60915 | .5985 | |
| | | 3A | .6185 | .6250 | .60470 | .6155 | .6250 | .60200 | .60470 | .5910 | .60820 | .5969 | 3B |
| | | | .6180 | .6255 | .60455 | .6150 | .6255 | .60215 | .60485 | .5905 | .60805 | .5964 | |
| 11/16-12 or 0.6875-12 | UN | 2A | .6730 | .6859 | .6318 | .6625 | .6859 | .6264 | .6334 | .5970 | .6405 | .6150 | 2B |
| | | | .6724 | .6865 | .6316 | .6619 | .6865 | .6266 | .6336 | .5964 | .6403 | .6144 | |
| | | 3A | .6746 | .6875 | .6334 | .6654 | .6875 | .6293 | .6334 | .5970 | .6387 | .6085 | 3B |
| | | | .6740 | .6881 | .6332 | .6648 | .6881 | .6295 | .6336 | .5964 | .6385 | .6079 | |
| 11/16-16 or 0.6875-16 | UN | 2A | .6756 | .6861 | .6455 | .6678 | .6861 | .6407 | .6469 | .6200 | .6531 | .6340 | 2B |
| | | | .6750 | .6867 | .6453 | .6672 | .6867 | .6409 | .6471 | .6194 | .6529 | .6334 | |
| | | 3A | .6770 | .6875 | .6469 | .6704 | .6875 | .6433 | .6469 | .6200 | .6515 | .6284 | 3B |
| | | | .6764 | .6881 | .6467 | .6698 | .6881 | .6435 | .6471 | .6194 | .6513 | .6278 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 11/16-20 or 0.6875-20 | UN | 2A | 0.6772 | 0.6862 | 0.65370 | 0.6711 | 0.6862 | 0.64940 | 0.65500 | 0.6330 | 0.66060 | 0.6450 | 2B |
| | | | .6767 | .6867 | .65355 | .6706 | .6867 | .64955 | .65515 | .6325 | .66045 | .6445 | |
| | | 3A | .6785 | .6875 | .65500 | .6735 | .6875 | .65180 | .65500 | .6330 | .65920 | .6412 | 3B |
| | | | .6780 | .6880 | .65485 | .6730 | .6880 | .65195 | .65515 | .6325 | .65905 | .6407 | |
| 11/16-24 or 0.6875-24 | UNEF | 2A | .6784 | .6863 | .65920 | .6732 | .6863 | .65520 | .66040 | .6420 | .66560 | .6520 | 2B |
| | | | .6779 | .6868 | .65905 | .6727 | .6868 | .65535 | .66055 | .6415 | .66545 | .6515 | |
| | | 3A | .6796 | .6875 | .66040 | .6754 | .6875 | .65740 | .66040 | .6420 | .66430 | .6494 | 3B |
| | | | .6791 | .6880 | .66025 | .6749 | .6880 | .65755 | .66055 | .6415 | .66415 | .6489 | |
| 11/16-28 or 0.6875-28 | UN | 2A | .6793 | .6864 | .66320 | .6749 | .6862 | .65940 | .66430 | .6490 | .66920 | .6570 | 2B |
| | | | .6788 | .6869 | .66305 | .6744 | .6867 | .65955 | .66445 | .6485 | .66905 | .6565 | |
| | | 3A | .6804 | .6875 | .66430 | .6770 | .6875 | .66150 | .66430 | .6490 | .66800 | .6551 | 3B |
| | | | .6799 | .6880 | .66415 | .6765 | .6880 | .66165 | .66445 | .6485 | .66785 | .6546 | |
| 11/16-32 or 0.6875-32 | UN | 2A | .6799 | .6864 | .66610 | .6760 | .6864 | .66250 | .66720 | .6540 | .67180 | .6610 | 2B |
| | | | .6794 | .6869 | .66595 | .6755 | .6869 | .66265 | .66735 | .6535 | .67165 | .6605 | |
| | | 3A | .6810 | .6875 | .66720 | .6780 | .6875 | .66450 | .66720 | .6540 | .67070 | .6594 | 3B |
| | | | .6805 | .6880 | .66705 | .6775 | .6880 | .66465 | .66735 | .6535 | .67055 | .6589 | |
| 3/4-10 or 0.750-10 | UNC | 1A | .7336 | .7482 | .6832 | .7177 | .7482 | .6744 | .6850 | .6420 | .6965 | .6630 | 1B |
| | | | .7330 | .7488 | .6830 | .7171 | .7488 | .6746 | .6852 | .6414 | .6963 | .6624 | |
| | | 2A | .7336 | .7482 | .6832 | .7206 | .7482 | .6773 | .6850 | .6420 | .6927 | .6630 | 2B |
| | | | .7330 | .7488 | .6830 | .7200 | .7488 | .6775 | .6852 | .6414 | .6925 | .6624 | |
| | | 3A | .7354 | .7500 | .6850 | .7239 | .7500 | .6806 | .6850 | .6420 | .6907 | .6545 | 3B |
| | | | .7348 | .7506 | .6848 | .7233 | .7506 | .6808 | .6852 | .6414 | .6905 | .6539 | |
| 3/4-12 or 0.750-12 | UN | 2A | .7354 | .7483 | .6942 | .7248 | .7483 | .6887 | .6959 | .6600 | .7031 | .6780 | 2B |
| | | | .7348 | .7489 | .6940 | .7242 | .7489 | .6889 | .6961 | .6594 | .7029 | .6774 | |
| | | 3A | .7371 | .7500 | .6959 | .7279 | .7500 | .6918 | .6959 | .6600 | .7013 | .6707 | 3B |
| | | | .7365 | .7506 | .6957 | .7273 | .7506 | .6920 | .6961 | .6594 | .7011 | .6701 | |
| 3/4-16 or 0.750-16 | UNF | 1A | .7380 | .7485 | .7079 | .7275 | .7485 | .7004 | .7094 | .6820 | .7192 | .6960 | 1B |
| | | | .7374 | .7491 | .7077 | .7269 | .7491 | .7006 | .7096 | .6814 | .7190 | .6954 | |
| | | 2A | .7380 | .7485 | .7079 | .7300 | .7485 | .7029 | .7094 | .6820 | .7159 | .6960 | 2B |
| | | | .7374 | .7491 | .7077 | .7294 | .7491 | .7031 | .7096 | .6814 | .7157 | .6954 | |
| | | 3A | .7395 | .7500 | .7094 | .7327 | .7500 | .7056 | .7094 | .6820 | .7143 | .6908 | 3B |
| | | | .7389 | .7506 | .7092 | .7321 | .7506 | .7058 | .7096 | .6814 | .7141 | .6902 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3/4-20 or 0.750-20 | UNEF | 2A | 0.7397 | 0.7487 | 0.71620 | 0.7335 | 0.7487 | 0.71180 | 0.71750 | 0.6960 | 0.72320 | 0.7070 | 2B |
| | | | .7392 | .7492 | .71605 | .7330 | .7492 | .71195 | .71765 | .6955 | .72305 | .7065 | |
| | | 3A | .7410 | .7500 | .71750 | .7359 | .7500 | .71420 | .71750 | .6960 | .72180 | .7037 | 3B |
| | | | .7405 | .7505 | .71735 | .7354 | .7505 | .71435 | .71765 | .6955 | .72165 | .7032 | |
| 3/4-28 or 0.750-28 | UN | 2A | .7417 | .7488 | .72560 | .7373 | .7488 | .72180 | .72680 | .7110 | .73180 | .7200 | 2B |
| | | | .7412 | .7493 | .72545 | .7368 | .7493 | .72195 | .72695 | .7105 | .73165 | .7195 | |
| | | 3A | .7429 | .7500 | .72680 | .7394 | .7500 | .72390 | .72680 | .7110 | .73050 | .7176 | 3B |
| | | | .7424 | .7505 | .72665 | .7389 | .7505 | .72405 | .72695 | .7105 | .73035 | .7171 | |
| 3/4-32 or 0.750-32 | UN | 2A | .7424 | .7489 | .72860 | .7385 | .7489 | .72500 | .72970 | .7160 | .73440 | .7240 | 2B |
| | | | .7419 | .7494 | .72845 | .7380 | .7494 | .72515 | .72985 | .7155 | .73425 | .7235 | |
| | | 3A | .7435 | .7500 | .72970 | .7405 | .7500 | .72700 | .72970 | .7160 | .73330 | .7219 | 3B |
| | | | .7430 | .7505 | .72955 | .7400 | .7505 | .72715 | .72985 | .7155 | .73315 | .7214 | |
| 13/16-12 or 0.8125-12 | UN | 2A | .7979 | .8108 | .7567 | .7873 | .8108 | .7512 | .7584 | .7220 | .7656 | .7400 | 2B |
| | | | .7973 | .8114 | .7565 | .7867 | .8114 | .7514 | .7586 | .7214 | .7654 | .7394 | |
| | | 3A | .7996 | .8125 | .7584 | .7904 | .8125 | .7543 | .7584 | .7220 | .7638 | .7329 | 3B |
| | | | .7990 | .8131 | .7582 | .7898 | .8131 | .7545 | .7586 | .7214 | .7636 | .7323 | |
| 13/16-16 or 0.8125-16 | UN | 2A | .8005 | .8110 | .7704 | .7926 | .8110 | .7655 | .7719 | .7450 | .7782 | .7590 | 2B |
| | | | .7999 | .8116 | .7702 | .7920 | .8116 | .7657 | .7721 | .7444 | .7780 | .7584 | |
| | | 3A | .8020 | .8125 | .7719 | .7954 | .8125 | .7683 | .7719 | .7450 | .7766 | .7533 | 3B |
| | | | .8014 | .8131 | .7717 | .7948 | .8131 | .7685 | .7721 | .7444 | .7764 | .7527 | |
| 13/16-20 or 0.8125-20 | UNEF | 2A | .8022 | .8112 | .77870 | .7960 | .8112 | .77430 | .78000 | .7580 | .78570 | .7700 | 2B |
| | | | .8017 | .8117 | .77855 | .7955 | .8117 | .77445 | .78015 | .7575 | .78555 | .7695 | |
| | | 3A | .8035 | .8125 | .78000 | .7984 | .8125 | .77670 | .78000 | .7580 | .78430 | .7662 | 3B |
| | | | .8030 | .8130 | .77985 | .7979 | .8130 | .77685 | .78015 | .7575 | .78415 | .7657 | |
| 13/16-28 or 0.8125-28 | UN | 2A | .8042 | .8113 | .78810 | .7998 | .8113 | .78430 | .78930 | .7740 | .79430 | .7820 | 2B |
| | | | .8037 | .8118 | .78795 | .7993 | .8118 | .78445 | .78945 | .7735 | .79415 | .7815 | |
| | | 3A | .8054 | .8125 | .78930 | .8019 | .8125 | .78640 | .78930 | .7740 | .79300 | .7801 | 3B |
| | | | .8049 | .8130 | .78915 | .8014 | .8130 | .78655 | .78945 | .7735 | .79285 | .7796 | |
| 13/16-32 or 0.8125-32 | UN | 2A | .8049 | .8114 | .79110 | .8010 | .8114 | .78750 | .79220 | .7790 | .79690 | .7860 | 2B |
| | | | .8044 | .8119 | .79095 | .8005 | .8119 | .78765 | .79235 | .7785 | .79675 | .7855 | |
| | | 3A | .8060 | .8125 | .79220 | .8030 | .8125 | .78950 | .79220 | .7790 | .79580 | .7844 | 3B |
| | | | .8055 | .8130 | .79205 | .8025 | .8130 | .78965 | .79235 | .7785 | .79565 | .7839 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 7/8-9 or 0.875-9 | UNC | 1A | 0.8573 | 0.8731 | 0.8009 | 0.8395 | 0.8731 | 0.7914 | 0.8028 | 0.7550 | 0.8151 | 0.7780 | 1B |
| | | | .8566 | .8738 | .8007 | .8388 | .8738 | .7916 | .8030 | .7543 | .8149 | .7773 | |
| | | 2A | .8573 | .8731 | .8009 | .8427 | .8731 | .7946 | .8028 | .7550 | .8110 | .7780 | 2B |
| | | | .8566 | .8738 | .8007 | .8420 | .8738 | .7948 | .8030 | .7543 | .8108 | .7773 | |
| | | 3A | .8592 | .8750 | .8028 | .8462 | .8750 | .7981 | .8028 | .7550 | .8089 | .7681 | 3B |
| | | | .8585 | .8757 | .8026 | .8455 | .8757 | .7983 | .8030 | .7543 | .8087 | .7674 | |
| 7/8-12 or 0.875-12 | UN | 2A | .8604 | .8733 | .8192 | .8498 | .8733 | .8137 | .8209 | .7850 | .8281 | .8030 | 2B |
| | | | .8598 | .8739 | .8190 | .8492 | .8739 | .8139 | .8211 | .7844 | .8279 | .8024 | |
| | | 3A | .8621 | .8750 | .8209 | .8529 | .8750 | .8168 | .8209 | .7850 | .8263 | .7948 | 3B |
| | | | .8615 | .8756 | .8207 | .8523 | .8756 | .8170 | .8211 | .7844 | .8261 | .7942 | |
| 7/8-14 or 0.875-14 | UNF | 1A | .8619 | .8734 | .8270 | .8498 | .8734 | .8189 | .8286 | .7980 | .8392 | .8140 | 1B |
| | | | .8613 | .8740 | .8268 | .8492 | .8740 | .8191 | .8288 | .7974 | .8390 | .8134 | |
| | | 2A | .8619 | .8734 | .8270 | .8525 | .8734 | .8216 | .8286 | .7980 | .8356 | .8140 | 2B |
| | | | .8613 | .8740 | .8268 | .8519 | .8740 | .8218 | .8288 | .7974 | .8354 | .8134 | |
| | | 3A | .8635 | .8750 | .8286 | .8554 | .8750 | .8245 | .8286 | .7980 | .8339 | .8068 | 3B |
| | | | .8629 | .8756 | .8284 | .8548 | .8756 | .8247 | .8288 | .7974 | .8337 | .8062 | |
| 7/8-16 or 0.875-16 | UN | 2A | .8630 | .8735 | .8329 | .8551 | .8735 | .8280 | .8344 | .8070 | .8407 | .8210 | 2B |
| | | | .8624 | .8741 | .8327 | .8545 | .8741 | .8282 | .8346 | .8064 | .8405 | .8204 | |
| | | 3A | .8645 | .8750 | .8344 | .8579 | .8750 | .8308 | .8344 | .8070 | .8391 | .8158 | 3B |
| | | | .8639 | .8756 | .8342 | .8573 | .8756 | .8310 | .8346 | .8064 | .8389 | .8152 | |
| 7/8-20 or 0.875-20 | UNEF | 2A | .8647 | .8737 | .84120 | .8585 | .8737 | .83680 | .84250 | .8210 | .84820 | .8320 | 2B |
| | | | .8642 | .8742 | .84105 | .8580 | .8742 | .83695 | .84265 | .8205 | .84805 | .8315 | |
| | | 3A | .8660 | .8750 | .84250 | .8609 | .8750 | .83920 | .84250 | .8210 | .84680 | .8287 | 3B |
| | | | .8655 | .8755 | .84235 | .8604 | .8755 | .83935 | .84265 | .8205 | .84665 | .8282 | |
| 7/8-28 or 0.875-28 | UN | 2A | .8667 | .8738 | .85060 | .8623 | .8738 | .84680 | .85180 | .8360 | .85680 | .8450 | 2B |
| | | | .8662 | .8743 | .85045 | .8613 | .8743 | .84695 | .85195 | .8355 | .85665 | .8445 | |
| | | 3A | .8679 | .8750 | .85180 | .8644 | .8750 | .84890 | .85180 | .8360 | .85550 | .8426 | 3B |
| | | | .8674 | .8755 | .85165 | .8639 | .8755 | .84905 | .85195 | .8355 | .85535 | .8421 | |
| 7/8-32 or 0.875-32 | UN | 2A | .8674 | .8739 | .85360 | .8635 | .8739 | .85000 | .85470 | .8410 | .85940 | .8490 | 2B |
| | | | .8669 | .8744 | .85345 | .8630 | .8744 | .85015 | .85485 | .8405 | .85925 | .8485 | |
| | | 3A | .8685 | .8750 | .85470 | .8655 | .8750 | .85200 | .85470 | .8410 | .85830 | .8469 | 3B |
| | | | .8680 | .8755 | .85455 | .8650 | .8755 | .85215 | .85485 | .8405 | .85815 | .8464 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 15/16-12 or 0.9375-12 | UN | 2A | 0.9229 | 0.9358 | 0.8817 | 0.9121 | 0.9358 | 0.8760 | 0.8834 | 0.8470 | 0.8908 | 0.8650 | B |
| | | | .9223 | .9364 | .8815 | .9115 | .9364 | .8762 | .8836 | .8464 | .8906 | .8644 | |
| | | 3A | .9246 | .9375 | .8834 | .9153 | .9375 | .8792 | .8834 | .8470 | .8889 | .8575 | 3B |
| | | | .9240 | .9381 | .8832 | .9147 | .9381 | .8794 | .8836 | .8464 | .8887 | .8569 | |
| 15/16-16 or 0.9375-16 | UN | 2A | .9255 | .9360 | .8954 | .9175 | .9360 | .8904 | .8969 | .8700 | .9034 | .8840 | 2B |
| | | | .9249 | .9366 | .8952 | .9169 | .9366 | .8906 | .8971 | .8694 | .9032 | .8834 | |
| | | 3A | .9270 | .9375 | .8969 | .9203 | .9375 | .8932 | .8969 | .8700 | .9018 | .8783 | 3B |
| | | | .9264 | .9381 | .8967 | .9197 | .9381 | .8934 | .8971 | .8694 | .9016 | .8777 | |
| 15/16-20 or 0.9375-20 | UNEF | 2A | .9271 | .9361 | .90360 | .9208 | .9361 | .89910 | .90500 | .8830 | .91090 | .8950 | 2B |
| | | | .9266 | .9366 | .90345 | .9203 | .9366 | .89925 | .90515 | .8825 | .91075 | .8945 | |
| | | 3A | .9285 | .9375 | .90500 | .9233 | .9375 | .90160 | .90500 | .8830 | .90940 | .8912 | 3B |
| | | | .9280 | .9380 | .90485 | .9228 | .9380 | .90175 | .90515 | .8825 | .90925 | .8907 | |
| 15/16-28 or 0.9375-28 | UN | 2A | .9292 | .9363 | .91310 | .9246 | .9363 | .90910 | .91430 | .8990 | .91950 | .9070 | 2B |
| | | | .9287 | .9368 | .91295 | .9241 | .9368 | .90925 | .91445 | .8985 | .91935 | .9065 | |
| | | 3A | .9304 | .9375 | .91430 | .9268 | .9375 | .91130 | .91430 | .8990 | .91820 | .9051 | 3B |
| | | | .9299 | .9380 | .91415 | .9263 | .9380 | .91145 | .91445 | .8985 | .91805 | .9046 | |
| 15/16-32 or 0.9375-32 | UN | 2A | .9299 | .9364 | .91610 | .9258 | .9364 | .91230 | .91720 | .9040 | .92210 | .9110 | 2B |
| | | | .9294 | .9369 | .91595 | .9253 | .9369 | .91245 | .91735 | .9035 | .92195 | .9105 | |
| | | 3A | .9310 | .9375 | .91720 | .9279 | .9375 | .91440 | .91720 | .9040 | .92090 | .9094 | 3B |
| | | | .9305 | .9380 | .91705 | .9274 | .9380 | .91455 | .91735 | .9035 | .92075 | .9089 | |
| 1-8 or 1.000-8 | UNC | 1A | .9809 | .9980 | .9168 | .9608 | .9980 | .9067 | .9188 | .8650 | .9320 | .8900 | 1B |
| | | | .9802 | .9987 | .9166 | .9601 | .9987 | .9069 | .9190 | .8643 | .9318 | .8893 | |
| | | 2A | .9809 | .9980 | .9168 | .9641 | .9980 | .9100 | .9188 | .8650 | .9276 | .8900 | 2B |
| | | | .9802 | .9987 | .9166 | .9634 | .9987 | .9102 | .9190 | .8643 | .9274 | .8893 | |
| | | 3A | .9829 | 1.0000 | .9188 | .9678 | 1.0000 | .9137 | .9188 | .8650 | .9254 | .8797 | 3B |
| | | | .9822 | 1.0007 | .9186 | .9671 | 1.0007 | .9139 | .9190 | .8643 | .9252 | .8790 | |
| 1-12 or 1.000-12 | UNF | 1A | .9853 | .9982 | .9441 | .9714 | .9982 | .9353 | .9459 | .9100 | .9573 | .9280 | 1B |
| | | | .9847 | .9988 | .9439 | .9708 | .9988 | .9355 | .9961 | .9094 | .9571 | .9274 | |
| | | 2A | .9853 | .9982 | .9441 | .9743 | .9982 | .9382 | .9459 | .9100 | .9535 | .9280 | 2B |
| | | | .9847 | .9988 | .9439 | .9737 | .9988 | .9384 | .9461 | .9094 | .9533 | .9274 | |
| | | 3A | .9871 | 1.0000 | .9459 | .9776 | 1.0000 | .9415 | .9479 | .9100 | .9516 | .9198 | 3B |
| | | | .9865 | 1.0006 | .9457 | .9770 | 1.0006 | .9417 | .9461 | .9094 | .9514 | .9192 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1-16 or 1.000-16 | UN | 2A | 0.9880 | 0.9985 | 0.9579 | 0.9800 | 0.9985 | 0.9529 | 0.9594 | 0.9320 | 0.9659 | 0.9460 | 2B |
| | | | .9874 | .9991 | .9577 | .9794 | .9991 | .9531 | .9596 | .9314 | .9657 | .9454 | |
| | | 3A | .9895 | 1.0000 | .9594 | .9828 | 1.0000 | .9557 | .9594 | .9320 | .9643 | .9408 | 3B |
| | | | .9889 | 1.0006 | .9592 | .9822 | 1.0006 | .9559 | .9596 | .9314 | .9641 | .9402 | |
| 1-20 or 1.000-20 | UNEF | 2A | .9896 | .9986 | .96610 | .9833 | .9986 | .96160 | .96750 | .9460 | .97340 | .9570 | 2B |
| | | | .9891 | .9991 | .96595 | .9828 | .9991 | .96175 | .96765 | .9455 | .97325 | .9565 | |
| | | 3A | .9910 | 1.0000 | .96750 | .9858 | 1.0000 | .96410 | .96750 | .9460 | .97190 | .9537 | 3B |
| | | | .9905 | 1.0005 | .96735 | .9853 | 1.0005 | .96425 | .96765 | .9455 | .97175 | .9532 | |
| 1-28 or 1.000-28 | UN | 2A | .9917 | .9988 | .97560 | .9871 | .9988 | .97160 | .97680 | .9610 | .98200 | .9700 | 2B |
| | | | .9912 | .9993 | .97545 | .9866 | .9993 | .97175 | .97695 | .9605 | .98185 | .9695 | |
| | | 3A | .9929 | 1.0000 | .97680 | .9893 | 1.0000 | .97380 | .97680 | .9610 | .98070 | .9676 | 3B |
| | | | .9924 | 1.0005 | .97665 | .9888 | 1.0005 | .97395 | .97695 | .9605 | .98055 | .9671 | |
| 1-32 or 1.000-32 | UN | 2A | .9924 | .9989 | .97860 | .9883 | .9989 | .97480 | .97970 | .9660 | .98460 | .9740 | 2B |
| | | | .9919 | .9994 | .97845 | .9878 | .9994 | .97495 | .97985 | .9655 | .98445 | .9735 | |
| | | 3A | .9935 | 1.0000 | .97970 | .9904 | 1.0000 | .97690 | .97970 | .9660 | .98340 | .9719 | 3B |
| | | | .9930 | 1.0005 | .97955 | .9899 | 1.0005 | .97705 | .97985 | .9655 | .98325 | .9714 | |
| 1 1/16-8 or 1.0625-8 | UN | 2A | 1.0434 | 1.0605 | .9793 | 1.0266 | 1.0605 | .9725 | .9813 | .9270 | .9902 | .9520 | 2B |
| | | | 1.0427 | 1.0612 | .9791 | 1.0259 | 1.0612 | .9727 | .9815 | .9263 | .9900 | .9513 | |
| | | 3A | 1.0454 | 1.0625 | .9813 | 1.0303 | 1.0625 | .9762 | .9813 | .9270 | .9880 | .9422 | 3B |
| | | | 1.0447 | 1.0632 | .9811 | 1.0296 | 1.0632 | .9764 | .9815 | .9263 | .9878 | .9415 | |
| 1 1/16-12 or 1.0625-12 | UN | 2A | 1.0479 | 1.0608 | 1.0067 | 1.0371 | 1.0608 | 1.0010 | 1.0084 | .9720 | 1.0158 | .9900 | 2B |
| | | | 1.0473 | 1.0614 | 1.0065 | 1.0365 | 1.0614 | 1.0012 | 1.0086 | .9714 | 1.0156 | .9894 | |
| | | 3A | 1.0496 | 1.0625 | 1.0084 | 1.0403 | 1.0625 | 1.0042 | 1.0084 | .9720 | 1.0139 | .9823 | 3B |
| | | | 1.0490 | 1.0631 | 1.0082 | 1.0397 | 1.0631 | 1.0044 | 1.0086 | .9714 | 1.0137 | .9817 | |
| 1 1/16-16 or 1.0625-16 | UN | 2A | 1.0505 | 1.0610 | 1.0204 | 1.0425 | 1.0610 | 1.0154 | 1.0219 | .9950 | 1.0284 | 1.0090 | 2B |
| | | | 1.0499 | 1.0616 | 1.0202 | 1.0419 | 1.0616 | 1.0156 | 1.0221 | .9944 | 1.0282 | 1.0084 | |
| | | 3A | 1.0520 | 1.0625 | 1.0219 | 1.0453 | 1.0625 | 1.0182 | 1.0219 | .9950 | 1.0268 | 1.0033 | 3B |
| | | | 1.0514 | 1.0631 | 1.0217 | 1.0447 | 1.0631 | 1.0184 | 1.0221 | .9944 | 1.0266 | 1.0027 | |
| 1 1/16-18 or 1.0625-18 | UNEF | 2A | 1.0514 | 1.0611 | 1.02500 | 1.0444 | 1.0611 | 1.02030 | 1.02640 | 1.0020 | 1.03260 | 1.0150 | 2B |
| | | | 1.0509 | 1.0616 | 1.02485 | 1.0439 | 1.0616 | 1.02045 | 1.02655 | 1.0015 | 1.03245 | 1.0145 | |
| | | 3A | 1.0528 | 1.0625 | 1.02640 | 1.0469 | 1.0625 | 1.02280 | 1.02640 | 1.0020 | 1.03100 | 1.0105 | 3B |
| | | | 1.0523 | 1.0630 | 1.02625 | 1.0464 | 1.0630 | 1.02295 | 1.02655 | 1.0015 | 1.03085 | 1.0100 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 1/16-20 or 1.0625-20 | UN | 2A | 1.0521 | 1.0611 | 1.02860 | 1.0458 | 1.0611 | 1.02410 | 1.03000 | 1.0080 | 1.03590 | 1.0200 | 2B |
| | | | 1.0516 | 1.0616 | 1.02845 | 1.0453 | 1.0616 | 1.02425 | 1.03015 | 1.0075 | 1.03575 | 1.0195 | |
| | | 3A | 1.0535 | 1.0625 | 1.03000 | 1.0483 | 1.0625 | 1.02660 | 1.03000 | 1.0080 | 1.03440 | 1.0162 | 3B |
| | | | 1.0530 | 1.0630 | 1.02985 | 1.0478 | 1.0630 | 1.02675 | 1.03015 | 1.0075 | 1.03425 | 1.0157 | |
| 1 1/16-28 or 1.0625-28 | UN | 2A | 1.0542 | 1.0613 | 1.03810 | 1.0496 | 1.0613 | 1.03410 | 1.03930 | 1.0240 | 1.04450 | 1.0320 | 2B |
| | | | 1.0537 | 1.0618 | 1.03795 | 1.0491 | 1.0618 | 1.03425 | 1.03945 | 1.0235 | 1.04435 | 1.0315 | |
| | | 3A | 1.0554 | 1.0625 | 1.03930 | 1.0518 | 1.0625 | 1.03630 | 1.03930 | 1.0240 | 1.04320 | 1.0301 | 3B |
| | | | 1.0549 | 1.0630 | 1.03915 | 1.0513 | 1.0630 | 1.03645 | 1.03945 | 1.0235 | 1.04305 | 1.0296 | |
| 1 1/8-7 or 1.125-7 | UNC | 1A | 1.1040 | 1.1228 | 1.0300 | 1.0810 | 1.1228 | 1.0191 | 1.0322 | .9700 | 1.0463 | .9980 | 1B |
| | | | 1.1033 | 1.1235 | 1.0298 | 1.0803 | 1.1235 | 1.0193 | 1.0324 | .9693 | 1.0461 | .9973 | |
| | | 2A | 1.1040 | 1.1228 | 1.0300 | 1.0847 | 1.1228 | 1.0228 | 1.0322 | .9700 | 1.0416 | .9980 | 2B |
| | | | 1.1033 | 1.1235 | 1.0298 | 1.0840 | 1.1235 | 1 0230 | 1.0324 | .9693 | 1.0414 | .9973 | |
| | | 3A | 1.1062 | 1.1250 | 1.0322 | 1.0887 | 1.1250 | 1.0268 | 1.0322 | .9700 | 1.0393 | .9875 | 3B |
| | | | 1.1055 | 1.1257 | 1.0320 | 1.0880 | 1.1257 | 1.0270 | 1.0324 | .9693 | 1.0391 | .9868 | |
| 1 1/8-8 or 1.125-8 | UN | 2A | 1.1058 | 1.1229 | 1.0417 | 1.0889 | 1.1229 | 1.0348 | 1.0438 | .9900 | 1.0528 | 1.0150 | 2B |
| | | | 1.1051 | 1.1236 | 1.0415 | 1.0882 | 1.1236 | 1.0350 | 1.0440 | .9893 | 1.0526 | 1.0143 | |
| | | 3A | 1.1079 | 1.1250 | 1.0438 | 1.0927 | 1.1250 | 1.0386 | 1.0438 | .9900 | 1.0505 | 1.0047 | 3B |
| | | | 1.1072 | 1.1257 | 1.0436 | 1.0920 | 1.1257 | 1.0388 | 1.0440 | .9893 | 1.0503 | 1.0040 | |
| 1 1/8-12 or 1.125-12 | UNF | 1A | 1.1103 | 1.1232 | 1.0691 | 1.0962 | 1.1232 | 1.0601 | 1.0709 | 1.0350 | 1.0826 | 1.0530 | 1B |
| | | | 1.1097 | 1.1238 | 1.0689 | 1.0956 | 1.1238 | 1.0603 | 1.0711 | 1.0344 | 1.0824 | 1.0524 | |
| | | 2A | 1.1103 | 1.1232 | 1.0691 | 1.0992 | 1.1232 | 1.0631 | 1.0709 | 1.0350 | 1.0787 | 1.0530 | 2B |
| | | | 1.1097 | 1.1238 | 1.0689 | 1.0986 | 1.1238 | 1.0633 | 1.0711 | 1.0344 | 1.0785 | 1.0524 | |
| | | 3A | 1.1121 | 1.1250 | 1.0709 | 1.1025 | 1.1250 | 1.0664 | 1.0709 | 1.0350 | 1.0768 | 1.0448 | 3B |
| | | | 1.1115 | 1.1256 | 1.0707 | 1.1019 | 1.1256 | 1.0666 | 1.0711 | 1.0344 | 1.0766 | 1.0442 | |
| 1 1/8-16 or 1.125-16 | UN | 2A | 1.1130 | 1.1235 | 1.0829 | 1.1050 | 1.1235 | 1.0779 | 1.0844 | 1.0570 | 1.0909 | 1.0710 | 2B |
| | | | 1.1124 | 1.1241 | 1.0827 | 1.1044 | 1.1241 | 1.0781 | 1.0846 | 1.0564 | 1.0907 | 1.0704 | |
| | | 3A | 1.1145 | 1.1250 | 1.0844 | 1.1078 | 1.1250 | 1.0807 | 1.0844 | 1.0570 | 1.0893 | 1.0658 | 3B |
| | | | 1.1139 | 1.1256 | 1.0842 | 1.1072 | 1.1256 | 1.0809 | 1.0846 | 1.0564 | 1.0891 | 1.0652 | |
| 1 1/8-18 or 1.125-18 | UNEF | 2A | 1.1139 | 1.1236 | 1.08750 | 1.1069 | 1.1236 | 1.08280 | 1.08890 | 1.0650 | 1.09510 | 1.0780 | 2B |
| | | | 1.1134 | 1.1241 | 1.08735 | 1.1064 | 1.1241 | 1.08295 | 1.08905 | 1.0645 | 1.09495 | 1.0775 | |
| | | 3A | 1.1153 | 1.1250 | 1.08890 | 1.1094 | 1.1250 | 1.08530 | 1.08890 | 1.0650 | 1.09350 | 1.0730 | 3B |
| | | | 1.1148 | 1.1255 | 1.08875 | 1.1089 | 1.1255 | 1.08545 | 1.08905 | 1.0645 | 1.09335 | 1.0725 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1⅛-20 or 1.125-20 | UN | 2A | 1.1146 | 1.1236 | 1.09110 | 1.1083 | 1.1236 | 1.08660 | 1.09250 | 1.0710 | 1.09840 | 1.0820 | 2B |
| | | | 1.1141 | 1.1241 | 1.09095 | 1.1078 | 1.1241 | 1.08675 | 1.09265 | 1.0705 | 1.09825 | 1.0815 | |
| | | 3A | 1.1160 | 1.1250 | 1.09250 | 1.1108 | 1.1250 | 1.08910 | 1.09250 | 1.0710 | 1.09690 | 1.0787 | 3B |
| | | | 1.1155 | 1.1255 | 1.09235 | 1.1103 | 1.1255 | 1.08925 | 1.09265 | 1.0705 | 1.09675 | 1.0782 | |
| 1⅛-28 or 1.125-28 | UN | 2A | 1.1167 | 1.1238 | 1.10060 | 1.1121 | 1.1238 | 1.09660 | 1.10180 | 1.0860 | 1.10700 | 1.0950 | 2B |
| | | | 1.1162 | 1.1243 | 1.10045 | 1.1116 | 1.1243 | 1.09675 | 1.10195 | 1.0855 | 1.10685 | 1.0945 | |
| | | 3A | 1.1179 | 1.1250 | 1.10180 | 1.1143 | 1.1250 | 1.09880 | 1.10180 | 1.0860 | 1.10570 | 1.0926 | 3B |
| | | | 1.1174 | 1.1255 | 1.10165 | 1.1138 | 1.1255 | 1.09895 | 1.10195 | 1.0855 | 1.10555 | 1.0921 | |
| 1³⁄₁₆-8 or 1.1875-8 | UN | 2A | 1.1683 | 1.1854 | 1.1042 | 1.1513 | 1.1854 | 1.0972 | 1.1063 | 1.0520 | 1.1154 | 1.0770 | 2B |
| | | | 1.1676 | 1.1861 | 1.1040 | 1.1506 | 1.1861 | 1.0974 | 1.1065 | 1.0513 | 1.1152 | 1.0763 | |
| | | 3A | 1.1704 | 1.1875 | 1.1063 | 1.1552 | 1.1875 | 1.1011 | 1.1063 | 1.0520 | 1.1131 | 1.0672 | 3B |
| | | | 1.1697 | 1.1882 | 1.1061 | 1.1545 | 1.1882 | 1.1013 | 1.1065 | 1.0513 | 1.1129 | 1.0665 | |
| 1³⁄₁₆-12 or 1.1875-12 | UN | 2A | 1.1729 | 1.1858 | 1.1317 | 1.1620 | 1.1858 | 1.1259 | 1.1334 | 1.0970 | 1.1409 | 1.1150 | 2B |
| | | | 1.1723 | 1.1864 | 1.1315 | 1.1614 | 1.1864 | 1.1261 | 1.1336 | 1.0964 | 1.1407 | 1.1144 | |
| | | 3A | 1.1746 | 1.1875 | 1.1334 | 1.1652 | 1.1875 | 1.1291 | 1.1334 | 1.0970 | 1.1390 | 1.1073 | 3B |
| | | | 1.1740 | 1.1881 | 1.1332 | 1.1646 | 1.1881 | 1.1293 | 1.1336 | 1.0964 | 1.1388 | 1.1067 | |
| 1³⁄₁₆-16 or 1.1875-16 | UN | 2A | 1.1755 | 1.1860 | 1.1454 | 1.1674 | 1.1860 | 1.1403 | 1.1469 | 1.1200 | 1.1535 | 1.1340 | 2B |
| | | | 1.1749 | 1.1866 | 1.1452 | 1.1668 | 1.1866 | 1.1405 | 1.1471 | 1.1194 | 1.1533 | 1.1334 | |
| | | 3A | 1.1770 | 1.1875 | 1.1469 | 1.1702 | 1.1875 | 1.1431 | 1.1469 | 1.1200 | 1.1519 | 1.1283 | 3B |
| | | | 1.1764 | 1.1881 | 1.1467 | 1.1696 | 1.1881 | 1.1433 | 1.1471 | 1.1194 | 1.1517 | 1.1277 | |
| 1³⁄₁₆-18 or 1.1875-18 | UNEF | 2A | 1.1763 | 1.1860 | 1.14990 | 1.1691 | 1.1860 | 1.14500 | 1.15140 | 1.1270 | 1.15770 | 1.1400 | 2B |
| | | | 1.1758 | 1.1865 | 1.14975 | 1.1686 | 1.1865 | 1.14515 | 1.15155 | 1.1265 | 1.15755 | 1.1395 | |
| | | 3A | 1.1778 | 1.1875 | 1.15140 | 1.1719 | 1.1875 | 1.14780 | 1.15140 | 1.1270 | 1.15610 | 1.1355 | 3B |
| | | | 1.1773 | 1.1880 | 1.15125 | 1.1714 | 1.1880 | 1.14795 | 1.15155 | 1.1265 | 1.15595 | 1.1350 | |
| 1³⁄₁₆-20 or 1.1875-20 | UN | 2A | 1.1771 | 1.1861 | 1.15360 | 1.1706 | 1.1861 | 1.14890 | 1.15500 | 1.1330 | 1.16110 | 1.1450 | 2B |
| | | | 1.1766 | 1.1866 | 1.15345 | 1.1701 | 1.1866 | 1.14905 | 1.15515 | 1.1325 | 1.16095 | 1.1445 | |
| | | 3A | 1.1785 | 1.1875 | 1.15500 | 1.1732 | 1.1875 | 1.15150 | 1.15500 | 1.1330 | 1.15950 | 1.1412 | 3B |
| | | | 1.1780 | 1.1880 | 1.15485 | 1.1727 | 1.1880 | 1.15165 | 1.15515 | 1.1325 | 1.15935 | 1.1407 | |
| 1³⁄₁₆-28 or 1.1875-28 | UN | 2A | 1.1792 | 1.1863 | 1.16310 | 1.1745 | 1.1863 | 1.15900 | 1.16430 | 1.1490 | 1.16960 | 1.1570 | 2B |
| | | | 1.1787 | 1.1868 | 1.16295 | 1.1740 | 1.1868 | 1.15915 | 1.16445 | 1.1485 | 1.16945 | 1.1565 | |
| | | 3A | 1.1804 | 1.1875 | 1.16430 | 1.1767 | 1.1875 | 1.16120 | 1.16430 | 1.1490 | 1.16830 | 1.1551 | 3B |
| | | | 1.1799 | 1.1880 | 1.16415 | 1.1762 | 1.1880 | 1.16135 | 1.16445 | 1.1485 | 1.16815 | 1.1546 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1¼-7 or 1.250-7 | UNC | 1A | 1.2290 | 1.2478 | 1.1550 | 1.2058 | 1.2478 | 1.1439 | 1.1572 | 1.0950 | 1.1716 | 1.1230 | 1B |
| | | | 1.2283 | 1.2485 | 1.1548 | 1.2051 | 1.2485 | 1.1441 | 1.1574 | 1.0943 | 1.1714 | 1.1223 | |
| | | 2A | 1.2290 | 1.2478 | 1.1550 | 1.2095 | 1.2478 | 1.1476 | 1.1572 | 1.0950 | 1.1668 | 1.1230 | 2B |
| | | | 1.2283 | 1.2485 | 1.1548 | 1.2088 | 1.2485 | 1.1478 | 1.1574 | 1.0943 | 1.1666 | 1.1223 | |
| | | 3A | 1.2312 | 1.2500 | 1.1572 | 1.2136 | 1.2500 | 1.1517 | 1.1572 | 1.0950 | 1.1644 | 1.1125 | 3B |
| | | | 1.2305 | 1.2507 | 1.1570 | 1.2129 | 1.2507 | 1.1519 | 1.1574 | 1.0943 | 1.1642 | 1.1118 | |
| 1¼-8 or 1.250-8 | UN | 2A | 1.2308 | 1.2479 | 1.1667 | 1.2138 | 1.2479 | 1.1597 | 1.1688 | 1.1150 | 1.1780 | 1.1400 | 2B |
| | | | 1.2301 | 1.2486 | 1.1665 | 1.2131 | 1.2486 | 1.1599 | 1.1690 | 1.1143 | 1.1778 | 1.1393 | |
| | | 3A | 1.2329 | 1.2500 | 1.1688 | 1.2176 | 1.2500 | 1.1635 | 1.1688 | 1.1150 | 1.1757 | 1.1297 | 3B |
| | | | 1.2322 | 1.2507 | 1.1686 | 1.2169 | 1.2507 | 1.1637 | 1.1690 | 1.1143 | 1.1755 | 1.1290 | |
| 1¼-12 or 1.250-12 | UNF | 1A | 1.2353 | 1.2482 | 1.1941 | 1.2210 | 1.2482 | 1.1849 | 1.1959 | 1.1600 | 1.2079 | 1.1780 | 1B |
| | | | 1.2347 | 1.2488 | 1.1939 | 1.2204 | 1.2488 | 1.1851 | 1.1961 | 1.1594 | 1.2077 | 1.1774 | |
| | | 2A | 1.2353 | 1.2482 | 1.1941 | 1.2240 | 1.2482 | 1.1879 | 1.1959 | 1.1600 | 1.2039 | 1.1780 | 2B |
| | | | 1.2347 | 1.2488 | 1.1939 | 1.2234 | 1.2488 | 1.1881 | 1.1961 | 1.1594 | 1.2037 | 1.1774 | |
| | | 3A | 1.2371 | 1.2500 | 1.1959 | 1.2274 | 1.2500 | 1.1913 | 1.1959 | 1.1600 | 1.2019 | 1.1698 | 3B |
| | | | 1.2365 | 1.2506 | 1.1957 | 1.2268 | 1.2506 | 1.1915 | 1.1961 | 1.1594 | 1.2017 | 1.1692 | |
| 1¼-16 or 1.250-16 | UN | 2A | 1.2380 | 1.2485 | 1.2079 | 1.2299 | 1.2485 | 1.2028 | 1.2094 | 1.1820 | 1.2160 | 1.1960 | 2B |
| | | | 1.2374 | 1.2491 | 1.2077 | 1.2293 | 1.2491 | 1.2030 | 1.2096 | 1.1814 | 1.2158 | 1.1954 | |
| | | 3A | 1.2395 | 1.2500 | 1.2094 | 1.2327 | 1.2500 | 1.2056 | 1.2094 | 1.1820 | 1.2144 | 1.1908 | 3B |
| | | | 1.2389 | 1.2506 | 1.2092 | 1.2321 | 1.2506 | 1.2058 | 1.2096 | 1.1814 | 1.2142 | 1.1902 | |
| 1¼-18 or 1.250-18 | UNEF | 2A | 1.2388 | 1.2485 | 1.21240 | 1.2316 | 1.2485 | 1.20750 | 1.21390 | 1.1900 | 1.22020 | 1.2030 | 2B |
| | | | 1.2383 | 1.2490 | 1.21225 | 1.2311 | 1.2490 | 1.20765 | 1.21405 | 1.1895 | 1.22005 | 1.2025 | |
| | | 3A | 1.2403 | 1.2500 | 1.21390 | 1.2344 | 1.2500 | 1.21030 | 1.21390 | 1.1900 | 1.21860 | 1.1980 | 3B |
| | | | 1.2398 | 1.2505 | 1.21375 | 1.2339 | 1.2505 | 1.21045 | 1.21405 | 1.1895 | 1.21845 | 1.1975 | |
| 1¼-20 or 1.250-20 | UN | 2A | 1.2396 | 1.2486 | 1.21610 | 1.2331 | 1.2486 | 1.21140 | 1.21750 | 1.1960 | 1.22360 | 1.2070 | 2B |
| | | | 1.2391 | 1.2491 | 1.21595 | 1.2326 | 1.2491 | 1.21155 | 1.21765 | 1.1955 | 1.22345 | 1.2065 | |
| | | 3A | 1.2410 | 1.2500 | 1.21750 | 1.2357 | 1.2500 | 1.21400 | 1.21750 | 1.1960 | 1.22200 | 1.2037 | 3B |
| | | | 1.2405 | 1.2505 | 1.21735 | 1.2352 | 1.2505 | 1.21415 | 1.21765 | 1.1955 | 1.22185 | 1.2032 | |
| 1¼-28 or 1.250-28 | UN | 2A | 1.2417 | 1.2488 | 1.22560 | 1.2370 | 1.2488 | 1.22150 | 1.22680 | 1.2110 | 1.23210 | 1.2200 | 2B |
| | | | 1.2412 | 1.2493 | 1.22545 | 1.2365 | 1.2493 | 1.22165 | 1.22695 | 1.2105 | 1.23195 | 1.2195 | |
| | | 3A | 1.2429 | 1.2500 | 1.22680 | 1.2392 | 1.2500 | 1.22370 | 1.22680 | 1.2110 | 1.23080 | 1.2176 | 3B |
| | | | 1.2424 | 1.2505 | 1.22665 | 1.2387 | 1.2505 | 1.22385 | 1.22695 | 1.2105 | 1.23065 | 1.2171 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 5/16-8 or 1.3125-8 | UN | 2A | 1.2933 | 1.3104 | 1.2292 | 1.2762 | 1.3104 | 1.2221 | 1.2313 | 1.1770 | 1.2405 | 1.2020 | 2B |
| | | | 1.2926 | 1.3111 | 1.2290 | 1.2755 | 1.3111 | 1.2223 | 1.2315 | 1.1763 | 1.2403 | 1.2013 | |
| | | 3A | 1.2954 | 1.3125 | 1.2313 | 1.2801 | 1.3125 | 1.2260 | 1.2313 | 1.1770 | 1.2382 | 1.1922 | 3B |
| | | | 1.2947 | 1.3132 | 1.2311 | 1.2794 | 1.3132 | 1.2262 | 1.2315 | 1.1763 | 1.2380 | 1.1915 | |
| 1 5/16-12 or 1.3125-12 | UN | 2A | 1.2979 | 1.3108 | 1.2567 | 1.2870 | 1.3108 | 1.2509 | 1.2584 | 1.2220 | 1.2659 | 1.2400 | 2B |
| | | | 1.2973 | 1.3114 | 1.2565 | 1.2864 | 1.3114 | 1.2511 | 1.2586 | 1.2214 | 1.2657 | 1.2394 | |
| | | 3A | 1.2996 | 1.3125 | 1.2584 | 1.2902 | 1.3125 | 1.2541 | 1.2584 | 1.2220 | 1.2640 | 1.2323 | 3B |
| | | | 1.2990 | 1.3131 | 1.2582 | 1.2896 | 1.3131 | 1.2543 | 1.2586 | 1.2214 | 1.2638 | 1.2317 | |
| 1 5/16-16 or 1.3125-16 | UN | 2A | 1.3005 | 1.3110 | 1.2704 | 1.2924 | 1.3110 | 1.2653 | 1.2719 | 1.2450 | 1.2785 | 1.2590 | 2B |
| | | | 1.2999 | 1.3116 | 1.2702 | 1.2918 | 1.3116 | 1.2655 | 1.2721 | 1.2444 | 1.2783 | 1.2584 | |
| | | 3A | 1.3020 | 1.3125 | 1.2719 | 1.2952 | 1.3125 | 1.2681 | 1.2719 | 1.2450 | 1.2769 | 1.2533 | 3B |
| | | | 1.3014 | 1.3131 | 1.2717 | 1.2946 | 1.3131 | 1.2683 | 1.2721 | 1.2444 | 1.2767 | 1.2527 | |
| 1 5/16-18 or 1.3125-18 | UNEF | 2A | 1.3013 | 1.3110 | 1.27490 | 1.2941 | 1.3110 | 1.27000 | 1.27640 | 1.2520 | 1.28270 | 1.2650 | 2B |
| | | | 1.3008 | 1.3115 | 1.27475 | 1.2936 | 1.3115 | 1.27015 | 1.27655 | 1.2515 | 1.28255 | 1.2645 | |
| | | 3A | 1.3028 | 1.3125 | 1.27640 | 1.2969 | 1.3125 | 1.27280 | 1.27640 | 1.2520 | 1.28110 | 1.2605 | 3B |
| | | | 1.3023 | 1.3130 | 1.27625 | 1.2964 | 1.3130 | 1.27295 | 1.27655 | 1.2515 | 1.28095 | 1.2600 | |
| 1 5/16-20 or 1.3125-20 | UN | 2A | 1.3021 | 1.3111 | 1.27860 | 1.2956 | 1.3111 | 1.27390 | 1.28000 | 1.2580 | 1.28610 | 1.2700 | 2B |
| | | | 1.3016 | 1.3116 | 1.27845 | 1.2951 | 1.3116 | 1.27405 | 1.28015 | 1.2575 | 1.28595 | 1.2695 | |
| | | 3A | 1.3035 | 1.3125 | 1.28000 | 1.2982 | 1.3125 | 1.27650 | 1.28000 | 1.2580 | 1.28450 | 1.2662 | 3B |
| | | | 1.3030 | 1.3130 | 1.27985 | 1.2977 | 1.3130 | 1.27665 | 1.28015 | 1.2575 | 1.28435 | 1.2657 | |
| 1 5/16-28 or 1.3125-28 | UN | 2A | 1.3042 | 1.3113 | 1.28810 | 1.2995 | 1.3113 | 1.28400 | 1.28930 | 1.2740 | 1.29460 | 1.2820 | 2B |
| | | | 1.3037 | 1.3118 | 1.28795 | 1.2990 | 1.3118 | 1.28415 | 1.28945 | 1.2735 | 1.29445 | 1.2815 | |
| | | 3A | 1.3054 | 1.3125 | 1.28930 | 1.3017 | 1.3125 | 1.28620 | 1.28930 | 1.2740 | 1.29330 | 1.2801 | 3B |
| | | | 1.3049 | 1.3130 | 1.28915 | 1.3012 | 1.3130 | 1.28635 | 1.28945 | 1.2735 | 1.29315 | 1.2796 | |
| 1 3/8-6 or 1.375-6 | UNC | 1A | 1.3516 | 1.3726 | 1.2643 | 1.3245 | 1.3726 | 1.2523 | 1.2667 | 1.1950 | 1.2822 | 1.2250 | 1B |
| | | | 1.3508 | 1.3734 | 1.2641 | 1.3237 | 1.3734 | 1.2525 | 1.2669 | 1.1942 | 1.2820 | 1.2242 | |
| | | 2A | 1.3516 | 1.3726 | 1.2643 | 1.3285 | 1.3726 | 1.2563 | 1.2667 | 1.1950 | 1.2771 | 1.2250 | 2B |
| | | | 1.3508 | 1.3734 | 1.2641 | 1.3277 | 1.3734 | 1.2565 | 1.2669 | 1.1942 | 1.2769 | 1.2242 | |
| | | 3A | 1.3540 | 1.3750 | 1.2667 | 1.3329 | 1.3750 | 1.2607 | 1.2267 | 1.1950 | 1.2745 | 1.2146 | 3B |
| | | | 1.3532 | 1.3758 | 1.2665 | 1.3321 | 1.3758 | 1.2609 | 1.2269 | 1.1942 | 1.2743 | 1.2138 | |
| 1 3/8-8 or 1.375-8 | UN | 2A | 1.3557 | 1.3728 | 1.2916 | 1.3385 | 1.3728 | 1.2844 | 1.2938 | 1.2400 | 1.3031 | 1.2650 | 2B |
| | | | 1.3550 | 1.3735 | 1.2914 | 1.3378 | 1.3735 | 1.2846 | 1.2940 | 1.2393 | 1.3029 | 1.2643 | |
| | | 3A | 1.3579 | 1.3750 | 1.2938 | 1.3425 | 1.3750 | 1.2884 | 1.2938 | 1.2400 | 1.3008 | 1.2547 | 3B |
| | | | 1.3572 | 1.3757 | 1.2936 | 1.3418 | 1.3757 | 1.2886 | 1.2940 | 1.2393 | 1.3006 | 1.2540 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1⅜-12 or 1.375-12 | UNF | 1A | 1.3602 | 1.3731 | 1.3190 | 1.3457 | 1.3731 | 1.3096 | 1.3209 | 1.2850 | 1.3332 | 1.3030 | 1B |
| | | | 1.3596 | 1.3737 | 1.3188 | 1.3451 | 1.3737 | 1.3098 | 1.3211 | 1.2844 | 1.3330 | 1.3024 | |
| | | 2A | 1.3602 | 1.3731 | 1.3190 | 1.3488 | 1.3731 | 1.3127 | 1.3209 | 1.2850 | 1.3291 | 1.3030 | 2B |
| | | | 1.3596 | 1.3737 | 1.3188 | 1.3482 | 1.3737 | 1.3129 | 1.3211 | 1.2844 | 1.3289 | 1.3024 | |
| | | 3A | 1.3621 | 1.3750 | 1.3209 | 1.3523 | 1.3750 | 1.3162 | 1.3209 | 1.2850 | 1.3270 | 1.2948 | 3B |
| | | | 1.3615 | 1.3756 | 1.3207 | 1.3517 | 1.3756 | 1.3164 | 1.3211 | 1.2844 | 1.3268 | 1.2942 | |
| 1⅜-16 or 1.375-16 | UN | 2A | 1.3630 | 1.3735 | 1.3329 | 1.3549 | 1.3735 | 1.3278 | 1.3344 | 1.3070 | 1.3410 | 1.3210 | 2B |
| | | | 1.3624 | 1.3741 | 1.3327 | 1.3543 | 1.3741 | 1.3280 | 1.3346 | 1.3064 | 1.3408 | 1.3204 | |
| | | 3A | 1.3645 | 1.3750 | 1.3344 | 1.3577 | 1.3750 | 1.3306 | 1.3344 | 1.3070 | 1.3394 | 1.3158 | 3B |
| | | | 1.3639 | 1.3756 | 1.3342 | 1.3571 | 1.3756 | 1.3308 | 1.3346 | 1.3064 | 1.3392 | 1.3152 | |
| 1⅜-18 or 1.375-18 | UNEF | 2A | 1.3638 | 1.3735 | 1.33740 | 1.3566 | 1.3735 | 1.33250 | 1.33890 | 1.3150 | 1.34520 | 1.3280 | 2B |
| | | | 1.3633 | 1.3740 | 1.33725 | 1.3561 | 1.3740 | 1.33265 | 1.33905 | 1.3145 | 1.34505 | 1.3275 | |
| | | 3A | 1.3653 | 1.3750 | 1.33890 | 1.3594 | 1.3750 | 1.33530 | 1.33890 | 1.3150 | 1.34360 | 1.3230 | 3B |
| | | | 1.3648 | 1.3755 | 1.33875 | 1.3589 | 1.3755 | 1.33545 | 1.33905 | 1.3145 | 1.34345 | 1.3225 | |
| 1⅜-20 or 1.375-20 | UN | 2A | 1.3646 | 1.3736 | 1.34110 | 1.3581 | 1.3736 | 1.33640 | 1.34250 | 1.3210 | 1.34860 | 1.3320 | 2B |
| | | | 1.3641 | 1.3741 | 1.34095 | 1.3576 | 1.3741 | 1.33655 | 1.34265 | 1.3205 | 1.34845 | 1.3315 | |
| | | 3A | 1.3660 | 1.3750 | 1.34250 | 1.3607 | 1.3750 | 1.33900 | 1.34250 | 1.3210 | 1.34700 | 1.3287 | 3B |
| | | | 1.3655 | 1.3755 | 1.34235 | 1.3602 | 1.3755 | 1.33915 | 1.34265 | 1.3205 | 1.34685 | 1.3282 | |
| 1⅜-28 or 1.375-28 | UN | 2A | 1.3667 | 1.3738 | 1.35060 | 1.3620 | 1.3738 | 1.34650 | 1.35180 | 1.3360 | 1.35710 | 1.3450 | 2B |
| | | | 1.3662 | 1.3743 | 1.35045 | 1.3615 | 1.3743 | 1.34665 | 1.35195 | 1.3355 | 1.35695 | 1.3445 | |
| | | 3A | 1.3679 | 1.3750 | 1.35180 | 1.3642 | 1.3750 | 1.34870 | 1.35180 | 1.3360 | 1.35580 | 1.3426 | 3B |
| | | | 1.3674 | 1.3755 | 1.35165 | 1.3637 | 1.3755 | 1.34885 | 1.35195 | 1.3355 | 1.35565 | 1.3421 | |
| 1⁷⁄₁₆-6 or 1.4375-6 | UN | 2A | 1.4141 | 1.4351 | 1.3268 | 1.3910 | 1.4351 | 1.3188 | 1.3292 | 1.2570 | 1.3396 | 1.2880 | 2B |
| | | | 1.4133 | 1.4359 | 1.3266 | 1.3902 | 1.4359 | 1.3190 | 1.3294 | 1.2562 | 1.3394 | 1.2872 | |
| | | 3A | 1.4165 | 1.4375 | 1.3292 | 1.3954 | 1.4375 | 1.3232 | 1.3292 | 1.2570 | 1.3370 | 1.2771 | 3B |
| | | | 1.4157 | 1.4383 | 1.3290 | 1.3946 | 1.4383 | 1.3234 | 1.3294 | 1.2562 | 1.3368 | 1.2763 | |
| 1⁷⁄₁₆-8 or 1.4375-8 | UN | 2A | 1.4182 | 1.4353 | 1.3541 | 1.4010 | 1.4353 | 1.3469 | 1.3563 | 1.3020 | 1.3657 | 1.3270 | 2B |
| | | | 1.4175 | 1.4360 | 1.3539 | 1.4003 | 1.4360 | 1.3471 | 1.3565 | 1.3013 | 1.3655 | 1.3263 | |
| | | 3A | 1.4204 | 1.4375 | 1.3563 | 1.4050 | 1.4375 | 1.3509 | 1.3563 | 1.3020 | 1.3634 | 1.3172 | 3B |
| | | | 1.4197 | 1.4382 | 1.3561 | 1.4043 | 1.4382 | 1.3511 | 1.3565 | 1.3013 | 1.3632 | 1.3165 | |
| 1⁷⁄₁₆-12 or 1.4375-12 | UN | 2A | 1.4228 | 1.4357 | 1.3816 | 1.4118 | 1.4357 | 1.3757 | 1.3834 | 1.3470 | 1.3910 | 1.3650 | 2B |
| | | | 1.4222 | 1.4363 | 1.3814 | 1.4112 | 1.4363 | 1.3759 | 1.3836 | 1.3464 | 1.3908 | 1.3644 | |
| | | 3A | 1.4246 | 1.4375 | 1.3834 | 1.4151 | 1.4375 | 1.3790 | 1.3834 | 1.3470 | 1.3891 | 1.3573 | 3B |
| | | | 1.4240 | 1.4381 | 1.3832 | 1.4145 | 1.4381 | 1.3792 | 1.3836 | 1.3464 | 1.3889 | 1.3567 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 7/16-16 or 1.4375-16 | UN | 2A | 1.4254 | 1.4359 | 1.3953 | 1.4172 | 1.4359 | 1.3901 | 1.3969 | 1.3700 | 1.4037 | 1.3840 | 2B |
| | | | 1.4248 | 1.4365 | 1.3951 | 1.4166 | 1.4365 | 1.3903 | 1.3971 | 1.3694 | 1.4035 | 1.3834 | |
| | | 3A | 1.4270 | 1.4375 | 1.3969 | 1.4201 | 1.4375 | 1.3930 | 1.3969 | 1.3700 | 1.4020 | 1.3783 | 3B |
| | | | 1.4264 | 1.4381 | 1.3967 | 1.4195 | 1.4381 | 1.3932 | 1.3971 | 1.3694 | 1.4018 | 1.3777 | |
| 1 7/16-18 or 1.4375-18 | UNEF | 2A | 1.4263 | 1.4360 | 1.39990 | 1.4190 | 1.4360 | 1.39490 | 1.40140 | 1.3770 | 1.40790 | 1.3900 | 2B |
| | | | 1.4258 | 1.4365 | 1.39975 | 1.4185 | 1.4365 | 1.39505 | 1.40155 | 1.3765 | 1.40775 | 1.3895 | |
| | | 3A | 1.4278 | 1.4375 | 1.40140 | 1.4218 | 1.4375 | 1.39770 | 1.40140 | 1.3770 | 1.40620 | 1.3855 | 3B |
| | | | 1.4273 | 1.4380 | 1.40125 | 1.4213 | 1.4380 | 1.39785 | 1.40155 | 1.3765 | 1.40605 | 1.3850 | |
| 1 7/16-20 or 1.4375-20 | UN | 2A | 1.4271 | 1.4361 | 1.40360 | 1.4205 | 1.4361 | 1.39880 | 1.40500 | 1.3830 | 1.41120 | 1.3950 | 2B |
| | | | 1.4266 | 1.4366 | 1.40345 | 1.4200 | 1.4366 | 1.39895 | 1.40515 | 1.3825 | 1.41105 | 1.3945 | |
| | | 3A | 1.4285 | 1.4375 | 1.40500 | 1.4231 | 1.4375 | 1.40140 | 1.40500 | 1.3830 | 1.40960 | 1.3912 | 3B |
| | | | 1.4280 | 1.4380 | 1.40485 | 1.4226 | 1.4380 | 1.40155 | 1.40515 | 1.3825 | 1.40945 | 1.3907 | |
| 1 7/16-28 or 1.4375-28 | UN | 2A | 1.4291 | 1.4362 | 1.41300 | 1.4243 | 1.4362 | 1.40880 | 1.41430 | 1.3990 | 1.41980 | 1.4070 | 2B |
| | | | 1.4286 | 1.4367 | 1.41285 | 1.4238 | 1.4367 | 1.40895 | 1.41445 | 1.3985 | 1.41965 | 1.4065 | |
| | | 3A | 1.4304 | 1.4375 | 1.41430 | 1.4267 | 1.4375 | 1.41120 | 1.41430 | 1.3990 | 1.41840 | 1.4051 | 3B |
| | | | 1.4299 | 1.4380 | 1.41415 | 1.4262 | 1.4380 | 1.41135 | 1.41445 | 1.3985 | 1.41825 | 1.4046 | |
| 1 1/2-6 or 1.500-6 | UNC | 1A | 1.4766 | 1.4976 | 1.3893 | 1.4494 | 1.4976 | 1.3772 | 1.3917 | 1.3200 | 1.4075 | 1.3500 | 1B |
| | | | 1.4758 | 1.4984 | 1.3891 | 1.4486 | 1.4984 | 1.3774 | 1.3919 | 1.3192 | 1.4073 | 1.3492 | |
| | | 2A | 1.4766 | 1.4976 | 1.3893 | 1.4534 | 1.4976 | 1.3812 | 1.3917 | 1.3200 | 1.4022 | 1.3500 | 2B |
| | | | 1.4758 | 1.4984 | 1.3891 | 1.4526 | 1.4984 | 1.3814 | 1.3919 | 1.3192 | 1.4020 | 1.3492 | |
| | | 3A | 1.4790 | 1.5000 | 1.3917 | 1.4578 | 1.5000 | 1.3856 | 1.3917 | 1.3200 | 1.3996 | 1.3396 | 3B |
| | | | 1.4782 | 1.5008 | 1.3915 | 1.4570 | 1.5008 | 1.3858 | 1.3919 | 1.3192 | 1.3994 | 1.3388 | |
| 1 1/2-8 or 1.500-8 | UN | 2A | 1.4807 | 1.4978 | 1.4166 | 1.4634 | 1.4978 | 1.4093 | 1.4188 | 1.3650 | 1.4283 | 1.3900 | 2B |
| | | | 1.4800 | 1.4985 | 1.4164 | 1.4627 | 1.4985 | 1.4095 | 1.4190 | 1.3643 | 1.4281 | 1.3893 | |
| | | 3A | 1.4829 | 1.5000 | 1.4188 | 1.4674 | 1.5000 | 1.4133 | 1.4188 | 1.3650 | 1.4259 | 1.3797 | 3B |
| | | | 1.4822 | 1.5007 | 1.4186 | 1.4667 | 1.5007 | 1.4135 | 1.4190 | 1.3643 | 1.4257 | 1.3790 | |
| 1 1/2-12 or 1.500-12 | UNF | 1A | 1.4852 | 1.4981 | 1.4440 | 1.4705 | 1.4981 | 1.4344 | 1.4459 | 1.4100 | 1.4584 | 1.4280 | 1B |
| | | | 1.4846 | 1.4987 | 1.4438 | 1.4699 | 1.4987 | 1.4346 | 1.4461 | 1.4094 | 1.4582 | 1.4274 | |
| | | 2A | 1.4852 | 1.4981 | 1.4440 | 1.4737 | 1.4981 | 1.4376 | 1.4459 | 1.4100 | 1.4542 | 1.4280 | 2B |
| | | | 1.4846 | 1.4987 | 1.4438 | 1.4731 | 1.4987 | 1.4378 | 1.4461 | 1.4094 | 1.4540 | 1.4274 | |
| | | 3A | 1.4871 | 1.5000 | 1.4459 | 1.4772 | 1.5000 | 1.4411 | 1.4459 | 1.4100 | 1.4522 | 1.4198 | 3B |
| | | | 1.4865 | 1.5006 | 1.4457 | 1.4766 | 1.5006 | 1.4413 | 1.4461 | 1.4094 | 1.4520 | 1.4192 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1½-16 or 1.500-16 | UN | 2A | 1.4879 | 1.4984 | 1.4578 | 1.4797 | 1.4984 | 1.4526 | 1.4594 | 1.4320 | 1.4662 | 1.4460 | 2B |
| | | | 1.4873 | 1.4990 | 1.4576 | 1.4791 | 1.4990 | 1.4528 | 1.4596 | 1.4314 | 1.4660 | 1.4454 | |
| | | 3A | 1.4895 | 1.5000 | 1.4594 | 1.4826 | 1.5000 | 1.4555 | 1.4594 | 1.4320 | 1.4645 | 1.4408 | 3B |
| | | | 1.4889 | 1.5006 | 1.4592 | 1.4820 | 1.5006 | 1.4557 | 1.4596 | 1.4314 | 1.4643 | 1.4402 | |
| 1½-18 or 1.500-18 | UNEF | 2A | 1.4888 | 1.4985 | 1.46240 | 1.4815 | 1.4985 | 1.45740 | 1.46390 | 1.4400 | 1.47040 | 1.4520 | 2B |
| | | | 1.4883 | 1.4990 | 1.46225 | 1.4810 | 1.4990 | 1.45755 | 1.46405 | 1.4395 | 1.47025 | 1.4515 | |
| | | 3A | 1.4903 | 1.5000 | 1.46390 | 1.4843 | 1.5000 | 1.46020 | 1.46390 | 1.4400 | 1.46870 | 1.4480 | 3B |
| | | | 1.4898 | 1.5005 | 1.46375 | 1.4838 | 1.5005 | 1.46035 | 1.46405 | 1.4395 | 1.46855 | 1.4475 | |
| 1½-20 or 1.500-20 | UN | 2A | 1.4896 | 1.4986 | 1.46610 | 1.4830 | 1.4986 | 1.46130 | 1.46750 | 1.4460 | 1.47370 | 1.4570 | 2B |
| | | | 1.4891 | 1.4991 | 1.46595 | 1.4825 | 1.4991 | 1.46145 | 1.46765 | 1.4455 | 1.47355 | 1.4565 | |
| | | 3A | 1.4910 | 1.5000 | 1.46750 | 1.4856 | 1.5000 | 1.46390 | 1.46750 | 1.4460 | 1.47210 | 1.4537 | 3B |
| | | | 1.4905 | 1.5005 | 1.46735 | 1.4851 | 1.5005 | 1.46405 | 1.46765 | 1.4455 | 1.47195 | 1.4532 | |
| 1½-28 or 1.500-28 | UN | 2A | 1.4916 | 1.4987 | 1.47550 | 1.4868 | 1.4987 | 1.47130 | 1.47680 | 1.4610 | 1.48230 | 1.4700 | 2B |
| | | | 1.4911 | 1.4992 | 1.47535 | 1.4863 | 1.4992 | 1.47145 | 1.47695 | 1.4605 | 1.48215 | 1.4695 | |
| | | 3A | 1.4929 | 1.5000 | 1.47680 | 1.4892 | 1.5000 | 1.47370 | 1.47680 | 1.4610 | 1.48090 | 1.4676 | 3B |
| | | | 1.4924 | 1.5005 | 1.47665 | 1.4887 | 1.5005 | 1.47385 | 1.47695 | 1.4605 | 1.48075 | 1.4671 | |
| 1⁹⁄₁₆-6 or 1.5625-6 | UN | 2A | 1.5391 | 1.5601 | 1.45180 | 1.5158 | 1.5601 | 1.44360 | 1.45420 | 1.3820 | 1.46480 | 1.4130 | 2B |
| | | | 1.5383 | 1.5609 | 1.45155 | 1.5150 | 1.5609 | 1.44385 | 1.45445 | 1.3812 | 1.46455 | 1.4122 | |
| | | 3A | 1.5415 | 1.5625 | 1.45420 | 1.5203 | 1.5625 | 1.44810 | 1.45420 | 1.3820 | 1.46220 | 1.4021 | 3B |
| | | | 1.5407 | 1.5633 | 1.45395 | 1.5195 | 1.5633 | 1.44835 | 1.45445 | 1.3812 | 1.46195 | 1.4013 | |
| 1⁹⁄₁₆-8 or 1.5625-8 | UN | 2A | 1.5432 | 1.5603 | 1.47910 | 1.5258 | 1.5603 | 1.47170 | 1.48130 | 1.4270 | 1.49090 | 1.4520 | 2B |
| | | | 1.5425 | 1.5610 | 1.47885 | 1.5251 | 1.5610 | 1.47195 | 1.48155 | 1.4263 | 1.49065 | 1.4513 | |
| | | 3A | 1.5454 | 1.5625 | 1.48130 | 1.5299 | 1.5625 | 1.47580 | 1.48130 | 1.4270 | 1.48850 | 1.4422 | 3B |
| | | | 1.5447 | 1.5632 | 1.48105 | 1.5292 | 1.5632 | 1.47605 | 1.48155 | 1.4263 | 1.48825 | 1.4415 | |
| 1⁹⁄₁₆-12 or 1.5625-12 | UN | 2A | 1.5478 | 1.5607 | 1.50660 | 1.5368 | 1.5607 | 1.50070 | 1.50840 | 1.4720 | 1.51600 | 1.4900 | 2B |
| | | | 1.5472 | 1.5613 | 1.50635 | 1.5362 | 1.5613 | 1.50095 | 1.50865 | 1.4714 | 1.51575 | 1.4894 | |
| | | 3A | 1.5496 | 1.5625 | 1.50840 | 1.5401 | 1.5625 | 1.50400 | 1.50840 | 1.4720 | 1.51410 | 1.4823 | 3B |
| | | | 1.5490 | 1.5631 | 1.50815 | 1.5395 | 1.5631 | 1.50425 | 1.50865 | 1.4714 | 1.51385 | 1.4817 | |
| 1⁹⁄₁₆-16 or 1.5625-16 | UN | 2A | 1.5504 | 1.5609 | 1.52030 | 1.5422 | 1.5609 | 1.51510 | 1.52190 | 1.4950 | 1.52870 | 1.5090 | 2B |
| | | | 1.5498 | 1.5615 | 1.52005 | 1.5416 | 1.5615 | 1.51535 | 1.52215 | 1.4944 | 1.52845 | 1.5084 | |
| | | 3A | 1.5520 | 1.5625 | 1.52190 | 1.5451 | 1.5625 | 1.51800 | 1.52190 | 1.4950 | 1.52700 | 1.5033 | 3B |
| | | | 1.5514 | 1.5631 | 1.52165 | 1.5445 | 1.5631 | 1.51825 | 1.52215 | 1.4944 | 1.52675 | 1.5027 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 9/16-18 or 1.5625-18 | UNEF | 2A | 1.5513 | 1.5610 | 1.5249 | 1.5440 | 1.5610 | 1.5199 | 1.5264 | 1.5020 | 1.5329 | 1.5150 | 2B |
| | | | 1.5508 | 1.5615 | 1.5247 | 1.5435 | 1.5615 | 1.5201 | 1.5266 | 1.5015 | 1.5327 | 1.5145 | |
| | | 3A | 1.5528 | 1.5625 | 1.5264 | 1.5468 | 1.5625 | 1.5227 | 1.5264 | 1.5020 | 1.5312 | 1.5105 | 3B |
| | | | 1.5523 | 1.5630 | 1.5262 | 1.5463 | 1.5630 | 1.5229 | 1.5266 | 1.5015 | 1.5310 | 1.5100 | |
| 1 9/16-20 or 1.5625-20 | UN | 2A | 1.5521 | 1.5611 | 1.5286 | 1.5455 | 1.5611 | 1.5238 | 1.5300 | 1.5080 | 1.5362 | 1.5200 | 2B |
| | | | 1.5516 | 1.5616 | 1.5284 | 1.5450 | 1.5616 | 1.5240 | 1.5302 | 1.5075 | 1.5360 | 1.5195 | |
| | | 3A | 1.5535 | 1.5625 | 1.5300 | 1.5481 | 1.5625 | 1.5264 | 1.5300 | 1.5080 | 1.5346 | 1.5162 | 3B |
| | | | 1.5530 | 1.5630 | 1.5298 | 1.5476 | 1.5630 | 1.5266 | 1.5302 | 1.5075 | 1.5344 | 1.5157 | |
| 1 5/8-6 or 1.625-6 | UN | 2A | 1.6015 | 1.6225 | 1.51420 | 1.5782 | 1.6225 | 1.50600 | 1.51670 | 1.4450 | 1.52740 | 1.4750 | 2B |
| | | | 1.6007 | 1.6233 | 1.51395 | 1.5774 | 1.6233 | 1.50625 | 1.51695 | 1.4442 | 1.52715 | 1.4742 | |
| | | 3A | 1.6040 | 1.6250 | 1.51670 | 1.5827 | 1.6250 | 1.51050 | 1.51670 | 1.4450 | 1.52470 | 1.4646 | 3B |
| | | | 1.6032 | 1.6258 | 1.51645 | 1.5819 | 1.6258 | 1.51075 | 1.51695 | 1.4442 | 1.52445 | 1.4638 | |
| 1 5/8-8 or 1.625-8 | UN | 2A | 1.6057 | 1.6228 | 1.54160 | 1.5883 | 1.6228 | 1.53420 | 1.54380 | 1.4900 | 1.55350 | 1.5150 | 2B |
| | | | 1.6050 | 1.6235 | 1.54135 | 1.5876 | 1.6235 | 1.53445 | 1.54405 | 1.4893 | 1.55325 | 1.5143 | |
| | | 3A | 1.6079 | 1.6250 | 1.54380 | 1.5923 | 1.6250 | 1.53820 | 1.54380 | 1.4900 | 1.55100 | 1.5047 | 3B |
| | | | 1.6072 | 1.6257 | 1.54355 | 1.5916 | 1.6257 | 1.53845 | 1.54405 | 1.4893 | 1.55075 | 1.5040 | |
| 1 5/8-12 or 1.625-12 | UN | 2A | 1.6103 | 1.6232 | 1.56910 | 1.5993 | 1.6232 | 1.56320 | 1.57090 | 1.5350 | 1.57850 | 1.5530 | 2B |
| | | | 1.6097 | 1.6238 | 1.56885 | 1.5987 | 1.6238 | 1.56345 | 1.57115 | 1.5344 | 1.57825 | 1.5524 | |
| | | 3A | 1.6121 | 1.6250 | 1.57090 | 1.6026 | 1.6250 | 1.56650 | 1.57090 | 1.5350 | 1.57660 | 1.5448 | 3B |
| | | | 1.6115 | 1.6256 | 1.57065 | 1.6020 | 1.6256 | 1.56675 | 1.57115 | 1.5344 | 1.57635 | 1.5442 | |
| 1 5/8-16 or 1.625-16 | UN | 2A | 1.6129 | 1.6234 | 1.58280 | 1.6047 | 1.6234 | 1.57760 | 1.58440 | 1.5570 | 1.59120 | 1.5710 | 2B |
| | | | 1.6123 | 1.6240 | 1.58255 | 1.6041 | 1.6240 | 1.57785 | 1.58465 | 1.5564 | 1.59095 | 1.5704 | |
| | | 3A | 1.6145 | 1.6250 | 1.58440 | 1.6076 | 1.6250 | 1.58050 | 1.58440 | 1.5570 | 1.58950 | 1.5658 | 3B |
| | | | 1.6139 | 1.6256 | 1.58415 | 1.6070 | 1.6256 | 1.58075 | 1.58465 | 1.5564 | 1.58925 | 1.5652 | |
| 1 5/8-18 or 1.625-18 | UNEF | 2A | 1.6138 | 1.6235 | 1.5874 | 1.6065 | 1.6235 | 1.5824 | 1.5889 | 1.5650 | 1.5954 | 1.5780 | 2B |
| | | | 1.6133 | 1.6240 | 1.5872 | 1.6060 | 1.6240 | 1.5826 | 1.5891 | 1.5645 | 1.5952 | 1.5775 | |
| | | 3A | 1.6153 | 1.6250 | 1.5889 | 1.6093 | 1.6250 | 1.5852 | 1.5889 | 1.5650 | 1.5937 | 1.5730 | 3B |
| | | | 1.6148 | 1.6255 | 1.5887 | 1.6088 | 1.6255 | 1.5854 | 1.5891 | 1.5645 | 1.5935 | 1.5725 | |
| 1 5/8-20 or 1.625-20 | UN | 2A | 1.6146 | 1.6236 | 1.5911 | 1.6080 | 1.6236 | 1.5863 | 1.5925 | 1.5710 | 1.5987 | 1.5820 | 2B |
| | | | 1.6141 | 1.6241 | 1.5909 | 1.6075 | 1.6241 | 1.5865 | 1.5927 | 1.5705 | 1.5985 | 1.5815 | |
| | | 3A | 1.6160 | 1.6250 | 1.5925 | 1.6106 | 1.6250 | 1.5889 | 1.5925 | 1.5710 | 1.5971 | 1.5787 | 3B |
| | | | 1.6155 | 1.6255 | 1.5923 | 1.6101 | 1.6255 | 1.5891 | 1.5927 | 1.5705 | 1.5969 | 1.5782 | |

**TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B**
**UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)**

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 11/16-6 or 1.6875-6 | UN | 2A | 1.6640 | 1.6850 | 1.57670 | 1.6406 | 1.6850 | 1.56840 | 1.57920 | 1.5070 | 1.59000 | 1.5380 | 2B |
| | | | 1.6632 | 1.6858 | 1.57645 | 1.6398 | 1.6858 | 1.56865 | 1.57945 | 1.5062 | 1.58975 | 1.5372 | |
| | | 3A | 1.6665 | 1.6875 | 1.57920 | 1.6452 | 1.6875 | 1.57300 | 1.57920 | 1.5070 | 1.58730 | 1.5271 | 3B |
| | | | 1.6657 | 1.6883 | 1.57895 | 1.6444 | 1.6883 | 1.57325 | 1.57945 | 1.5062 | 1.58705 | 1.5263 | |
| 1 11/16-8 or 1.6875-8 | UN | 2A | 1.6682 | 1.6853 | 1.60410 | 1.6507 | 1.6853 | 1.59660 | 1.60630 | 1.5520 | 1.61600 | 1.5770 | 2B |
| | | | 1.6675 | 1.6860 | 1.60385 | 1.6500 | 1.6860 | 1.59685 | 1.60655 | 1.5513 | 1.61575 | 1.5763 | |
| | | 3A | 1.6704 | 1.6875 | 1.60630 | 1.6548 | 1.6875 | 1.60070 | 1.60630 | 1.5520 | 1.61360 | 1.5672 | 3B |
| | | | 1.6697 | 1.6882 | 1.60605 | 1.6541 | 1.6882 | 1.60095 | 1.60655 | 1.5513 | 1.61335 | 1.5665 | |
| 1 11/16-12 or 1.6875-12 | UN | 2A | 1.6728 | 1.6857 | 1.63160 | 1.6617 | 1.6857 | 1.62560 | 1.63340 | 1.5970 | 1.64120 | 1.6150 | 2B |
| | | | 1.6722 | 1.6863 | 1.63135 | 1.6611 | 1.6863 | 1.62585 | 1.63365 | 1.5964 | 1.64095 | 1.6144 | |
| | | 3A | 1.6746 | 1.6875 | 1.63340 | 1.6650 | 1.6875 | 1.62890 | 1.63340 | 1.5970 | 1.63920 | 1.6073 | 3B |
| | | | 1.6740 | 1.6881 | 1.63315 | 1.6644 | 1.6881 | 1.62915 | 1.63365 | 1.5964 | 1.63895 | 1.6067 | |
| 1 11/16-16 or 1.6875-16 | UN | 2A | 1.6754 | 1.6859 | 1.64530 | 1.6671 | 1.6859 | 1.64000 | 1.64690 | 1.6200 | 1.65380 | 1.6340 | 2B |
| | | | 1.6748 | 1.6865 | 1.64505 | 1.6665 | 1.6865 | 1.64025 | 1.64715 | 1.6194 | 1.65355 | 1.6334 | |
| | | 3A | 1.6770 | 1.6875 | 1.64690 | 1.6700 | 1.6875 | 1.64290 | 1.64690 | 1.6200 | 1.65210 | 1.6283 | 3B |
| | | | 1.6764 | 1.6881 | 1.64665 | 1.6694 | 1.6881 | 1.64315 | 1.64715 | 1.6194 | 1.65185 | 1.6277 | |
| 1 11/16-18 or 1.6875-18 | UNEF | 2A | 1.6763 | 1.6860 | 1.6499 | 1.6689 | 1.6860 | 1.6448 | 1.6514 | 1.6270 | 1.6580 | 1.6400 | 2B |
| | | | 1.6758 | 1.6865 | 1.6497 | 1.6684 | 1.6865 | 1.6450 | 1.6516 | 1.6265 | 1.6578 | 1.6395 | |
| | | 3A | 1.6778 | 1.6875 | 1.6514 | 1.6717 | 1.6875 | 1.6476 | 1.6514 | 1.6270 | 1.6563 | 1.6355 | 3B |
| | | | 1.6773 | 1.6880 | 1.6512 | 1.6712 | 1.6880 | 1.6478 | 1.6516 | 1.6265 | 1.6561 | 1.6350 | |
| 1 11/16-20 or 1.6875-20 | UN | 2A | 1.6770 | 1.6860 | 1.6535 | 1.6704 | 1.6860 | 1.6487 | 1.6550 | 1.6330 | 1.6613 | 1.6450 | 2B |
| | | | 1.6765 | 1.6865 | 1.6533 | 1.6699 | 1.6865 | 1.6489 | 1.6552 | 1.6325 | 1.6611 | 1.6445 | |
| | | 3A | 1.6785 | 1.6875 | 1.6550 | 1.6731 | 1.6875 | 1.6514 | 1.6550 | 1.6330 | 1.6597 | 1.6412 | 3B |
| | | | 1.6780 | 1.6880 | 1.6548 | 1.6726 | 1.6880 | 1.6516 | 1.6552 | 1.6325 | 1.6595 | 1.6407 | |
| 1¾-5 or 1.750-5 | UNC | 1A | 1.7234 | 1.7473 | 1.61740 | 1.6906 | 1.7473 | 1.60400 | 1.62010 | 1.5340 | 1.63750 | 1.5680 | 1B |
| | | | 1.7226 | 1.7481 | 1.61715 | 1.6898 | 1.7481 | 1.60425 | 1.62035 | 1.5332 | 1.63725 | 1.5672 | |
| | | 2A | 1.7234 | 1.7473 | 1.61740 | 1.6951 | 1.7473 | 1.60850 | 1.62010 | 1.5340 | 1.63170 | 1.5680 | 2B |
| | | | 1.7226 | 1.7481 | 1.61715 | 1.6943 | 1.7481 | 1.60875 | 1.62035 | 1.5332 | 1.63145 | 1.5672 | |
| | | 3A | 1.7261 | 1.7500 | 1.62010 | 1.7000 | 1.7500 | 1.61340 | 1.62010 | 1.5340 | 1.62880 | 1.5575 | 3B |
| | | | 1.7253 | 1.7508 | 1.61985 | 1.6992 | 1.7508 | 1.61365 | 1.62035 | 1.5332 | 1.62855 | 1.5507 | |
| 1¾-6 or 1.750-6 | UN | 2A | 1.7265 | 1.7475 | 1.63920 | 1.7031 | 1.7475 | 1.63090 | 1.64170 | 1.5700 | 1.65250 | 1.6000 | 2B |
| | | | 1.7257 | 1.7483 | 1.63895 | 1.7023 | 1.7483 | 1.63115 | 1.64195 | 1.5692 | 1.65225 | 1.5992 | |
| | | 3A | 1.7290 | 1.7500 | 1.64170 | 1.7076 | 1.7500 | 1.63540 | 1.64170 | 1.5700 | 1.64980 | 1.5896 | 3B |
| | | | 1.7282 | 1.7508 | 1.64145 | 1.7068 | 1.7508 | 1.63565 | 1.64195 | 1.5692 | 1.64955 | 1.5888 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1¾-8 or 1.750-8 | UN | 2A | 1.7306 | 1.7477 | 1.66650 | 1.7131 | 1.7477 | 1.65900 | 1.66880 | 1.6150 | 1.67860 | 1.6400 | 2B |
| | | | 1.7299 | 1.7484 | 1.66625 | 1.7124 | 1.7484 | 1.65925 | 1.66905 | 1.6143 | 1.67835 | 1.6393 | |
| | | 3A | 1.7329 | 1.7500 | 1.66880 | 1.7172 | 1.7500 | 1.66310 | 1.66880 | 1.6150 | 1.67620 | 1.6297 | 3B |
| | | | 1.7322 | 1.7507 | 1.66855 | 1.7165 | 1.7507 | 1.66335 | 1.66905 | 1.6143 | 1.67595 | 1.6290 | |
| 1¾-12 or 1.750-12 | UN | 2A | 1.7353 | 1.7482 | 1.69410 | 1.7242 | 1.7482 | 1.68810 | 1.69590 | 1.6600 | 1.70370 | 1.6780 | 2B |
| | | | 1.7347 | 1.7488 | 1.69385 | 1.7236 | 1.7488 | 1.68835 | 1.69615 | 1.6594 | 1.70345 | 1.6774 | |
| | | 3A | 1.7371 | 1.7500 | 1.69590 | 1.7275 | 1.7500 | 1.69140 | 1.69590 | 1.6600 | 1.70170 | 1.6698 | 3B |
| | | | 1.7365 | 1.7506 | 1.69565 | 1.7269 | 1.7506 | 1.69165 | 1.69615 | 1.6594 | 1.70145 | 1.6692 | |
| 1¾-16 or 1.750-16 | UN | 2A | 1.7379 | 1.7484 | 1.70780 | 1.7296 | 1.7484 | 1.70250 | 1.70940 | 1.6820 | 1.71630 | 1.6960 | 2B |
| | | | 1.7373 | 1.7490 | 1.70755 | 1.7290 | 1.7490 | 1.70275 | 1.70965 | 1.6814 | 1.71605 | 1.6954 | |
| | | 3A | 1.7395 | 1.7500 | 1.70940 | 1.7325 | 1.7500 | 1.70540 | 1.70940 | 1.6820 | 1.71460 | 1.6908 | 3B |
| | | | 1.7389 | 1.7506 | 1.70915 | 1.7319 | 1.7506 | 1.70565 | 1.70965 | 1.6814 | 1.71435 | 1.6902 | |
| 1¾-20 or 1.750-20 | UN | 2A | 1.7395 | 1.7485 | 1.7160 | 1.7329 | 1.7485 | 1.7112 | 1.7175 | 1.6960 | 1.7238 | 1.7070 | 2B |
| | | | 1.7390 | 1.7490 | 1.7158 | 1.7324 | 1.7490 | 1.7114 | 1.7177 | 1.6955 | 1.7236 | 1.7065 | |
| | | 3A | 1.7410 | 1.7500 | 1.7175 | 1.7356 | 1.7500 | 1.7139 | 1.7175 | 1.6960 | 1.7222 | 1.7037 | 3B |
| | | | 1.7405 | 1.7505 | 1.7173 | 1.7351 | 1.7505 | 1.7141 | 1.7177 | 1.6955 | 1.7220 | 1.7032 | |
| 1 13/16-6 or 1.8125-6 | UN | 2A | 1.7890 | 1.8100 | 1.70170 | 1.7655 | 1.8100 | 1.69330 | 1.70420 | 1.6320 | 1.71510 | 1.6630 | 2B |
| | | | 1.7882 | 1.8108 | 1.70145 | 1.7647 | 1.8108 | 1.69355 | 1.70445 | 1.6312 | 1.71485 | 1.6622 | |
| | | 3A | 1.7915 | 1.8125 | 1.70420 | 1.7701 | 1.8125 | 1.69790 | 1.70420 | 1.6320 | 1.71240 | 1.6521 | 3B |
| | | | 1.7907 | 1.8133 | 1.70395 | 1.7693 | 1.8133 | 1.69815 | 1.70445 | 1.6312 | 1.71215 | 1.6513 | |
| 1 13/16-8 or 1.8125-8 | UN | 2A | 1.7931 | 1.8102 | 1.72900 | 1.7755 | 1.8102 | 1.72140 | 1.73130 | 1.6770 | 1.74120 | 1.7020 | 2B |
| | | | 1.7924 | 1.8109 | 1.72875 | 1.7748 | 1.8109 | 1.72165 | 1.73155 | 1.6763 | 1.74095 | 1.7013 | |
| | | 3A | 1.7954 | 1.8125 | 1.73130 | 1.7797 | 1.8125 | 1.72560 | 1.73130 | 1.6770 | 1.73870 | 1.6922 | 3B |
| | | | 1.7947 | 1.8132 | 1.73105 | 1.7790 | 1.8132 | 1.72585 | 1.73155 | 1.6763 | 1.73845 | 1.6915 | |
| 1 13/16-12 or 1.8125-12 | UN | 2A | 1.7978 | 1.8107 | 1.75660 | 1.7867 | 1.8107 | 1.75060 | 1.75840 | 1.7220 | 1.76620 | 1.7400 | 2B |
| | | | 1.7972 | 1.8113 | 1.75635 | 1.7861 | 1.8113 | 1.75085 | 1.75865 | 1.7214 | 1.76595 | 1.7394 | |
| | | 3A | 1.7996 | 1.8125 | 1.75840 | 1.7900 | 1.8125 | 1.75390 | 1.75840 | 1.7220 | 1.76420 | 1.7323 | 3B |
| | | | 1.7990 | 1.8131 | 1.75815 | 1.7894 | 1.8131 | 1.75415 | 1.75865 | 1.7214 | 1.76395 | 1.7317 | |
| 1 13/16-16 or 1.8125-16 | UN | 2A | 1.8004 | 1.8109 | 1.77030 | 1.7921 | 1.8109 | 1.76500 | 1.77190 | 1.7450 | 1.77880 | 1.7590 | 2B |
| | | | 1.7998 | 1.8115 | 1.77005 | 1.7915 | 1.8115 | 1.76525 | 1.77215 | 1.7444 | 1.77855 | 1.7584 | |
| | | 3A | 1.8020 | 1.8125 | 1.77190 | 1.7950 | 1.8125 | 1.76790 | 1.77190 | 1.7450 | 1.77710 | 1.7533 | 3B |
| | | | 1.8014 | 1.8131 | 1.77165 | 1.7944 | 1.8131 | 1.76815 | 1.77215 | 1.7444 | 1.77685 | 1.7527 | |
| 1 13/16-20 or 1.8125-20 | UN | 2A | 1.8020 | 1.8110 | 1.7785 | 1.7954 | 1.8110 | 1.7737 | 1.7800 | 1.7580 | 1.7863 | 1.7700 | 2B |
| | | | 1.8015 | 1.8115 | 1.7783 | 1.7949 | 1.8115 | 1.7739 | 1.7802 | 1.7575 | 1.7861 | 1.7695 | |
| | | 3A | 1.8035 | 1.8125 | 1.7800 | 1.7981 | 1.8125 | 1.7764 | 1.7800 | 1.7580 | 1.7847 | 1.7662 | 3B |
| | | | 1.8030 | 1.8130 | 1.7798 | 1.7976 | 1.8130 | 1.7766 | 1.7802 | 1.7575 | 1.7845 | 1.7657 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1⅞-6 or 1.875-6 | UN | 2A | 1.8515 | 1.8725 | 1.76420 | 1.8280 | 1.8725 | 1.75580 | 1.76670 | 1.6950 | 1.77770 | 1.7250 | 2B |
| | | | 1.8507 | 1.8733 | 1.76395 | 1.8272 | 1.8733 | 1.75605 | 1.76695 | 1.6942 | 1.77745 | 1.7242 | |
| | | 3A | 1.8540 | 1.8750 | 1.76670 | 1.8326 | 1.8750 | 1.76040 | 1.76670 | 1.6950 | 1.77490 | 1.7146 | 3B |
| | | | 1.8532 | 1.8758 | 1.76645 | 1.8318 | 1.8758 | 1.76065 | 1.76695 | 1.6942 | 1.77465 | 1.7138 | |
| 1⅞-8 or 1.875-8 | UN | 2A | 1.8556 | 1.8727 | 1.79150 | 1.8379 | 1.8727 | 1.78380 | 1.79380 | 1.7400 | 1.80380 | 1.7650 | 2B |
| | | | 1.8549 | 1.8734 | 1.79125 | 1.8372 | 1.8734 | 1.78405 | 1.79405 | 1.7393 | 1.80355 | 1.7643 | |
| | | 3A | 1.8579 | 1.8750 | 1.79380 | 1.8422 | 1.8750 | 1.78810 | 1.79380 | 1.7400 | 1.80130 | 1.7547 | 3B |
| | | | 1.8572 | 1.8757 | 1.79355 | 1.8415 | 1.8757 | 1.78835 | 1.79405 | 1.7393 | 1.80105 | 1.7540 | |
| 1⅞-12 or 1.875-12 | UN | 2A | 1.8603 | 1.8732 | 1.81910 | 1.8492 | 1.8732 | 1.81310 | 1.82090 | 1.7850 | 1.82870 | 1.8030 | 2B |
| | | | 1.8597 | 1.8738 | 1.81885 | 1.8486 | 1.8738 | 1.81335 | 1.82115 | 1.7844 | 1.82845 | 1.8024 | |
| | | 3A | 1.8621 | 1.8750 | 1.82090 | 1.8525 | 1.8750 | 1.81640 | 1.82090 | 1.7850 | 1.82670 | 1.7948 | 3B |
| | | | 1.8615 | 1.8756 | 1.82065 | 1.8519 | 1.8756 | 1.81665 | 1.82115 | 1.7844 | 1.82645 | 1.7942 | |
| 1⅞-16 or 1.875-16 | UN | 2A | 1.8629 | 1.8734 | 1.83280 | 1.8546 | 1.8734 | 1.82750 | 1.83440 | 1.8070 | 1.84130 | 1.8210 | 2B |
| | | | 1.8623 | 1.8740 | 1.83255 | 1.8540 | 1.8740 | 1.82775 | 1.83465 | 1.8064 | 1.84105 | 1.8204 | |
| | | 3A | 1.8645 | 1.8750 | 1.83440 | 1.8575 | 1.8750 | 1.83040 | 1.83440 | 1.8070 | 1.83960 | 1.8158 | 3B |
| | | | 1.8639 | 1.8756 | 1.83415 | 1.8569 | 1.8756 | 1.83065 | 1.83465 | 1.8064 | 1.83935 | 1.8152 | |
| 1⅞-20 or 1.875-20 | UN | 2A | 1.8645 | 1.8735 | 1.8410 | 1.8579 | 1.8735 | 1.8362 | 1.8425 | 1.8210 | 1.8488 | 1.8320 | 2B |
| | | | 1.8640 | 1.8740 | 1.8408 | 1.8574 | 1.8740 | 1.8364 | 1.8427 | 1.8205 | 1.8486 | 1.8315 | |
| | | 3A | 1.8660 | 1.8750 | 1.8425 | 1.8606 | 1.8750 | 1.8389 | 1.8425 | 1.8210 | 1.8472 | 1.8287 | 3B |
| | | | 1.8655 | 1.8755 | 1.8423 | 1.8601 | 1.8755 | 1.8391 | 1.8427 | 1.8205 | 1.8470 | 1.8282 | |
| 1 15/16-6 or 1.9375-6 | UN | 2A | 1.9139 | 1.9349 | 1.82660 | 1.8903 | 1.9349 | 1.81810 | 1.82920 | 1.7570 | 1.84030 | 1.7880 | 2B |
| | | | 1.9131 | 1.9357 | 1.82635 | 1.8895 | 1.9357 | 1.81835 | 1.82945 | 1.7562 | 1.84005 | 1.7872 | |
| | | 3A | 1.9165 | 1.9375 | 1.82920 | 1.8950 | 1.9375 | 1.82280 | 1.82920 | 1.7570 | 1.83750 | 1.7771 | 3B |
| | | | 1.9157 | 1.9383 | 1.82895 | 1.8942 | 1.9383 | 1.82305 | 1.82945 | 1.7562 | 1.83725 | 1.7763 | |
| 1 15/16-8 or 1.9375-8 | UN | 2A | 1.9181 | 1.9352 | 1.85400 | 1.9004 | 1.9352 | 1.84630 | 1.85630 | 1.8020 | 1.86630 | 1.8270 | 2B |
| | | | 1.9174 | 1.9359 | 1.85375 | 1.8997 | 1.9359 | 1.84655 | 1.85655 | 1.8013 | 1.86605 | 1.8263 | |
| | | 3A | 1.9204 | 1.9375 | 1.85630 | 1.9046 | 1.9375 | 1.85050 | 1.85630 | 1.8020 | 1.86380 | 1.8172 | 3B |
| | | | 1.9197 | 1.9382 | 1.85605 | 1.9039 | 1.9382 | 1.85075 | 1.85655 | 1.8013 | 1.86355 | 1.8165 | |
| 1 15/16-12 or 1.9375-12 | UN | 2A | 1.9228 | 1.9357 | 1.88160 | 1.9116 | 1.9357 | 1.87550 | 1.88340 | 1.8470 | 1.89130 | 1.8650 | 2B |
| | | | 1.9222 | 1.9363 | 1.88135 | 1.9110 | 1.9363 | 1.87575 | 1.88365 | 1.8464 | 1.89105 | 1.8644 | |
| | | 3A | 1.9246 | 1.9375 | 1.88340 | 1.9150 | 1.9375 | 1.87890 | 1.88340 | 1.8470 | 1.88930 | 1.8573 | 3B |
| | | | 1.9240 | 1.9381 | 1.88315 | 1.9144 | 1.9381 | 1.87915 | 1.88365 | 1.8464 | 1.88905 | 1.8567 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 1 15/16-16 or 1.9375-16 | UN | 2A | 1.9254 | 1.9359 | 1.89530 | 1.9170 | 1.9359 | 1.88990 | 1.89690 | 1.8700 | 1.90390 | 1.8840 | 2B |
| | | | 1.9248 | 1.9365 | 1.89505 | 1.9164 | 1.9365 | 1.89015 | 1.89715 | 1.8694 | 1.90365 | 1.8834 | |
| | | 3A | 1.9270 | 1.9375 | 1.89690 | 1.9200 | 1.9375 | 1.89290 | 1.89690 | 1.8700 | 1.90210 | 1.8783 | 3B |
| | | | 1.9264 | 1.9381 | 1.89665 | 1.9194 | 1.9381 | 1.89315 | 1.89715 | 1.8694 | 1.90185 | 1.8777 | |
| 1 15/16-20 or 1.9375-20 | UN | 2A | 1.9270 | 1.9360 | 1.9035 | 1.9203 | 1.9360 | 1.8986 | 1.9050 | 1.8830 | 1.9114 | 1.8950 | 2B |
| | | | 1.9265 | 1.9365 | 1.9033 | 1.9198 | 1.9365 | 1.8988 | 1.9052 | 1.8825 | 1.9112 | 1.8945 | |
| | | 3A | 1.9285 | 1.9375 | 1.9050 | 1.9230 | 1.9375 | 1.9013 | 1.9050 | 1.8830 | 1.9098 | 1.8912 | 3B |
| | | | 1.9280 | 1.9380 | 1.9048 | 1.9225 | 1.9380 | 1.9015 | 1.9052 | 1.8825 | 1.9096 | 1.8907 | |
| 2-4 1/2 or 2.000-4.5 | UNC | 1A | 1.9713 | 1.9971 | 1.85280 | 1.9347 | 1.9971 | 1.83850 | 1.85570 | 1.7590 | 1.87430 | 1.7950 | 1B |
| | | | 1.9705 | 1.9979 | 1.85255 | 1.9339 | 1.9979 | 1.83875 | 1.85595 | 1.7582 | 1.87405 | 1.7942 | |
| | | 2A | 1.9713 | 1.9971 | 1.85280 | 1.9395 | 1.9971 | 1.84330 | 1.85570 | 1.7590 | 1.86810 | 1.7950 | 2B |
| | | | 1.9705 | 1.9979 | 1.85255 | 1.9387 | 1.9979 | 1.84355 | 1.85595 | 1.7582 | 1.86785 | 1.7942 | |
| | | 3A | 1.9742 | 2.0000 | 1.85570 | 1.9448 | 2.0000 | 1.84860 | 1.85570 | 1.7590 | 1.86500 | 1.7861 | 3B |
| | | | 1.9734 | 2.0008 | 1.85545 | 1.9440 | 2.0008 | 1.84885 | 1.85595 | 1.7582 | 1.86475 | 1.7853 | |
| 2-6 or 2.000-6 | UN | 2A | 1.9764 | 1.9974 | 1.88910 | 1.9527 | 1.9974 | 1.88050 | 1.89170 | 1.8200 | 1.90280 | 1.8500 | 2B |
| | | | 1.9756 | 1.9982 | 1.88885 | 1.9519 | 1.9982 | 1.88075 | 1.89195 | 1.8192 | 1.90255 | 1.8492 | |
| | | 3A | 1.9790 | 2.0000 | 1.89170 | 1.9575 | 2.0000 | 1.88530 | 1.89170 | 1.8200 | 1.90000 | 1.8396 | 3B |
| | | | 1.9782 | 2.0008 | 1.89145 | 1.9567 | 2.0008 | 1.88555 | 1.89195 | 1.8192 | 1.89975 | 1.8388 | |
| 2-8 or 2.000-8 | UN | 2A | 1.9806 | 1.9977 | 1.91650 | 1.9628 | 1.9977 | 1.90870 | 1.91880 | 1.8650 | 1.92890 | 1.8900 | 2B |
| | | | 1.9799 | 1.9984 | 1.91625 | 1.9621 | 1.9984 | 1.90895 | 1.91905 | 1.8643 | 1.92865 | 1.8893 | |
| | | 3A | 1.9829 | 2.0000 | 1.91880 | 1.9671 | 2.0000 | 1.91300 | 1.91880 | 1.8650 | 1.92640 | 1.8797 | 3B |
| | | | 1.9822 | 2.0007 | 1.91855 | 1.9664 | 2.0007 | 1.91325 | 1.91905 | 1.8643 | 1.92615 | 1.8790 | |
| 2-12 or 2.000-12 | UN | 2A | 1.9853 | 1.9982 | 1.94410 | 1.9741 | 1.9982 | 1.93800 | 1.94590 | 1.9100 | 1.95380 | 1.9280 | 2B |
| | | | 1.9847 | 1.9988 | 1.94385 | 1.9735 | 1.9988 | 1.93825 | 1.94615 | 1.9094 | 1.95355 | 1.9274 | |
| | | 3A | 1.9871 | 2.0000 | 1.94590 | 1.9775 | 2.0000 | 1.94140 | 1.94590 | 1.9100 | 1.95180 | 1.9198 | 3B |
| | | | 1.9865 | 2.0006 | 1.94565 | 1.9769 | 2.0006 | 1.94165 | 1.94615 | 1.9094 | 1.95155 | 1.9192 | |
| 2-16 or 2.000-16 | UN | 2A | 1.9879 | 1.9984 | 1.95780 | 1.9795 | 1.9984 | 1.95240 | 1.95940 | 1.9320 | 1.96640 | 1.9460 | 2B |
| | | | 1.9873 | 1.9990 | 1.95755 | 1.9789 | 1.9990 | 1.95265 | 1.95965 | 1.9314 | 1.96615 | 1.9454 | |
| | | 3A | 1.9895 | 2.0000 | 1.95940 | 1.9825 | 2.0000 | 1.95540 | 1.95940 | 1.9320 | 1.96460 | 1.9408 | 3B |
| | | | 1.9889 | 2.0006 | 1.95915 | 1.9819 | 2.0006 | 1.95565 | 1.95965 | 1.9314 | 1.96435 | 1.9402 | |
| 2-20 or 2.000-20 | UN | 2A | 1.9895 | 1.9985 | 1.9660 | 1.9828 | 1.9985 | 1.9611 | 1.9675 | 1.9460 | 1.9739 | 1.9570 | 2B |
| | | | 1.9890 | 1.9990 | 1.9658 | 1.9823 | 1.9990 | 1.9613 | 1.9677 | 1.9455 | 1.9737 | 1.9565 | |
| | | 3A | 1.9910 | 2.0000 | 1.9675 | 1.9855 | 2.0000 | 1.9638 | 1.9675 | 1.9460 | 1.9723 | 1.9537 | 3B |
| | | | 1.9905 | 2.0005 | 1.9673 | 1.9850 | 2.0005 | 1.9640 | 1.9677 | 1.9455 | 1.9721 | 1.9532 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2⅛-6 or 2.125-6 | UN | 2A | 2.1014 | 2.1224 | 2.01410 | 2.0776 | 2.1224 | 2.00540 | 2.01670 | 1.9450 | 2.02800 | 1.9750 | 2B |
| | | | 2.1006 | 2.1232 | 2.01385 | 2.0768 | 2.1232 | 2.00565 | 2.01695 | 1.9442 | 2.02775 | 1.9742 | |
| | | 3A | 2.1040 | 2.1250 | 2.01670 | 2.0824 | 2.1250 | 2.01020 | 2.01670 | 1.9450 | 2.02510 | 1.9646 | 3B |
| | | | 2.1032 | 2.1258 | 2.01645 | 2.0816 | 2.1258 | 2.01045 | 2.01695 | 1.9442 | 2.02485 | 1.9638 | |
| 2⅛-8 or 2.125-8 | UN | 2A | 2.1055 | 2.1226 | 2.04140 | 2.0876 | 2.1226 | 2.03350 | 2.04380 | 1.9900 | 2.05400 | 2.0150 | 2B |
| | | | 2.1048 | 2.1233 | 2.04115 | 2.0869 | 2.1233 | 2.03375 | 2.04405 | 1.9893 | 2.05375 | 2.0143 | |
| | | 3A | 2.1079 | 2.1250 | 2.04380 | 2.0920 | 2.1250 | 2.03790 | 2.04380 | 1.9900 | 2.05150 | 2.0047 | 3B |
| | | | 2.1072 | 2.1257 | 2.04355 | 2.0913 | 2.1257 | 2.03815 | 2.04405 | 1.9893 | 2.05125 | 2.0040 | |
| 2⅛-12 or 2.125-12 | UN | 2A | 2.1103 | 2.1232 | 2.06910 | 2.0991 | 2.1232 | 2.06300 | 2.07090 | 2.0350 | 2.07880 | 2.0530 | 2B |
| | | | 2.1097 | 2.1238 | 2.06885 | 2.0985 | 2.1238 | 2.06325 | 2.07115 | 2.0344 | 2.07855 | 2.0524 | |
| | | 3A | 2.1121 | 2.1250 | 2.07090 | 2.1025 | 2.1250 | 2.06640 | 2.07090 | 2.0350 | 2.07680 | 2.0448 | 3B |
| | | | 2.1115 | 2.1256 | 2.07065 | 2.1019 | 2.1256 | 2.06665 | 2.07115 | 2.0344 | 2.07655 | 2.0442 | |
| 2⅛-16 or 2.125-16 | UN | 2A | 2.1129 | 2.1234 | 2.08280 | 2.1045 | 2.1234 | 2.07740 | 2.08440 | 2.0570 | 2.09140 | 2.0710 | 2B |
| | | | 2.1123 | 2.1240 | 2.08255 | 2.1039 | 2.1240 | 2.07765 | 2.08465 | 2.0564 | 2.09115 | 2.0704 | |
| | | 3A | 2.1145 | 2.1250 | 2.08440 | 2.1075 | 2.1250 | 2.08040 | 2.08440 | 2.0570 | 2.08960 | 2.0658 | 3B |
| | | | 2.1139 | 2.1256 | 2.08415 | 2.1069 | 2.1256 | 2.08065 | 2.08465 | 2.0564 | 2.08935 | 2.0652 | |
| 2⅛-20 or 2.125-20 | UN | 2A | 2.1145 | 2.1235 | 2.0910 | 2.1078 | 2.1235 | 2.0861 | 2.0925 | 2.0710 | 2.0989 | 2.0820 | 2B |
| | | | 2.1140 | 2.1240 | 2.0908 | 2.1073 | 2.1240 | 2.0863 | 2.0927 | 2.0705 | 2.0987 | 2.0815 | |
| | | 3A | 2.1160 | 2.1250 | 2.0925 | 2.1105 | 2.1250 | 2.0888 | 2.0925 | 2.0710 | 2.0973 | 2.0787 | 3B |
| | | | 2.1155 | 2.1255 | 2.0923 | 2.1100 | 2.1255 | 2.0890 | 2.0927 | 2.0705 | 2.0971 | 2.0782 | |
| 2¼-4½ or 2.250-4.5 | UNC | 1A | 2.2213 | 2.2471 | 2.10280 | 2.1844 | 2.2471 | 2.08820 | 2.10570 | 2.0090 | 2.12470 | 2.0450 | 1B |
| | | | 2.2205 | 2.2479 | 2.10255 | 2.1836 | 2.2479 | 2.08845 | 2.10595 | 2.0082 | 2.12445 | 2.0442 | |
| | | 2A | 2.2213 | 2.2471 | 2.10280 | 2.1893 | 2.2471 | 2.09310 | 2.10570 | 2.0090 | 2.11830 | 2.0450 | 2B |
| | | | 2.2205 | 2.2479 | 2.10255 | 2.1885 | 2.2479 | 2.09335 | 2.10595 | 2.0082 | 2.11805 | 2.0442 | |
| | | 3A | 2.2242 | 2.2500 | 2.10570 | 2.1946 | 2.2500 | 2.09840 | 2.10570 | 2.0090 | 2.11520 | 2.0361 | 3B |
| | | | 2.2234 | 2.2508 | 2.10545 | 2.1938 | 2.2508 | 2.09865 | 2.10595 | 2.0082 | 2.11495 | 2.0353 | |
| 2¼-6 or 2.250-6 | UN | 2A | 2.2264 | 2.2474 | 2.13910 | 2.2025 | 2.2474 | 2.13030 | 2.14170 | 2.0700 | 2.15310 | 2.1000 | 2B |
| | | | 2.2256 | 2.2482 | 2.13885 | 2.2017 | 2.2482 | 2.13055 | 2.14195 | 2.0692 | 2.15285 | 2.0992 | |
| | | 3A | 2.2290 | 2.2500 | 2.14170 | 2.2073 | 2.2500 | 2.13510 | 2.14170 | 2.0700 | 2.15020 | 2.0896 | 3B |
| | | | 2.2282 | 2.2508 | 2.14145 | 2.2065 | 2.2508 | 2.13535 | 2.14195 | 2.0692 | 2.14995 | 2.0888 | |
| 2¼-8 or 2.250-8 | UN | 2A | 2.2305 | 2.2476 | 2.16640 | 2.2125 | 2.2476 | 2.15840 | 2.16880 | 2.1150 | 2.17920 | 2.1400 | 2B |
| | | | 2.2298 | 2.2483 | 2.16615 | 2.2118 | 2.2483 | 2.15865 | 2.16905 | 2.1143 | 2.17895 | 2.1393 | |
| | | 3A | 2.2329 | 2.2500 | 2.16880 | 2.2169 | 2.2500 | 2.16280 | 2.16880 | 2.1150 | 2.17660 | 2.1297 | 3B |
| | | | 2.2322 | 2.2507 | 2.16855 | 2.2162 | 2.2507 | 2.16305 | 2.16905 | 2.1143 | 2.17635 | 2.1290 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2¼-12 or 2.250-12 | UN | 2A | 2.2353 | 2.2482 | 2.19410 | 2.2241 | 2.2482 | 2.18800 | 2.19590 | 2.1600 | 2.20380 | 2.1780 | 2B |
| | | | 2.2347 | 2.2488 | 2.19385 | 2.2235 | 2.2488 | 2.18825 | 2.19615 | 2.1594 | 2.20355 | 2.1774 | |
| | | 3A | 2.2371 | 2.2500 | 2.19590 | 2.2275 | 2.2500 | 2.19140 | 2.19590 | 2.1600 | 2.20180 | 2.1698 | 3B |
| | | | 2.2365 | 2.2506 | 2.19565 | 2.2269 | 2.2506 | 2.19165 | 2.19615 | 2.1594 | 2.20155 | 2.1692 | |
| 2¼-16 or 2.250-16 | UN | 2A | 2.2379 | 2.2484 | 2.20780 | 2.2295 | 2.2484 | 2.20240 | 2.20940 | 2.1820 | 2.21640 | 2.1960 | 2B |
| | | | 2.2373 | 2.2490 | 2.20755 | 2.2289 | 2.2490 | 2.20265 | 2.20965 | 2.1814 | 2.21615 | 2.1954 | |
| | | 3A | 2.2395 | 2.2500 | 2.20940 | 2.2325 | 2.2500 | 2.20540 | 2.20940 | 2.1820 | 2.21460 | 2.1908 | 3B |
| | | | 2.2389 | 2.2506 | 2.20915 | 2.2319 | 2.2506 | 2.20565 | 2.20965 | 2.1814 | 2.21435 | 2.1902 | |
| 2¼-20 or 2.250-20 | UN | 2A | 2.2395 | 2.2485 | 2.2160 | 2.2328 | 2.2485 | 2.2111 | 2.2175 | 2.1960 | 2.2239 | 2.2070 | 2B |
| | | | 2.2390 | 2.2490 | 2.2158 | 2.2323 | 2.2490 | 2.2113 | 2.2177 | 2.1955 | 2.2237 | 2.2065 | |
| | | 3A | 2.2410 | 2.2500 | 2.2175 | 2.2355 | 2.2500 | 2.2138 | 2.2175 | 2.1960 | 2.2223 | 2.2037 | 3B |
| | | | 2.2405 | 2.2505 | 2.2173 | 2.2350 | 2.2505 | 2.2140 | 2.2177 | 2.1955 | 2.2221 | 2.2032 | |
| 2⅜-6 or 2.375-6 | UN | 2A | 2.3513 | 2.3723 | 2.26400 | 2.3273 | 2.3723 | 2.25510 | 2.26670 | 2.1950 | 2.27820 | 2.2260 | 2B |
| | | | 2.3505 | 2.3731 | 2.26375 | 2.3265 | 2.3731 | 2.25535 | 2.26695 | 2.1942 | 2.27795 | 2.2252 | |
| | | 3A | 2.3540 | 2.3750 | 2.26670 | 2.3323 | 2.3750 | 2.26010 | 2.26670 | 2.1950 | 2.27530 | 2.2146 | 3B |
| | | | 2.3532 | 2.3758 | 2.26645 | 2.3315 | 2.3758 | 2.26035 | 2.26695 | 2.1942 | 2.27505 | 2.2138 | |
| 2⅜-8 or 2.375-8 | UN | 2A | 2.3555 | 2.3726 | 2.29140 | 2.3374 | 2.3726 | 2.28330 | 2.29380 | 2.2400 | 2.30430 | 2.2650 | 2B |
| | | | 2.3548 | 2.3733 | 2.29115 | 2.3367 | 2.3733 | 2.28355 | 2.29405 | 2.2393 | 2.30405 | 2.2643 | |
| | | 3A | 2.3579 | 2.3750 | 2.29380 | 2.3419 | 2.3750 | 2.28780 | 2.29380 | 2.2400 | 2.30170 | 2.2547 | 3B |
| | | | 2.3572 | 2.3757 | 2.29355 | 2.3412 | 2.3757 | 2.28805 | 2.29405 | 2.2393 | 2.30145 | 2.2540 | |
| 2⅜-12 or 2.375-12 | UN | 2A | 2.3602 | 2.3731 | 2.31900 | 2.3489 | 2.3731 | 2.31280 | 2.32090 | 2.2850 | 2.32900 | 2.3030 | 2B |
| | | | 2.3596 | 2.3737 | 2.31875 | 2.3483 | 2.3737 | 2.31305 | 2.32115 | 2.2844 | 2.32875 | 2.3024 | |
| | | 3A | 2.3621 | 2.3750 | 2.32090 | 2.3524 | 2.3750 | 2.31630 | 2.32090 | 2.2850 | 2.32690 | 2.2948 | 3B |
| | | | 2.3615 | 2.3756 | 2.32065 | 2.3518 | 2.3756 | 2.31655 | 2.32115 | 2.2844 | 2.32665 | 2.2942 | |
| 2⅜-16 or 2.375-16 | UN | 2A | 2.3628 | 2.3733 | 2.33270 | 2.3543 | 2.3733 | 2.32720 | 2.33440 | 2.3070 | 2.34160 | 2.3210 | 2B |
| | | | 2.3622 | 2.3739 | 2.33245 | 2.3537 | 2.3739 | 2.32745 | 2.33465 | 2.3064 | 2.34135 | 2.3204 | |
| | | 3A | 2.3645 | 2.3750 | 2.33440 | 2.3574 | 2.3750 | 2.33030 | 2.33440 | 2.3070 | 2.33980 | 2.3158 | 3B |
| | | | 2.3639 | 2.3756 | 2.33415 | 2.3568 | 2.3756 | 2.33055 | 2.33465 | 2.3064 | 2.33955 | 2.3152 | |
| 2⅜-20 or 2.375-20 | UN | 2A | 2.3645 | 2.3735 | 2.3410 | 2.3576 | 2.3735 | 2.3359 | 2.3425 | 2.3210 | 2.3491 | 2.3320 | 2B |
| | | | 2.3640 | 2.3740 | 2.3408 | 2.3571 | 2.3740 | 2.3361 | 2.3427 | 2.3205 | 2.3489 | 2.3315 | |
| | | 3A | 2.3660 | 2.3750 | 2.3425 | 2.3604 | 2.3750 | 2.3387 | 2.3425 | 2.3210 | 2.3475 | 2.3287 | 3B |
| | | | 2.3655 | 2.3755 | 2.3423 | 2.3599 | 2.3755 | 2.3389 | 2.3427 | 2.3205 | 2.3473 | 2.3282 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2½-4 or 2.500-4 | UNC | 1A | 2.4688 | 2.4969 | 2.33450 | 2.4273 | 2.4969 | 2.31900 | 2.33760 | 2.2290 | 2.35780 | 2.2670 | 1B |
| | | | 2.4679 | 2.4978 | 2.33425 | 2.4264 | 2.4978 | 2.31925 | 2.33785 | 2.2281 | 2.35755 | 2.2661 | |
| | | 2A | 2.4688 | 2.4969 | 2.33450 | 2.4324 | 2.4969 | 2.32410 | 2.33760 | 2.2290 | 2.35110 | 2.2670 | 2B |
| | | | 2.4679 | 2.4978 | 2.33425 | 2.4315 | 2.4978 | 2.32435 | 2.33785 | 2.2281 | 2.35085 | 2.2661 | |
| | | 3A | 2.4719 | 2.5000 | 2.33760 | 2.4381 | 2.5000 | 2.32980 | 2.33760 | 2.2290 | 2.34770 | 2.2594 | 3B |
| | | | 2.4710 | 2.5009 | 2.33735 | 2.4372 | 2.5009 | 2.33005 | 2.33785 | 2.2281 | 2.34745 | 2.2585 | |
| 2½-6 or 2.500-6 | UN | 2A | 2.4763 | 2.4973 | 2.38900 | 2.4623 | 2.4973 | 2.38000 | 2.39170 | 2.3200 | 2.40330 | 2.3500 | 2B |
| | | | 2.4755 | 2.4981 | 2.38875 | 2.4514 | 2.4981 | 2.38025 | 2.39195 | 2.3192 | 2.40305 | 2.3492 | |
| | | 3A | 2.4790 | 2.5000 | 2.39170 | 2.4572 | 2.5000 | 2.38500 | 2.39170 | 2.3200 | 2.40040 | 2.3396 | 3B |
| | | | 2.4782 | 2.5008 | 2.39145 | 2.4564 | 2.5008 | 2.38525 | 2.39195 | 2.3192 | 2.40015 | 2.3388 | |
| 2½-8 or 2.500-8 | UN | 2A | 2.4805 | 2.4976 | 2.41640 | 2.4623 | 2.4976 | 2.40820 | 2.41880 | 2.3650 | 2.42940 | 2.3900 | 2B |
| | | | 2.4798 | 2.4983 | 2.41615 | 2.4616 | 2.4983 | 2.40845 | 2.41905 | 2.3643 | 2.42915 | 2.3893 | |
| | | 3A | 2.4829 | 2.5000 | 2.41880 | 2.4668 | 2.5000 | 2.41270 | 2.41880 | 2.3650 | 2.42680 | 2.3797 | 3B |
| | | | 2.4822 | 2.5007 | 2.41855 | 2.4661 | 2.5007 | 2.41295 | 2.41905 | 2.3643 | 2.42655 | 2.3790 | |
| 2½-12 or 2.500-12 | UN | 2A | 2.4852 | 2.4981 | 2.44400 | 2.4739 | 2.4981 | 2.43780 | 2.44590 | 2.4100 | 2.45400 | 2.4280 | 2B |
| | | | 2.4846 | 2.4987 | 2.44375 | 2.4733 | 2.4987 | 2.43805 | 2.44615 | 2.4094 | 2.45375 | 2.4274 | |
| | | 3A | 2.4871 | 2.5000 | 2.44590 | 2.4774 | 2.5000 | 2.44130 | 2.44590 | 2.4100 | 2.45190 | 2.4198 | 3B |
| | | | 2.4865 | 2.5006 | 2.44565 | 2.4768 | 2.5006 | 2.44155 | 2.44615 | 2.4094 | 2.45165 | 2.4192 | |
| 2½-16 or 2.500-16 | UN | 2A | 2.4878 | 2.4983 | 2.45770 | 2.4793 | 2.4985 | 2.45220 | 2.45940 | 2.4320 | 2.46660 | 2.4460 | 2B |
| | | | 2.4872 | 2.4989 | 2.45745 | 2.4787 | 2.4990 | 2.45245 | 2.45965 | 2.3414 | 2.46635 | 2.4454 | |
| | | 3A | 2.4895 | 2.5000 | 2.45940 | 2.4824 | 2.5000 | 2.45530 | 2.45940 | 2.4320 | 2.46480 | 2.4408 | 3B |
| | | | 2.4889 | 2.5006 | 2.45915 | 2.4818 | 2.5006 | 2.45555 | 2.45965 | 2.4314 | 2.46455 | 2.4402 | |
| 2½-20 or 2.500-20 | UN | 2A | 2.4895 | 2.4985 | 2.4660 | 2.4826 | 2.4985 | 2.4609 | 2.4675 | 2.4460 | 2.4741 | 2.4570 | 2B |
| | | | 2.4890 | 2.4990 | 2.4658 | 2.4821 | 2.4990 | 2.4611 | 2.4677 | 2.4455 | 2.4739 | 2.4565 | |
| | | 3A | 2.4910 | 2.5000 | 2.4675 | 2.4854 | 2.5000 | 2.4637 | 2.4675 | 2.4460 | 2.4725 | 2.4537 | 3B |
| | | | 2.4905 | 2.5005 | 2.4673 | 2.4849 | 2.5005 | 2.4639 | 2.4677 | 2.4455 | 2.4723 | 2.4532 | |
| 2⅝-6 or 2.625-6 | UN | 2A | 2.6013 | 2.6223 | 2.51400 | 2.5772 | 2.6223 | 2.50500 | 2.51670 | 2.4450 | 2.52850 | 2.4750 | 2B |
| | | | 2.6005 | 2.6231 | 2.51375 | 2.5764 | 2.6231 | 2.50525 | 2.51695 | 2.4442 | 2.52825 | 2.4742 | |
| | | 3A | 2.6040 | 2.6250 | 2.51670 | 2.5821 | 2.6250 | 2.50990 | 2.51670 | 2.4450 | 2.52550 | 2.4646 | 3B |
| | | | 2.6032 | 2.6258 | 2.51645 | 2.5813 | 2.6258 | 2.51015 | 2.51695 | 2.4442 | 2.52525 | 2.4638 | |
| 2⅝-8 or 2.625-8 | UN | 2A | 2.6054 | 2.6225 | 2.54130 | 2.5872 | 2.6225 | 2.53310 | 2.54380 | 2.4900 | 2.55450 | 2.5150 | 2B |
| | | | 2.6047 | 2.6232 | 2.54105 | 2.5865 | 2.6232 | 2.53335 | 2.54405 | 2.4893 | 2.55425 | 2.5143 | |
| | | 3A | 2.6079 | 2.6250 | 2.54380 | 2.5917 | 2.6250 | 2.53760 | 2.54380 | 2.4900 | 2.55180 | 2.5047 | 3B |
| | | | 2.6072 | 2.6257 | 2.54355 | 2.5910 | 2.6257 | 2.53785 | 2.54405 | 2.4893 | 2.55155 | 2.5040 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2⅝-12 or 2.625-12 | UN | 2A | 2.6102 | 2.6231 | 2.56900 | 2.5989 | 2.6231 | 2.56280 | 2.57090 | 2.5350 | 2.57900 | 2.5530 | 2B |
| | | | 2.6096 | 2.6237 | 2.56875 | 2.5983 | 2.6237 | 2.56305 | 2.57115 | 2.5344 | 2.57875 | 2.5524 | |
| | | 3A | 2.6121 | 2.6250 | 2.57090 | 2.6024 | 2.6250 | 2.56630 | 2.57090 | 2.5350 | 2.57690 | 2.5448 | 3B |
| | | | 2.6115 | 2.6256 | 2.57065 | 2.6018 | 2.6256 | 2.56655 | 2.57115 | 2.5344 | 2.57665 | 2.5442 | |
| 2⅝-16 or 2.625-16 | UN | 2A | 2.6128 | 2.6233 | 2.58270 | 2.6043 | 2.6233 | 2.57720 | 2.58440 | 2.5570 | 2.59160 | 2.5710 | 2B |
| | | | 2.6122 | 2.6239 | 2.58245 | 2.6037 | 2.6239 | 2.57745 | 2.58465 | 2.5564 | 2.59135 | 2.5704 | |
| | | 3A | 2.6145 | 2.6250 | 2.58440 | 2.6074 | 2.6250 | 2.58030 | 2.58440 | 2.5570 | 2.58980 | 2.5658 | 3B |
| | | | 2.6139 | 2.6256 | 2.58415 | 2.6068 | 2.6256 | 2.58055 | 2.58465 | 2.5564 | 2.58955 | 2.5652 | |
| 2⅝-20 or 2.625-20 | UN | 2A | 2.6145 | 2.6235 | 2.5910 | 2.6076 | 2.6235 | 2.5859 | 2.5925 | 2.5710 | 2.5991 | 2.5820 | 2B |
| | | | 2.6140 | 2.6240 | 2.5908 | 2.6071 | 2.6240 | 2.5861 | 2.5927 | 2.5705 | 2.5989 | 2.5815 | |
| | | 3A | 2.6160 | 2.6250 | 2.5925 | 2.6104 | 2.6250 | 2.5887 | 2.5925 | 2.5710 | 2.5975 | 2.5787 | 3B |
| | | | 2.6155 | 2.6255 | 2.5923 | 2.6099 | 2.6255 | 2.5889 | 2.5927 | 2.5705 | 2.5973 | 2.5782 | |
| 2¾-4 or 2.750-4 | UNC | 1A | 2.7187 | 2.7468 | 2.58440 | 2.6769 | 2.7468 | 2.56860 | 2.58760 | 2.4790 | 2.60820 | 2.5170 | 1B |
| | | | 2.7178 | 2.7477 | 2.58415 | 2.6760 | 2.7477 | 2.56885 | 2.58785 | 2.4781 | 2.60795 | 2.5161 | |
| | | 2A | 2.7187 | 2.7468 | 2.58440 | 2.6822 | 2.7468 | 2.57390 | 2.58760 | 2.4790 | 2.60130 | 2.5170 | 2B |
| | | | 2.7178 | 2.7477 | 2.58415 | 2.6813 | 2.7477 | 2.57415 | 2.58785 | 2.4781 | 2.60105 | 2.5161 | |
| | | 3A | 2.7219 | 2.7500 | 2.58760 | 2.6880 | 2.7500 | 2.57970 | 2.58760 | 2.4790 | 2.59790 | 2.5094 | 3B |
| | | | 2.7210 | 2.7509 | 2.58735 | 2.6871 | 2.7509 | 2.57995 | 2.58785 | 2.4781 | 2.59765 | 2.5085 | |
| 2¾-6 or 2.750-6 | UN | 2A | 2.7263 | 2.7473 | 2.63900 | 2.7021 | 2.7473 | 2.62990 | 2.64170 | 2.5700 | 2.65360 | 2.6000 | 2B |
| | | | 2.7255 | 2.7481 | 2.63875 | 2.7013 | 2.7481 | 2.63015 | 2.64195 | 2.5692 | 2.65335 | 2.5992 | |
| | | 3A | 2.7290 | 2.7500 | 2.64170 | 2.7071 | 2.7500 | 2.63490 | 2.64170 | 2.5700 | 2.65060 | 2.5896 | 3B |
| | | | 2.7282 | 2.7508 | 2.64145 | 2.7063 | 2.7508 | 2.63515 | 2.64195 | 2.5692 | 2.65035 | 2.5888 | |
| 2¾-8 or 2.750-8 | UN | 2A | 2.7304 | 2.7475 | 2.66630 | 2.7121 | 2.7475 | 2.65800 | 2.66880 | 2.6150 | 2.67960 | 2.6400 | 2B |
| | | | 2.7297 | 2.7482 | 2.66605 | 2.7114 | 2.7482 | 2.65825 | 2.66905 | 2.6143 | 2.67935 | 2.6393 | |
| | | 3A | 2.7329 | 2.7500 | 2.66880 | 2.7167 | 2.7500 | 2.66250 | 2.66880 | 2.6150 | 2.67690 | 2.6297 | 3B |
| | | | 2.7322 | 2.7507 | 2.66855 | 2.7160 | 2.7507 | 2.66275 | 2.66905 | 2.6143 | 2.67665 | 2.6290 | |
| 2¾-12 or 2.750-12 | UN | 2A | 2.7352 | 2.7481 | 2.69400 | 2.7239 | 2.7481 | 2.68780 | 2.69590 | 2.6600 | 2.70400 | 2.6780 | 2B |
| | | | 2.7346 | 2.7487 | 2.69375 | 2.7233 | 2.7487 | 2.68805 | 2.69615 | 2.6594 | 2.70375 | 2.6774 | |
| | | 3A | 2.7371 | 2.7500 | 2.69590 | 2.7274 | 2.7500 | 2.69130 | 2.69590 | 2.6600 | 2.70190 | 2.6698 | 3B |
| | | | 2.7365 | 2.7506 | 2.69565 | 2.7268 | 2.7506 | 2.69155 | 2.69615 | 2.6594 | 2.70165 | 2.6692 | |
| 2¾-16 or 2.750-16 | UN | 2A | 2.7378 | 2.7483 | 2.70770 | 2.7293 | 2.7483 | 2.70220 | 2.70940 | 2.6820 | 2.71660 | 2.6960 | 2B |
| | | | 2.7372 | 2.7489 | 2.70745 | 2.7287 | 2.7489 | 2.70245 | 2.70965 | 2.6814 | 2.71635 | 2.6954 | |
| | | 3A | 2.7395 | 2.7500 | 2.70940 | 2.7324 | 2.7500 | 2.70530 | 2.70940 | 2.6820 | 2.71480 | 2.6908 | 3B |
| | | | 2.7389 | 2.7506 | 2.70915 | 2.7318 | 2.7506 | 2.70555 | 2.70965 | 2.6814 | 2.71455 | 2.6902 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 2¾-20 or 2.750-20 | UN | 2A | 2.7395 | 2.7485 | 2.7160 | 2.7326 | 2.7485 | 2.7109 | 2.7175 | 2.6960 | 2.7241 | 2.7070 | 2B |
| | | | 2.7390 | 2.7490 | 2.7158 | 2.7321 | 2.7490 | 2.7111 | 2.7177 | 2.6955 | 2.7239 | 2.7065 | |
| | | 3A | 2.7410 | 2.7500 | 2.7175 | 2.7354 | 2.7500 | 2.7137 | 2.7175 | 2.6960 | 2.7225 | 2.7037 | 3B |
| | | | 2.7405 | 2.7505 | 2.7173 | 2.7349 | 2.7505 | 2.7139 | 2.7177 | 2.6955 | 2.7223 | 2.7032 | |
| 2⅞-6 or 2.875-6 | UN | 2A | 2.8512 | 2.8722 | 2.76390 | 2.8269 | 2.8722 | 2.75470 | 2.76670 | 2.6950 | 2.77870 | 2.7250 | 2B |
| | | | 2.8504 | 2.8730 | 2.76365 | 2.8261 | 2.8730 | 2.75495 | 2.76695 | 2.6942 | 2.77845 | 2.7242 | |
| | | 3A | 2.8540 | 2.8750 | 2.76670 | 2.8320 | 2.8750 | 2.75980 | 2.76670 | 2.6950 | 2.77570 | 2.7146 | 3B |
| | | | 2.8532 | 2.8758 | 2.76645 | 2.8312 | 2.8758 | 2.76005 | 2.76695 | 2.6942 | 2.77545 | 2.7138 | |
| 2⅞-8 or 2.875-8 | UN | 2A | 2.8554 | 2.8725 | 2.79130 | 2.8370 | 2.8725 | 2.78290 | 2.79380 | 2.7400 | 2.80480 | 2.7650 | 2B |
| | | | 2.8547 | 2.8732 | 2.79105 | 2.8363 | 2.8732 | 2.78315 | 2.79405 | 2.7393 | 2.80455 | 2.7643 | |
| | | 3A | 2.8579 | 2.8750 | 2.79380 | 2.8416 | 2.8750 | 2.78750 | 2.79380 | 2.7400 | 2.80200 | 2.7547 | 3B |
| | | | 2.8572 | 2.8757 | 2.79355 | 2.8409 | 2.8757 | 2.78775 | 2.79405 | 2.7393 | 2.80175 | 2.7540 | |
| 2⅞-12 or 2.875-12 | UN | 2A | 2.8602 | 2.8731 | 2.81900 | 2.8488 | 2.8731 | 2.81270 | 2.82090 | 2.7850 | 2.82910 | 2.8030 | 2B |
| | | | 2.8596 | 2.8737 | 2.81875 | 2.8482 | 2.8737 | 2.81295 | 2.82115 | 2.7844 | 2.82885 | 2.8024 | |
| | | 3A | 2.8621 | 2.8750 | 2.82090 | 2.8523 | 2.8750 | 2.81620 | 2.82090 | 2.7850 | 2.82710 | 2.7948 | 3B |
| | | | 2.8615 | 2.8756 | 2.82065 | 2.8517 | 2.8756 | 2.81645 | 2.82115 | 2.7844 | 2.82685 | 2.7942 | |
| 2⅞-16 or 2.875-16 | UN | 2A | 2.8628 | 2.8733 | 2.83270 | 2.8542 | 2.8733 | 2.82710 | 2.83440 | 2.8070 | 2.84170 | 2.8210 | 2B |
| | | | 2.8622 | 2.8739 | 2.83245 | 2.8536 | 2.8739 | 2.82735 | 2.83465 | 2.8064 | 2.84145 | 2.8204 | |
| | | 3A | 2.8645 | 2.8750 | 2.83440 | 2.8573 | 2.8750 | 2.83020 | 2.83440 | 2.8070 | 2.83990 | 2.8158 | 3B |
| | | | 2.8639 | 2.8756 | 2.83415 | 2.8567 | 2.8756 | 2.83045 | 2.83465 | 2.8064 | 2.83965 | 2.8152 | |
| 2⅞-20 or 2.875-20 | UN | 2A | 2.8644 | 2.8734 | 2.8409 | 2.8574 | 2.8734 | 2.8357 | 2.8425 | 2.8210 | 2.8493 | 2.8320 | 2B |
| | | | 2.8639 | 2.8739 | 2.8407 | 2.8569 | 2.8739 | 2.8359 | 2.8427 | 2.8205 | 2.8491 | 2.8315 | |
| | | 3A | 2.8660 | 2.8750 | 2.8425 | 2.8603 | 2.8750 | 2.8386 | 2.8425 | 2.8210 | 2.8476 | 2.8287 | 3B |
| | | | 2.8655 | 2.8755 | 2.8423 | 2.8598 | 2.8755 | 2.8388 | 2.8427 | 2.8205 | 2.8474 | 2.8282 | |
| 3-4 or 3.000-4 | UNC | 1A | 2.9687 | 2.9968 | 2.83440 | 2.9266 | 2.9968 | 2.81830 | 2.83760 | 2.7290 | 2.85850 | 2.7670 | 1B |
| | | | 2.9678 | 2.9977 | 2.83415 | 2.9257 | 2.9977 | 2.81855 | 2.83785 | 2.7281 | 2.85825 | 2.7661 | |
| | | 2A | 2.9687 | 2.9968 | 2.83440 | 2.9320 | 2.9968 | 2.82370 | 2.83760 | 2.7290 | 2.85150 | 2.7670 | 2B |
| | | | 2.9678 | 2.9977 | 2.83415 | 2.9311 | 2.9977 | 2.82395 | 2.83785 | 2.7281 | 2.85125 | 2.7661 | |
| | | 3A | 2.9719 | 3.0000 | 2.83760 | 2.9379 | 3.0000 | 2.82960 | 2.83760 | 2.7290 | 2.84800 | 2.7594 | 3B |
| | | | 2.9710 | 3.0009 | 2.83735 | 2.9370 | 3.0009 | 2.82985 | 2.83785 | 2.7281 | 2.84775 | 2.7585 | |
| 3-6 or 3.000-6 | UN | 2A | 2.9762 | 2.9972 | 2.88890 | 2.9518 | 2.9972 | 2.87960 | 2.89170 | 2.8200 | 2.90380 | 2.8500 | 2B |
| | | | 2.9754 | 2.9980 | 2.88865 | 2.9510 | 2.9980 | 2.87985 | 2.89195 | 2.8192 | 2.90355 | 2.8492 | |
| | | 3A | 2.9790 | 3.0000 | 2.89170 | 2.9569 | 3.0000 | 2.88470 | 2.89170 | 2.8200 | 2.90080 | 2.8396 | 3B |
| | | | 2.9782 | 3.0008 | 2.89145 | 2.9561 | 3.0008 | 2.88495 | 2.89195 | 2.8192 | 2.90055 | 2.8388 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | Class | Truncated | Full-Form | | Truncated | Full-Form | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3-8 or 3.000-8 | UN | 2A | 2.9803 | 2.9974 | 2.91620 | 2.9618 | 2.9974 | 2.90770 | 2.91880 | 2.8650 | 2.92990 | 2.8900 | 2B |
| | | | 2.9796 | 2.9981 | 2.91595 | 2.9611 | 2.9981 | 2.90795 | 2.91905 | 2.8643 | 2.92965 | 2.8893 | |
| | | 3A | 2.9829 | 3.0000 | 2.91880 | 2.9665 | 3.0000 | 2.91240 | 2.91880 | 2.8650 | 2.92710 | 2.8797 | 3B |
| | | | 2.9822 | 3.0007 | 2.91855 | 2.9658 | 3.0007 | 2.91265 | 2.91905 | 2.8643 | 2.92685 | 2.8790 | |
| 3-12 or 3.000-12 | UN | 2A | 2.9852 | 2.9981 | 2.94400 | 2.9738 | 2.9981 | 2.93770 | 2.94590 | 2.9100 | 2.95410 | 2.9280 | 2B |
| | | | 2.9846 | 2.9987 | 2.94375 | 2.9732 | 2.9987 | 2.93795 | 2.94615 | 2.9094 | 2.95385 | 2.9274 | |
| | | 3A | 2.9871 | 3.0000 | 2.94590 | 2.9773 | 3.0000 | 2.94120 | 2.94590 | 2.9100 | 2.95210 | 2.9198 | 3B |
| | | | 2.9865 | 3.0006 | 2.94565 | 2.9767 | 3.0006 | 2.94145 | 2.94615 | 2.9094 | 2.95185 | 2.9192 | |
| 3-16 or 3.000-16 | UN | 2A | 2.9878 | 2.9983 | 2.95770 | 2.9792 | 2.9983 | 2.95210 | 2.95940 | 2.9320 | 2.96670 | 2.9460 | 2B |
| | | | 2.9872 | 2.9989 | 2.95745 | 2.9786 | 2.9989 | 2.95235 | 2.95965 | 2.9314 | 2.96645 | 2.9454 | |
| | | 3A | 2.9895 | 3.0000 | 2.95940 | 2.9823 | 3.0000 | 2.95520 | 2.95940 | 2.9320 | 2.96490 | 2.9408 | 3B |
| | | | 2.9889 | 3.0006 | 2.95915 | 2.9817 | 3.0006 | 2.95545 | 2.95965 | 2.9314 | 2.96465 | 2.9402 | |
| 3-20 or 3.000-20 | UN | 2A | 2.9894 | 2.9984 | 2.9659 | 2.9824 | 2.9984 | 2.9607 | 2.9675 | 2.9460 | 2.9743 | 2.9570 | 2B |
| | | | 2.9889 | 2.9989 | 2.9657 | 2.9819 | 2.9989 | 2.9609 | 2.9677 | 2.9455 | 2.9741 | 2.9565 | |
| | | 3A | 2.9910 | 3.0000 | 2.9675 | 2.9853 | 3.0000 | 2.9636 | 2.9675 | 2.9460 | 2.9726 | 2.9537 | 3B |
| | | | 2.9905 | 3.0005 | 2.9673 | 2.9848 | 3.0005 | 2.9638 | 2.9677 | 2.9455 | 2.9724 | 2.9532 | |
| 3⅛-6 or 3.125-6 | UN | 2A | 3.1012 | 3.1222 | 3.01390 | 3.0767 | 3.1222 | 3.00450 | 3.01670 | 2.9450 | 3.02890 | 2.9750 | 2B |
| | | | 3.1004 | 3.1230 | 3.01365 | 3.0759 | 3.1230 | 3.00475 | 3.01695 | 2.9442 | 3.02865 | 2.9742 | |
| | | 3A | 3.1040 | 3.1250 | 3.01670 | 3.0819 | 3.1250 | 3.00970 | 3.01670 | 2.9450 | 3.02590 | 2.9646 | 3B |
| | | | 3.1032 | 3.1258 | 3.01645 | 3.0811 | 3.1258 | 3.00995 | 3.01695 | 2.9442 | 3.02565 | 2.9638 | |
| 3⅛-8 or 3.125-8 | UN | 2A | 3.1053 | 3.1224 | 3.04120 | 3.0867 | 3.1224 | 3.03260 | 3.04380 | 2.9900 | 3.05500 | 3.0150 | 2B |
| | | | 3.1046 | 3.1231 | 3.04095 | 3.0860 | 3.1231 | 3.03285 | 3.04405 | 2.9893 | 3.05475 | 3.0143 | |
| | | 3A | 3.1079 | 3.1250 | 3.04380 | 3.0915 | 3.1250 | 3.03740 | 3.04380 | 2.9900 | 3.05220 | 3.0047 | 3B |
| | | | 3.1072 | 3.1257 | 3.04355 | 3.0908 | 3.1257 | 3.03765 | 3.04405 | 2.9893 | 3.05195 | 3.0040 | |
| 3⅛-12 or 3.125-12 | UN | 2A | 3.1102 | 3.1231 | 3.06900 | 3.0988 | 3.1231 | 3.06270 | 3.07090 | 3.0350 | 3.07910 | 3.0530 | 2B |
| | | | 3.1096 | 3.1237 | 3.06875 | 3.0982 | 3.1237 | 3.06295 | 3.07115 | 3.0344 | 3.07885 | 3.0524 | |
| | | 3A | 3.1121 | 3.1250 | 3.07090 | 3.1023 | 3.1250 | 3.06620 | 3.07090 | 3.0350 | 3.07710 | 3.0448 | 3B |
| | | | 3.1115 | 3.1256 | 3.07065 | 3.1017 | 3.1256 | 3.06645 | 3.07115 | 3.0344 | 3.07685 | 3.0442 | |
| 3⅛-16 or 3.125-16 | UN | 2A | 3.1128 | 3.1233 | 3.08270 | 3.1042 | 3.1233 | 3.07710 | 3.08440 | 3.0570 | 3.09170 | 3.0710 | 2B |
| | | | 3.1122 | 3.1239 | 3.08245 | 3.1036 | 3.1239 | 3.07735 | 3.08465 | 3.0564 | 3.09145 | 3.0704 | |
| | | 3A | 3.1145 | 3.1250 | 3.08440 | 3.1073 | 3.1250 | 3.08020 | 3.08440 | 3.0570 | 3.08990 | 3.0658 | 3B |
| | | | 3.1139 | 3.1256 | 3.08415 | 3.1067 | 3.1256 | 3.08045 | 3.08465 | 3.0564 | 3.08965 | 3.0652 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3¼-4 or 3.250-4 | UNC | 1A | 3.2186 | 3.2467 | 3.08430 | 3.1763 | 3.2467 | 3.06800 | 3.08760 | 2.9790 | 3.10880 | 3.0170 | 1B |
| | | | 3.2177 | 3.2476 | 3.08405 | 3.1754 | 3.2476 | 3.06825 | 3.08785 | 2.9781 | 3.10855 | 3.0161 | |
| | | 2A | 3.2186 | 3.2467 | 3.08430 | 3.1817 | 3.2467 | 3.07340 | 3.08760 | 2.9790 | 3.10170 | 3.0170 | 2B |
| | | | 3.2177 | 3.2476 | 3.08405 | 3.1808 | 3.2476 | 3.07365 | 3.08785 | 2.9781 | 3.10145 | 3.0161 | |
| | | 3A | 3.2219 | 3.2500 | 3.08760 | 3.1877 | 3.2500 | 3.07940 | 3.08760 | 2.9790 | 3.09820 | 3.0094 | 3B |
| | | | 3.2210 | 3.2509 | 3.08735 | 3.1868 | 3.2509 | 3.07965 | 3.08785 | 2.9781 | 3.09795 | 3.0085 | |
| 3¼-6 or 3.250-6 | UN | 2A | 3.2262 | 3.2472 | 3.13890 | 3.2016 | 3.2472 | 3.12940 | 3.14170 | 3.0700 | 3.15400 | 3.1000 | 2B |
| | | | 3.2254 | 3.2480 | 3.13865 | 3.2008 | 3.2480 | 3.12965 | 3.14195 | 3.0692 | 3.15375 | 3.0992 | |
| | | 3A | 3.2290 | 3.2500 | 3.14170 | 3.2068 | 3.2500 | 3.13460 | 3.14170 | 3.0700 | 3.15090 | 3.0896 | 3B |
| | | | 3.2282 | 3.2508 | 3.14145 | 3.2060 | 3.2508 | 3.13485 | 3.14195 | 3.0692 | 3.15065 | 3.0888 | |
| 3¼-8 or 3.250-8 | UN | 2A | 3.2303 | 3.2474 | 3.16620 | 3.2116 | 3.2474 | 3.15750 | 3.16880 | 3.1150 | 3.18010 | 3.1400 | 2B |
| | | | 3.2296 | 3.2481 | 3.16595 | 3.2109 | 3.2481 | 3.15775 | 3.16905 | 3.1143 | 3.17985 | 3.1393 | |
| | | 3A | 3.2329 | 3.2500 | 3.16880 | 3.2164 | 3.2500 | 3.16230 | 3.16880 | 3.1150 | 3.17730 | 3.1297 | 3B |
| | | | 3.2322 | 3.2507 | 3.16855 | 3.2157 | 3.2507 | 3.16255 | 3.16905 | 3.1143 | 3.17705 | 3.1290 | |
| 3¼-12 or 3.250-12 | UN | 2A | 3.2352 | 3.2481 | 3.19400 | 3.2238 | 3.2481 | 3.18770 | 3.19590 | 3.1600 | 3.20410 | 3.1780 | 2B |
| | | | 3.2346 | 3.2487 | 3.19375 | 3.2232 | 3.2487 | 3.18795 | 3.19615 | 3.1594 | 3.20385 | 3.1774 | |
| | | 3A | 3.2371 | 3.2500 | 3.19590 | 3.2273 | 3.2500 | 3.19120 | 3.19590 | 3.1600 | 3.20210 | 3.1698 | 3B |
| | | | 3.2365 | 3.2506 | 3.19565 | 3.2267 | 3.2506 | 3.19145 | 3.19615 | 3.1594 | 3.20185 | 3.1692 | |
| 3¼-16 or 3.250-16 | UN | 2A | 3.2378 | 3.2483 | 3.20770 | 3.2292 | 3.2483 | 3.20210 | 3.20940 | 3.1820 | 3.21670 | 3.1960 | 2B |
| | | | 3.2372 | 3.2489 | 3.20745 | 3.2286 | 3.2489 | 3.20235 | 3.20965 | 3.1814 | 3.21645 | 3.1954 | |
| | | 3A | 3.2395 | 3.2500 | 3.20940 | 3.2323 | 3.2500 | 3.20520 | 3.20940 | 3.1820 | 3.21490 | 3.1908 | 3B |
| | | | 3.2389 | 3.2506 | 3.20915 | 3.2317 | 3.2506 | 3.20545 | 3.20965 | 3.1814 | 3.21465 | 3.1902 | |
| 3⅜-6 or 3.375-6 | UN | 2A | 3.3511 | 3.3721 | 3.26380 | 3.3265 | 3.3721 | 3.25430 | 3.26670 | 3.1950 | 3.27910 | 3.2250 | 2B |
| | | | 3.3503 | 3.3729 | 3.26355 | 3.3257 | 3.3729 | 3.25455 | 3.26695 | 3.1942 | 3.27885 | 3.2242 | |
| | | 3A | 3.3540 | 3.3750 | 3.26670 | 3.3317 | 3.3750 | 3.25950 | 3.26670 | 3.1950 | 3.27600 | 3.2146 | 3B |
| | | | 3.3532 | 3.3758 | 3.26645 | 3.3309 | 3.3758 | 3.25975 | 3.26695 | 3.1942 | 3.27575 | 3.2138 | |
| 3⅜-8 or 3.375-8 | UN | 2A | 3.3553 | 3.3724 | 3.29120 | 3.3365 | 3.3724 | 3.28240 | 3.29380 | 3.2400 | 3.30520 | 3.2650 | 2B |
| | | | 3.3546 | 3.3731 | 3.29095 | 3.3358 | 3.3731 | 3.28265 | 3.29405 | 3.2393 | 3.30495 | 3.2643 | |
| | | 3A | 3.3579 | 3.3750 | 3.29380 | 3.3413 | 3.3750 | 3.28720 | 3.29380 | 3.2400 | 3.30230 | 3.2547 | 3B |
| | | | 3.3572 | 3.3757 | 3.29355 | 3.3406 | 3.3757 | 3.28745 | 3.29405 | 3.2393 | 3.30205 | 3.2540 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3⅜-12 or 3.375-12 | UN | 2A | 3.3602 | 3.3731 | 3.31900 | 3.3487 | 3.3731 | 3.31260 | 3.32090 | 3.2850 | 3.32930 | 3.3030 | 2B |
| | | | 3.3596 | 3.3737 | 3.31875 | 3.3481 | 3.3737 | 3.31285 | 3.32115 | 3.2844 | 3.32905 | 3.3024 | |
| | | 3A | 3.3621 | 3.3750 | 3.32090 | 3.3522 | 3.3750 | 3.31610 | 3.32090 | 3.2850 | 3.32720 | 3.2948 | 3B |
| | | | 3.3615 | 3.3756 | 3.32065 | 3.3516 | 3.3756 | 3.31635 | 3.32115 | 3.2844 | 3.32695 | 3.2942 | |
| 3⅜-16 or 3.375-16 | UN | 2A | 3.3628 | 3.3733 | 3.33270 | 3.3540 | 3.3733 | 3.32690 | 3.33440 | 3.3070 | 3.34190 | 3.3210 | 2B |
| | | | 3.3622 | 3.3739 | 3.33245 | 3.3534 | 3.3739 | 3.32715 | 3.33465 | 3.3064 | 3.34165 | 3.3204 | |
| | | 3A | 3.3645 | 3.3750 | 3.33440 | 3.3572 | 3.3750 | 3.33010 | 3.33440 | 3.3070 | 3.34000 | 3.3158 | 3B |
| | | | 3.3639 | 3.3756 | 3.33415 | 3.3566 | 3.3756 | 3.33035 | 3.33465 | 3.3064 | 3.33975 | 3.3152 | |
| 3½-4 or 3.500-4 | UNC | 1A | 3.4686 | 3.4967 | 3.33430 | 3.4260 | 3.4967 | 3.31770 | 3.33760 | 3.2290 | 3.35910 | 3.2670 | 1B |
| | | | 3.4677 | 3.4976 | 3.33405 | 3.4251 | 3.4976 | 3.31795 | 3.33785 | 3.2281 | 3.35885 | 3.2661 | |
| | | 2A | 3.4686 | 3.4967 | 3.33430 | 3.4316 | 3.4967 | 3.32330 | 3.33760 | 3.2290 | 3.35190 | 3.2670 | 2B |
| | | | 3.4677 | 3.4976 | 3.33405 | 3.4307 | 3.4976 | 3.32355 | 3.33785 | 3.2281 | 3.35165 | 3.2661 | |
| | | 3A | 3.4719 | 3.5000 | 3.33760 | 3.4376 | 3.5000 | 3.32930 | 3.33760 | 3.2290 | 3.34840 | 3.2594 | 3B |
| | | | 3.4710 | 3.5009 | 3.33735 | 3.4367 | 3.5009 | 3.32955 | 3.33785 | 3.2281 | 3.34815 | 3.2585 | |
| 3½-6 or 3.500-6 | UN | 2A | 3.4761 | 3.4971 | 3.38880 | 3.4514 | 3.4971 | 3.37920 | 3.39170 | 3.3200 | 3.40420 | 3.3500 | 2B |
| | | | 3.4753 | 3.4979 | 3.38855 | 3.4506 | 3.4979 | 3.37945 | 3.39195 | 3.3192 | 3.40395 | 3.3492 | |
| | | 3A | 3.4790 | 3.5000 | 3.39170 | 3.4567 | 3.5000 | 3.38450 | 3.39170 | 3.3200 | 3.40110 | 3.3396 | 3B |
| | | | 3.4782 | 3.5008 | 3.39145 | 3.4559 | 3.5008 | 3.38475 | 3.39195 | 3.3192 | 3.40085 | 3.3388 | |
| 3½-8 or 3.500-8 | UN | 2A | 3.4803 | 3.4974 | 3.41620 | 3.4615 | 3.4974 | 3.40740 | 3.41880 | 3.3650 | 3.43030 | 3.3900 | 2B |
| | | | 3.4796 | 3.4981 | 3.41595 | 3.4608 | 3.4981 | 3.40765 | 3.41905 | 3.3643 | 3.43005 | 3.3893 | |
| | | 3A | 3.4829 | 3.5000 | 3.41880 | 3.4663 | 3.5000 | 3.41220 | 3.41880 | 3.3650 | 3.42740 | 3.3797 | 3B |
| | | | 3.4822 | 3.5007 | 3.41855 | 3.4656 | 3.5007 | 3.41245 | 3.41905 | 3.3643 | 3.42715 | 3.3790 | |
| 3½-12 or 3.500-12 | UN | 2A | 3.4852 | 3.4981 | 3.44400 | 3.4737 | 3.4981 | 3.43760 | 3.44590 | 3.4100 | 3.45430 | 3.4280 | 2B |
| | | | 3.4846 | 3.4987 | 3.44375 | 3.4731 | 3.4987 | 3.43785 | 3.44615 | 3.4094 | 3.45405 | 3.4274 | |
| | | 3A | 3.4871 | 3.5000 | 3.44590 | 3.4772 | 3.5000 | 3.44110 | 3.44590 | 3.4100 | 3.45220 | 3.4198 | 3B |
| | | | 3.4865 | 3.5006 | 3.44565 | 3.4766 | 3.5006 | 3.44135 | 3.44615 | 3.4094 | 3.45195 | 3.4192 | |
| 3½-16 or 3.500-16 | UN | 2A | 3.4878 | 3.4983 | 3.45770 | 3.4790 | 3.4983 | 3.45190 | 3.45940 | 3.4320 | 3.46690 | 3.4460 | 2B |
| | | | 3.4872 | 3.4989 | 3.45745 | 3.4784 | 3.4989 | 3.45215 | 3.45965 | 3.4314 | 3.46665 | 3.4454 | |
| | | 3A | 3.4895 | 3.5000 | 3.45940 | 3.4822 | 3.5000 | 3.45510 | 3.45940 | 3.4320 | 3.46500 | 3.4408 | 3B |
| | | | 3.4889 | 3.5006 | 3.45915 | 3.4816 | 3.5006 | 3.45535 | 3.45965 | 3.4314 | 3.46475 | 3.4402 | |
| 3⅝-6 or 3.625-6 | UN | 2A | 3.6011 | 3.6221 | 3.51380 | 3.5763 | 3.6221 | 3.50410 | 3.51670 | 3.4450 | 3.52930 | 3.4750 | 2B |
| | | | 3.6003 | 3.6229 | 3.51355 | 3.5755 | 3.6229 | 3.50435 | 3.51695 | 3.4442 | 3.52905 | 3.4742 | |
| | | 3A | 3.6040 | 3.6250 | 3.51670 | 3.5816 | 3.6250 | 3.50940 | 3.51670 | 3.4450 | 3.52620 | 3.4646 | 3B |
| | | | 3.6032 | 3.6258 | 3.51645 | 3.5808 | 3.6258 | 3.50965 | 3.51695 | 3.4442 | 3.52595 | 3.4638 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3⅝-8 or 3.625-8 | UN | 2A | 3.6052 | 3.6223 | 3.54110 | 3.5863 | 3.6223 | 3.53220 | 3.54380 | 3.4900 | 3.55540 | 3.5150 | 2B |
| | | | 3.6045 | 3.6230 | 3.54085 | 3.5856 | 3.6230 | 3.53245 | 3.54405 | 3.4893 | 3.55515 | 3.5143 | |
| | | 3A | 3.6079 | 3.6250 | 3.54380 | 3.5912 | 3.6250 | 3.53710 | 3.54380 | 3.4900 | 3.55250 | 3.5047 | 3B |
| | | | 3.6072 | 3.6257 | 3.54355 | 3.5905 | 3.6257 | 3.53735 | 3.54405 | 3.4893 | 3.55225 | 3.5040 | |
| 3⅝-12 or 3.625-12 | UN | 2A | 3.6102 | 3.6231 | 3.56900 | 3.5987 | 3.6231 | 3.56260 | 3.57090 | 3.5350 | 3.57930 | 3.5530 | 2B |
| | | | 3.6096 | 3.6237 | 3.56875 | 3.5981 | 3.6237 | 3.56285 | 3.57115 | 3.5344 | 3.57905 | 3.5524 | |
| | | 3A | 3.6121 | 3.6250 | 3.57090 | 3.6022 | 3.6250 | 3.56610 | 3.57090 | 3.5350 | 3.57720 | 3.5448 | 3B |
| | | | 3.6115 | 3.6256 | 3.57065 | 3.6016 | 3.6256 | 3.56635 | 3.57115 | 3.5344 | 3.57695 | 3.5442 | |
| 3⅝-16 or 3.625-16 | UN | 2A | 3.6128 | 3.6233 | 3.58270 | 3.6040 | 3.6233 | 3.57690 | 3.58440 | 3.5570 | 3.59190 | 3.5710 | 2B |
| | | | 3.6122 | 3.6239 | 3.58245 | 3.6034 | 3.6239 | 3.57715 | 3.58465 | 3.5564 | 3.59165 | 3.5704 | |
| | | 3A | 3.6145 | 3.6250 | 3.58440 | 3.6072 | 3.6250 | 3.58010 | 3.58440 | 3.5570 | 3.59000 | 3.5658 | 3B |
| | | | 3.6139 | 3.6256 | 3.58415 | 3.6066 | 3.6256 | 3.58035 | 3.58465 | 3.5564 | 3.58975 | 3.5652 | |
| 3¾-4 or 3.750-4 | UNC | 1A | 3.7185 | 3.7466 | 3.58420 | 3.6757 | 3.7466 | 3.56740 | 3.58760 | 3.4790 | 3.60940 | 3.5170 | 1B |
| | | | 3.7176 | 3.7475 | 3.58395 | 3.6748 | 3.7475 | 3.56765 | 3.58785 | 3.4781 | 3.60915 | 3.5161 | |
| | | 2A | 3.7185 | 3.7466 | 3.58420 | 3.6813 | 3.7466 | 3.57300 | 3.58760 | 3.4790 | 3.60210 | 3.5170 | 2B |
| | | | 3.7176 | 3.7475 | 3.58395 | 3.6804 | 3.7475 | 3.57325 | 3.58785 | 3.4781 | 3.60185 | 3.5161 | |
| | | 3A | 3.7219 | 3.7500 | 3.58760 | 3.6875 | 3.7500 | 3.57920 | 3.58760 | 3.4790 | 3.59850 | 3.5094 | 3B |
| | | | 3.7210 | 3.7509 | 3.58735 | 3.6866 | 3.7509 | 3.57945 | 3.58785 | 3.4781 | 3.59825 | 3.5085 | |
| 3¾-6 or 3.750-6 | UN | 2A | 3.7261 | 3.7471 | 3.63880 | 3.7012 | 3.7471 | 3.62900 | 3.64170 | 3.5700 | 3.65440 | 3.6000 | 2B |
| | | | 3.7253 | 3.7479 | 3.63855 | 3.7004 | 3.7479 | 3.62925 | 3.64195 | 3.5692 | 3.65415 | 3.5992 | |
| | | 3A | 3.7290 | 3.7500 | 3.64170 | 3.7066 | 3.7500 | 3.63440 | 3.64170 | 3.5700 | 3.65120 | 3.5896 | 3B |
| | | | 3.7282 | 3.7508 | 3.64145 | 3.7058 | 3.7508 | 3.63465 | 3.64195 | 3.5692 | 3.65095 | 3.5888 | |
| 3¾-8 or 3.750-8 | UN | 2A | 3.7302 | 3.7473 | 3.66610 | 3.7112 | 3.7473 | 3.65710 | 3.66880 | 3.6150 | 3.68050 | 3.6400 | 2B |
| | | | 3.7295 | 3.7480 | 3.66585 | 3.7105 | 3.7480 | 3.65735 | 3.66905 | 3.6143 | 3.68025 | 3.6393 | |
| | | 3A | 3.7329 | 3.7500 | 3.66880 | 3.7162 | 3.7500 | 3.66210 | 3.66880 | 3.6150 | 3.67760 | 3.6297 | 3B |
| | | | 3.7322 | 3.7507 | 3.66855 | 3.7155 | 3.7507 | 3.66235 | 3.66905 | 3.6143 | 3.67735 | 3.6290 | |
| 3¾-12 or 3.750-12 | UN | 2A | 3.7352 | 3.7481 | 3.69400 | 3.7237 | 3.7481 | 3.68760 | 3.69590 | 3.6600 | 3.70430 | 3.6780 | 2B |
| | | | 3.7346 | 3.7487 | 3.69375 | 3.7231 | 3.7487 | 3.68785 | 3.69615 | 3.6594 | 3.70405 | 3.6774 | |
| | | 3A | 3.7371 | 3.7500 | 3.69590 | 3.7272 | 3.7500 | 3.69110 | 3.69590 | 3.6600 | 3.70220 | 3.6698 | 3B |
| | | | 3.7365 | 3.7506 | 3.69565 | 3.7266 | 3.7506 | 3.69135 | 3.69615 | 3.6594 | 3.70195 | 3.6692 | |
| 3¾-16 or 3.750-16 | UN | 2A | 3.7378 | 3.7483 | 3.70770 | 3.7290 | 3.7483 | 3.70190 | 3.70940 | 3.6820 | 3.71690 | 3.6960 | 2B |
| | | | 3.7372 | 3.7489 | 3.70745 | 3.7284 | 3.7489 | 3.70215 | 3.70965 | 3.6814 | 3.71665 | 3.6954 | |
| | | 3A | 3.7395 | 3.7500 | 3.70940 | 3.7322 | 3.7500 | 3.70510 | 3.70940 | 3.6820 | 3.71500 | 3.6908 | 3B |
| | | | 3.7389 | 3.7506 | 3.70915 | 3.7316 | 3.7506 | 3.70535 | 3.70965 | 3.6814 | 3.71475 | 3.6902 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 3/8-6 or 3.875-6 | UN | 2A | 3.8510 | 3.8720 | 3.76370 | 3.8260 | 3.8720 | 3.75380 | 3.76670 | 3.6950 | 3.77950 | 3.7250 | 2B |
| | | | 3.8502 | 3.8728 | 3.76345 | 3.8252 | 3.8728 | 3.75405 | 3.76695 | 3.6942 | 3.77925 | 3.7242 | |
| | | 3A | 3.8540 | 3.8750 | 3.76670 | 3.8315 | 3.8750 | 3.75930 | 3.76670 | 3.6950 | 3.77630 | 3.7146 | 3B |
| | | | 3.8532 | 3.8758 | 3.76645 | 3.8307 | 3.8758 | 3.75955 | 3.76695 | 3.6942 | 3.77605 | 3.7138 | |
| 3/8-8 or 3.875-8 | UN | 2A | 3.8552 | 3.8723 | 3.79110 | 3.8361 | 3.8723 | 3.78200 | 3.79380 | 3.7400 | 3.80560 | 3.7650 | 2B |
| | | | 3.8545 | 3.8730 | 3.79085 | 3.8354 | 3.8730 | 3.78225 | 3.79405 | 3.7393 | 3.80535 | 3.7643 | |
| | | 3A | 3.8579 | 3.8750 | 3.79380 | 3.8411 | 3.8750 | 3.78700 | 3.79380 | 3.7400 | 3.80260 | 3.7547 | 3B |
| | | | 3.8572 | 3.8757 | 3.79355 | 3.8404 | 3.8757 | 3.78725 | 3.79405 | 3.7393 | 3.80235 | 3.7540 | |
| 3/8-12 or 3.875-12 | UN | 2A | 3.8601 | 3.8730 | 3.81890 | 3.8485 | 3.8730 | 3.81240 | 3.82090 | 3.7850 | 3.82940 | 3.8030 | 2B |
| | | | 3.8595 | 3.8736 | 3.81865 | 3.8479 | 3.8736 | 3.81265 | 3.82115 | 3.7844 | 3.82915 | 3.8024 | |
| | | 3A | 3.8621 | 3.8750 | 3.82090 | 3.8521 | 3.8750 | 3.81600 | 3.82090 | 3.7850 | 3.82730 | 3.7948 | 3B |
| | | | 3.8615 | 3.8756 | 3.82065 | 3.8515 | 3.8756 | 3.81625 | 3.82115 | 3.7844 | 3.82705 | 3.7942 | |
| 3/8-16 or 3.875-16 | UN | 2A | 3.8627 | 3.8732 | 3.83260 | 3.8538 | 3.8732 | 3.82670 | 3.83440 | 3.8070 | 3.84200 | 3.8210 | 2B |
| | | | 3.8621 | 3.8738 | 3.83235 | 3.8532 | 3.8738 | 3.82695 | 3.83465 | 3.8064 | 3.84175 | 3.8204 | |
| | | 3A | 3.8645 | 3.8750 | 3.83440 | 3.8571 | 3.8750 | 3.83000 | 3.83440 | 3.8070 | 3.84010 | 3.8158 | 3B |
| | | | 3.8639 | 3.8756 | 3.83415 | 3.8565 | 3.8756 | 3.83025 | 3.83465 | 3.8064 | 3.83985 | 3.8152 | |
| 4-4 or 4.000-4 | UNC | 1A | 3.9685 | 3.9966 | 3.83420 | 3.9255 | 3.9966 | 3.81720 | 3.83760 | 3.7290 | 3.85970 | 3.7670 | 1B |
| | | | 3.9676 | 3.9975 | 3.83395 | 3.9246 | 3.9975 | 3.81745 | 3.83785 | 3.7281 | 3.85945 | 3.7661 | |
| | | 2A | 3.9685 | 3.9966 | 3.83420 | 3.9312 | 3.9966 | 3.82290 | 3.83760 | 3.7290 | 3.85230 | 3.7670 | 2B |
| | | | 3.9676 | 3.9975 | 3.83395 | 3.9303 | 3.9975 | 3.82315 | 3.83785 | 3.7281 | 3.85205 | 3.7661 | |
| | | 3A | 3.9719 | 4.0000 | 3.83760 | 3.9374 | 4.0000 | 3.82910 | 3.83760 | 3.7290 | 3.84870 | 3.7594 | 3B |
| | | | 3.9710 | 4.0009 | 3.83735 | 3.9365 | 4.0009 | 3.82935 | 3.83785 | 3.7281 | 3.84845 | 3.7585 | |
| 4-6 or 4.000-6 | UN | 2A | 3.9760 | 3.9970 | 3.88870 | 3.9510 | 3.9970 | 3.87880 | 3.89170 | 3.8200 | 3.90460 | 3.8500 | 2B |
| | | | 3.9752 | 3.9978 | 3.88845 | 3.9502 | 3.9978 | 3.87905 | 3.89195 | 3.8192 | 3.90435 | 3.8492 | |
| | | 3A | 3.9790 | 4.0000 | 3.89170 | 3.9565 | 4.0000 | 3.88430 | 3.89170 | 3.8200 | 3.90140 | 3.8396 | 3B |
| | | | 3.9782 | 4.0008 | 3.89145 | 3.9557 | 4.0008 | 3.88455 | 3.89195 | 3.8192 | 3.90115 | 3.8388 | |
| 4-8 or 4.000-8 | UN | 2A | 3.9802 | 3.9973 | 3.91610 | 3.9611 | 3.9973 | 3.90700 | 3.91880 | 3.8650 | 3.93070 | 3.8900 | 2B |
| | | | 3.9795 | 3.9980 | 3.91585 | 3.9604 | 3.9980 | 3.90725 | 3.91905 | 3.8643 | 3.93045 | 3.8893 | |
| | | 3A | 3.9829 | 4.0000 | 3.91880 | 3.9661 | 4.0000 | 3.91200 | 3.91880 | 3.8650 | 3.92770 | 3.8797 | 3B |
| | | | 3.9822 | 4.0007 | 3.91855 | 3.9654 | 4.0007 | 3.91225 | 3.91905 | 3.8643 | 3.92745 | 3.8790 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4-12 or 4.000-12 | UN | 2A | 3.9851 | 3.9980 | 3.94390 | 3.9735 | 3.9980 | 3.93740 | 3.94590 | 3.9100 | 3.95440 | 3.9280 | 2B |
| | | | 3.9845 | 3.9986 | 3.94365 | 3.9729 | 3.9986 | 3.93765 | 3.94615 | 3.9094 | 3.95415 | 3.9274 | |
| | | 3A | 3.9871 | 4.0000 | 3.94590 | 3.9771 | 4.0000 | 3.94100 | 3.94590 | 3.9100 | 3.95230 | 3.9198 | 3B |
| | | | 3.9865 | 4.0006 | 3.94565 | 3.9765 | 4.0006 | 3.94125 | 3.94615 | 3.9094 | 3.95205 | 3.9192 | |
| 4-16 or 4.000-16 | UN | 2A | 3.9877 | 3.9982 | 3.95760 | 3.9788 | 3.9982 | 3.95170 | 3.95940 | 3.9320 | 3.96700 | 3.9460 | 2B |
| | | | 3.9871 | 3.9988 | 3.95735 | 3.9782 | 3.9988 | 3.95195 | 3.95965 | 3.9314 | 3.96675 | 3.9454 | |
| | | 3A | 3.9895 | 4.0000 | 3.95940 | 3.9821 | 4.0000 | 3.95500 | 3.95940 | 3.9320 | 3.96510 | 3.9408 | 3B |
| | | | 3.9889 | 4.0006 | 3.95915 | 3.9815 | 4.0006 | 3.95525 | 3.95965 | 3.9314 | 3.96485 | 3.9402 | |
| 4⅛-6 or 4.125-6 | UN | 2A | 4.1010 | 4.1220 | 4.0137 | 4.0759 | 4.1220 | 4.0037 | 4.0167 | 3.9450 | 4.0297 | 3.9750 | 2B |
| | | | 4.0997 | 4.1233 | 4.0134 | 4.0746 | 4.1233 | 4.0040 | 4.0170 | 3.9437 | 4.0294 | 3.9737 | |
| | | 3A | 4.1040 | 4.1250 | 4.0167 | 4.0814 | 4.1250 | 4.0092 | 4.0167 | 3.9450 | 4.0264 | 3.9646 | 3B |
| | | | 4.1027 | 4.1263 | 4.0164 | 4.0801 | 4.1263 | 4.0095 | 4.0170 | 3.9437 | 4.0261 | 3.9633 | |
| 4⅛-12 or 4.125-12 | UN | 2A | 4.1101 | 4.1230 | 4.0689 | 4.0985 | 4.1230 | 4.0624 | 4.0709 | 4.0350 | 4.0794 | 4.0530 | 2B |
| | | | 4.1092 | 4.1239 | 4.0686 | 4.0976 | 4.1239 | 4.0627 | 4.0712 | 4.0341 | 4.0791 | 4.0521 | |
| | | 3A | 4.1121 | 4.1250 | 4.0709 | 4.1021 | 4.1250 | 4.0660 | 4.0709 | 4.0350 | 4.0773 | 4.0448 | 3B |
| | | | 4.1112 | 4.1259 | 4.0706 | 4.1012 | 4.1259 | 4.0663 | 4.0712 | 4.0341 | 4.0770 | 4.0439 | |
| 4⅛-16 or 4.125-16 | UN | 2A | 4.1127 | 4.1232 | 4.0826 | 4.1038 | 4.1232 | 4.0767 | 4.0844 | 4.0570 | 4.0920 | 4.0710 | 2B |
| | | | 4.1118 | 4.1241 | 4.0823 | 4.1029 | 4.1241 | 4.0770 | 4.0847 | 4.0561 | 4.0917 | 4.0701 | |
| | | 3A | 4.1145 | 4.1250 | 4.0844 | 4.1071 | 4.1250 | 4.0800 | 4.0844 | 4.0570 | 4.0901 | 4.0658 | 3B |
| | | | 4.1136 | 4.1259 | 4.0841 | 4.1062 | 4.1259 | 4.0803 | 4.0847 | 4.0561 | 4.0898 | 4.0649 | |
| 4¼-4 or 4.250-4 | UN | 2A | 4.2185 | 4.2466 | 4.0842 | 4.1810 | 4.2466 | 4.0727 | 4.0876 | 3.9790 | 4.1025 | 4.0170 | 2B |
| | | | 4.2170 | 4.2481 | 4.0839 | 4.1795 | 4.2481 | 4.0730 | 4.0879 | 3.9775 | 4.1022 | 4.0155 | |
| | | 3A | 4.2219 | 4.2500 | 4.0876 | 4.1873 | 4.2500 | 4.0790 | 4.0876 | 3.9790 | 4.0988 | 4.0094 | 3B |
| | | | 4.2204 | 4.2515 | 4.0873 | 4.1858 | 4.2515 | 4.0793 | 4.0879 | 3.9775 | 4.0985 | 4.0079 | |
| 4¼-6 or 4.250-6 | UN | 2A | 4.2260 | 4.2470 | 4.1387 | 4.2008 | 4.2470 | 4.1286 | 4.1417 | 4.0700 | 4.1548 | 4.1000 | 2B |
| | | | 4.2247 | 4.2483 | 4.1384 | 4.1995 | 4.2483 | 4.1289 | 4.1420 | 4.0687 | 4.1545 | 4.0987 | |
| | | 3A | 4.2290 | 4.2500 | 4.1417 | 4.2064 | 4.2500 | 4.1342 | 4.1417 | 4.0700 | 4.1515 | 4.0896 | 3B |
| | | | 4.2277 | 4.2513 | 4.1414 | 4.2051 | 4.2513 | 4.1345 | 4.1420 | 4.0687 | 4.1512 | 4.0883 | |
| 4¼-12 or 4.250-12 | UN | 2A | 4.2351 | 4.2480 | 4.1939 | 4.2235 | 4.2480 | 4.1874 | 4.1959 | 4.1600 | 4.2044 | 4.1780 | 2B |
| | | | 4.2342 | 4.2489 | 4.1936 | 4.2226 | 4.2489 | 4.1877 | 4.1962 | 4.1591 | 4.2041 | 4.1771 | |
| | | 3A | 4.2371 | 4.2500 | 4.1959 | 4.2271 | 4.2500 | 4.1910 | 4.1959 | 4.1600 | 4.2023 | 4.1698 | 3B |
| | | | 4.2362 | 4.2509 | 4.1956 | 4.2262 | 4.2509 | 4.1913 | 4.1962 | 4.1591 | 4.2020 | 4.1689 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4¼-16 or 4.250-16 | UN | 2A | 4.2377 | 4.2482 | 4.2076 | 4.2288 | 4.2482 | 4.2017 | 4.2094 | 4.1820 | 4.2170 | 4.1960 | 2B |
| | | | 4.2368 | 4.2491 | 4.2073 | 4.2279 | 4.2491 | 4.2020 | 4.2097 | 4.1811 | 4.2167 | 4.1951 | |
| | | 3A | 4.2395 | 4.2500 | 4.2094 | 4.2321 | 4.2500 | 4.2050 | 4.2094 | 4.1820 | 4.2151 | 4.1908 | 3B |
| | | | 4.2386 | 4.2509 | 4.2091 | 4.2312 | 4.2509 | 4.2053 | 4.2097 | 4.1811 | 4.2148 | 4.1899 | |
| 4⅜-6 or 4.375-6 | UN | 2A | 4.3510 | 4.3720 | 4.2637 | 4.3258 | 4.3720 | 4.2536 | 4.2667 | 4.1950 | 4.2799 | 4.2250 | 2B |
| | | | 4.3497 | 4.3733 | 4.2634 | 4.3245 | 4.3733 | 4.2539 | 4.2670 | 4.1937 | 4.2796 | 4.2237 | |
| | | 3A | 4.3540 | 4.3750 | 4.2667 | 4.3313 | 4.3750 | 4.2591 | 4.2667 | 4.1950 | 4.2766 | 4.2146 | 3B |
| | | | 4.3527 | 4.3763 | 4.2664 | 4.3300 | 4.3763 | 4.2594 | 4.2670 | 4.1937 | 4.2763 | 4.2133 | |
| 4⅜-12 or 4.375-12 | UN | 2A | 4.3601 | 4.3730 | 4.3189 | 4.3485 | 4.3730 | 4.3124 | 4.3209 | 4.2850 | 4.3294 | 4.3030 | 2B |
| | | | 4.3592 | 4.3739 | 4.3186 | 4.3476 | 4.3739 | 4.3127 | 4.3212 | 4.2841 | 4.3291 | 4.3021 | |
| | | 3A | 4.3621 | 4.3750 | 4.3209 | 4.3521 | 4.3750 | 4.3160 | 4.3209 | 4.2850 | 4.3273 | 4.2948 | 3B |
| | | | 4.3612 | 4.3759 | 4.3206 | 4.3512 | 4.3759 | 4.3163 | 4.3212 | 4.2841 | 4.3270 | 4.2939 | |
| 4⅜-16 or 4.375-16 | UN | 2A | 4.3627 | 4.3732 | 4.3326 | 4.3538 | 4.3732 | 4.3267 | 4.3344 | 4.3070 | 4.3420 | 4.3210 | 2B |
| | | | 4.3618 | 4.3741 | 4.3323 | 4.3529 | 4.3741 | 4.3270 | 4.3347 | 4.3061 | 4.3417 | 4.3201 | |
| | | 3A | 4.3645 | 4.3750 | 4.3344 | 4.3571 | 4.3750 | 4.3300 | 4.3344 | 4.3070 | 4.3401 | 4.3158 | 3B |
| | | | 4.3636 | 4.3759 | 4.3341 | 4.3562 | 4.3759 | 4.3303 | 4.3347 | 4.3061 | 4.3398 | 4.3149 | |
| 4½-4 or 4.500-4 | UN | 2A | 4.4684 | 4.4965 | 4.3341 | 4.4308 | 4.4965 | 4.3225 | 4.3376 | 4.2290 | 4.3527 | 4.2670 | 2B |
| | | | 4.4669 | 4.4980 | 4.3338 | 4.4293 | 4.4980 | 4.3228 | 4.3379 | 4.2275 | 4.3524 | 4.2655 | |
| | | 3A | 4.4719 | 4.5000 | 4.3376 | 4.4372 | 4.5000 | 4.3289 | 4.3376 | 4.2290 | 4.3489 | 4.2594 | 3B |
| | | | 4.4704 | 4.5015 | 4.3373 | 4.4357 | 4.5015 | 4.3292 | 4.3379 | 4.2275 | 4.3486 | 4.2579 | |
| 4½-6 or 4.500-6 | UN | 2A | 4.4759 | 4.4969 | 4.3886 | 4.4506 | 4.4969 | 4.3784 | 4.3917 | 4.3200 | 4.4050 | 4.3500 | 2B |
| | | | 4.4746 | 4.4982 | 4.3883 | 4.4493 | 4.4982 | 4.3787 | 4.3920 | 4.3187 | 4.4047 | 4.3487 | |
| | | 3A | 4.4790 | 4.5000 | 4.3917 | 4.4562 | 4.5000 | 4.3840 | 4.3917 | 4.3200 | 4.4016 | 4.3396 | 3B |
| | | | 4.4777 | 4.5013 | 4.3914 | 4.4549 | 4.5013 | 4.3843 | 4.3920 | 4.3187 | 4.4013 | 4.3383 | |
| 4½-12 or 4.500-12 | UN | 2A | 4.4851 | 4.4980 | 4.4439 | 4.4735 | 4.4980 | 4.4374 | 4.4459 | 4.4100 | 4.4544 | 4.4280 | 2B |
| | | | 4.4842 | 4.4989 | 4.4436 | 4.4726 | 4.4989 | 4.4377 | 4.4462 | 4.4091 | 4.4541 | 4.4271 | |
| | | 3A | 4.4871 | 4.5000 | 4.4459 | 4.4771 | 4.5000 | 4.4410 | 4.4459 | 4.4100 | 4.4523 | 4.4198 | 3B |
| | | | 4.4862 | 4.5009 | 4.4456 | 4.4762 | 4.5009 | 4.4413 | 4.4462 | 4.4091 | 4.4520 | 4.4189 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4½-16 or 4.500-16 | UN | 2A | 4.4877 | 4.4982 | 4.4576 | 4.4788 | 4.4982 | 4.4517 | 4.4594 | 4.4320 | 4.4670 | 4.4460 | 2B |
| | | | 4.4868 | 4.4991 | 4.4573 | 4.4779 | 4.4991 | 4.4520 | 4.4597 | 4.4311 | 4.4667 | 4.4451 | |
| | | 3A | 4.4895 | 4.5000 | 4.4594 | 4.4821 | 4.5000 | 4.4550 | 4.4594 | 4.4320 | 4.4651 | 4.4408 | 3B |
| | | | 4.4886 | 4.5009 | 4.4591 | 4.4812 | 4.5009 | 4.4553 | 4.4597 | 4.4311 | 4.4648 | 4.4399 | |
| 4⅝-6 or 4.625-6 | UN | 2A | 4.6009 | 4.6219 | 4.5136 | 4.5755 | 4.6219 | 4.5033 | 4.5167 | 4.4450 | 4.5300 | 4.4750 | 2B |
| | | | 4.5996 | 4.6232 | 4.5133 | 4.5742 | 4.6232 | 4.5036 | 4.5170 | 4.4437 | 4.5297 | 4.4737 | |
| | | 3A | 4.6040 | 4.6250 | 4.5167 | 4.5812 | 4.6250 | 4.5090 | 4.5167 | 4.4450 | 4.5267 | 4.4646 | 3B |
| | | | 4.6027 | 4.6263 | 4.5164 | 4.5799 | 4.6263 | 4.5093 | 4.5170 | 4.4437 | 4.5264 | 4.4633 | |
| 4⅝-12 or 4.625-12 | UN | 2A | 4.6101 | 4.6230 | 4.5689 | 4.5983 | 4.6230 | 4.5622 | 4.5709 | 4.5350 | 4.5796 | 4.5530 | 2B |
| | | | 4.6092 | 4.6239 | 4.5686 | 4.5974 | 4.6239 | 4.5625 | 4.5712 | 4.5341 | 4.5793 | 4.5521 | |
| | | 3A | 4.6121 | 4.6250 | 4.5709 | 4.6020 | 4.6250 | 4.5659 | 4.5709 | 4.5350 | 4.5775 | 4.5448 | 3B |
| | | | 4.6112 | 4.6259 | 4.5706 | 4.6011 | 4.6259 | 4.5662 | 4.5712 | 4.5341 | 4.5772 | 4.5439 | |
| 4⅝-16 or 4.625-16 | UN | 2A | 4.6127 | 4.6232 | 4.5826 | 4.6036 | 4.6232 | 4.5765 | 4.5844 | 4.5570 | 4.5923 | 4.5710 | 2B |
| | | | 4.6118 | 4.6241 | 4.5823 | 4.6027 | 4.6241 | 4.5768 | 4.5847 | 4.5561 | 4.5920 | 4.5701 | |
| | | 3A | 4.6145 | 4.6250 | 4.5844 | 4.6070 | 4.6250 | 4.5799 | 4.5844 | 4.5570 | 4.5903 | 4.5658 | 3B |
| | | | 4.6136 | 4.6259 | 4.5841 | 4.6061 | 4.6259 | 4.5802 | 4.5847 | 4.5561 | 4.5900 | 4.5649 | |
| 4¾-4 or 4.750-4 | UN | 2A | 4.7184 | 4.7465 | 4.5841 | 4.6807 | 4.7465 | 4.5724 | 4.5876 | 4.4790 | 4.6029 | 4.5170 | 2B |
| | | | 4.7169 | 4.7480 | 4.5838 | 4.6792 | 4.7480 | 4.5727 | 4.5879 | 4.4775 | 4.6026 | 4.5155 | |
| | | 3A | 4.7219 | 4.7500 | 4.5876 | 4.6871 | 4.7500 | 4.5788 | 4.5876 | 4.4790 | 4.5990 | 4.5094 | 3B |
| | | | 4.7204 | 4.7515 | 4.5873 | 4.6856 | 4.7515 | 4.5791 | 4.5879 | 4.4775 | 4.5987 | 4.5079 | |
| 4¾-6 or 4.750-6 | UN | 2A | 4.7259 | 4.7469 | 4.6386 | 4.7005 | 4.7469 | 4.6283 | 4.6417 | 4.5700 | 4.6551 | 4.6000 | 2B |
| | | | 4.7246 | 4.7482 | 4.6383 | 4.6992 | 4.7482 | 4.6286 | 4.6420 | 4.5687 | 4.6548 | 4.5987 | |
| | | 3A | 4.7290 | 4.7500 | 4.6417 | 4.7062 | 4.7500 | 4.6340 | 4.6417 | 4.5700 | 4.6518 | 4.5896 | 3B |
| | | | 4.7277 | 4.7513 | 4.6414 | 4.7049 | 4.7513 | 4.6343 | 4.6420 | 4.5687 | 4.6515 | 4.5883 | |
| 4¾-12 or 4.750-12 | UN | 2A | 4.7351 | 4.7480 | 4.6939 | 4.7233 | 4.7480 | 4.6872 | 4.6959 | 4.6600 | 4.7046 | 4.6780 | 2B |
| | | | 4.7342 | 4.7489 | 4.6936 | 4.7224 | 4.7489 | 4.6875 | 4.6962 | 4.6591 | 4.7043 | 4.6771 | |
| | | 3A | 4.7371 | 4.7500 | 4.6959 | 4.7270 | 4.7500 | 4.6909 | 4.6959 | 4.6600 | 4.7025 | 4.6698 | 3B |
| | | | 4.7362 | 4.7509 | 4.6956 | 4.7261 | 4.7509 | 4.6912 | 4.6962 | 4.6591 | 4.7022 | 4.6689 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 4¾-16 or 4.750-16 | UN | 2A | .4.73/7 | 4.7482 | 4.7076 | 4.7286 | 4.7482 | 4.7015 | 4.7094 | 4.6820 | 4.7173 | 4.6960 | 2B |
| | | | 4.7368 | 4.7491 | 4.7073 | 4.7277 | 4.7491 | 4.7018 | 4.7097 | 4.6811 | 4.7170 | 4.6951 | |
| | | 3A | 4.7395 | 4.7500 | 4.7094 | 4.7320 | 4.7500 | 4.7049 | 4.7094 | 4.6820 | 4.7153 | 4.6908 | 3B |
| | | | 4.7386 | 4.7509 | 4.7091 | 4.7311 | 4.7509 | 4.7052 | 4.7097 | 4.6811 | 4.7150 | 4.6899 | |
| 4⅞-6 or 4.875-6 | UN | 2A | 4.8509 | 4.8719 | 4.7636 | 4.8254 | 4.8719 | 4.7532 | 4.7667 | 4.6950 | 4.7802 | 4.7250 | 2B |
| | | | 4.8496 | 4.8732 | 4.7633 | 4.8241 | 4.8732 | 4.7535 | 4.7670 | 4.6937 | 4.7799 | 4.7237 | |
| | | 3A | 4.8540 | 4.8750 | 4.7667 | 4.8311 | 4.8750 | 4.7589 | 4.7667 | 4.6950 | 4.7768 | 4.7146 | 3B |
| | | | 4.8527 | 4.8763 | 4.7664 | 4.8298 | 4.8763 | 4.7592 | 4.7670 | 4.6937 | 4.7765 | 4.7133 | |
| 4⅞-12 or 4.875-12 | UN | 2A | 4.8601 | 4.8730 | 4.8189 | 4.8483 | 4.8730 | 4.8122 | 4.8209 | 4.7850 | 4.8296 | 4.8030 | 2B |
| | | | 4.8592 | 4.8739 | 4.8186 | 4.8474 | 4.8739 | 4.8125 | 4.8212 | 4.7841 | 4.8293 | 4.8021 | |
| | | 3A | 4.8621 | 4.8750 | 4.8209 | 4.8520 | 4.8750 | 4.8159 | 4.8209 | 4.7850 | 4.8275 | 4.7948 | 3B |
| | | | 4.8612 | 4.8759 | 4.8206 | 4.8511 | 4.8759 | 4.8162 | 4.8212 | 4.7841 | 4.8272 | 4.7939 | |
| 4⅞-16 or 4.875-16 | UN | 2A | 4.8627 | 4.8732 | 4.8326 | 4.8536 | 4.8732 | 4.8265 | 4.8344 | 4.8070 | 4.8423 | 4.8210 | 2B |
| | | | 4.8618 | 4.8741 | 4.8323 | 4.8527 | 4.8741 | 4.8268 | 4.8347 | 4.8061 | 4.8420 | 4.8201 | |
| | | 3A | 4.8645 | 4.8750 | 4.8344 | 4.8570 | 4.8750 | 4.8299 | 4.8344 | 4.8070 | 4.8403 | 4.8158 | 3B |
| | | | 4.8636 | 4.8759 | 4.8341 | 4.8561 | 4.8759 | 4.8302 | 4.8347 | 4.8061 | 4.8400 | 4.8149 | |
| 5-4 or 5.000-4 | UN | 2A | 4.9683 | 4.9964 | 4.8340 | 4.9304 | 4.9964 | 4.8221 | 4.8376 | 4.7290 | 4.8530 | 4.7670 | 2B |
| | | | 4.9668 | 4.9979 | 4.8337 | 4.9289 | 4.9979 | 4.8224 | 4.8379 | 4.7275 | 4.8527 | 4.7655 | |
| | | 3A | 4.9719 | 5.0000 | 4.8376 | 4.9370 | 5.0000 | 4.8287 | 4.8376 | 4.7290 | 4.8492 | 4.7594 | 3B |
| | | | 4.9704 | 5.0015 | 4.8373 | 4.9355 | 5.0015 | 4.8290 | 4.8379 | 4.7275 | 4.8489 | 4.7579 | |
| 5-6 or 5.000-6 | UN | 2A | 4.9759 | 4.9969 | 4.8886 | 4.9503 | 4.9969 | 4.8781 | 4.8917 | 4.8200 | 4.9053 | 4.8500 | 2B |
| | | | 4.9746 | 4.9982 | 4.8883 | 4.9490 | 4.9982 | 4.8784 | 4.8920 | 4.8187 | 4.9050 | 4.8487 | |
| | | 3A | 4.9790 | 5.0000 | 4.8917 | 4.9561 | 5.0000 | 4.8839 | 4.8917 | 4.8200 | 4.9019 | 4.8396 | 3B |
| | | | 4.9777 | 5.0013 | 4.8914 | 4.9548 | 5.0013 | 4.8842 | 4.8920 | 4.8187 | 4.9016 | 4.8383 | |
| 5-12 or 5.000-12 | UN | 2A | 4.9851 | 4.9980 | 4.9439 | 4.9733 | 4.9980 | 4.9372 | 4.9459 | 4.9100 | 4.9546 | 4.9280 | 2B |
| | | | 4.9842 | 4.9989 | 4.9436 | 4.9724 | 4.9985 | 4.9375 | 4.9462 | 4.9091 | 4.9543 | 4.9271 | |
| | | 3A | 4.9871 | 5.0000 | 4.9459 | 4.9770 | 5.0000 | 4.9409 | 4.9459 | 4.9100 | 4.9525 | 4.9198 | 3B |
| | | | 4.9862 | 5.0009 | 4.9456 | 4.9761 | 5.0009 | 4.9412 | 4.9462 | 4.9091 | 4.9522 | 4.9189 | |

**TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B**
**UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)**

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5-16 or 5.000-16 | UN | 2A | 4.9877 | 4.9982 | 4.9576 | 4.9786 | 4.9982 | 4.9515 | 4.9594 | 4.9320 | 4.9673 | 4.9460 | 2B |
| | | | 4.9868 | 4.9991 | 4.9573 | 4.9777 | 4.9991 | 4.9518 | 4.9597 | 4.9311 | 4.9670 | 4.9451 | |
| | | 3A | 4.9895 | 5.0000 | 4.9594 | 4.9820 | 5.0000 | 4.9549 | 4.9594 | 4.9320 | 4.9653 | 4.9408 | 3B |
| | | | 4.9886 | 5.0009 | 4.9591 | 4.9811 | 5.0009 | 4.9552 | 4.9597 | 4.9311 | 4.9650 | 4.9399 | |
| 5⅛-6 or 5.125-6 | UN | 2A | 5.1008 | 5.1218 | 5.0135 | 5.0752 | 5.1218 | 5.0030 | 5.0167 | 4.9450 | 5.0304 | 4.9750 | 2B |
| | | | 5.0995 | 5.1231 | 5.0132 | 5.0739 | 5.1231 | 5.0033 | 5.0170 | 4.9437 | 5.0301 | 4.9737 | |
| | | 3A | 5.1040 | 5.1250 | 5.0167 | 5.0810 | 5.1250 | 5.0088 | 5.0167 | 4.9450 | 5.0270 | 4.9646 | 3B |
| | | | 5.1027 | 5.1263 | 5.0164 | 5.0797 | 5.1263 | 5.0091 | 5.0170 | 4.9437 | 5.0267 | 4.9633 | |
| 5⅛-12 or 5.125-12 | UN | 2A | 5.1101 | 5.1230 | 5.0689 | 5.0983 | 5.1230 | 5.0622 | 5.0709 | 5.0350 | 5.0796 | 5.0530 | 2B |
| | | | 5.1092 | 5.1239 | 5.0686 | 5.0974 | 5.1239 | 5.0625 | 5.0712 | 5.0341 | 5.0793 | 5.0521 | |
| | | 3A | 5.1121 | 5.1250 | 5.0709 | 5.1020 | 5.1250 | 5.0659 | 5.0709 | 5.0350 | 5.0775 | 5.0448 | 3B |
| | | | 5.1112 | 5.1259 | 5.0706 | 5.1011 | 5.1259 | 5.0662 | 5.0712 | 5.0341 | 5.0772 | 5.0439 | |
| 5⅛-16 or 5.125-16 | UN | 2A | 5.1127 | 5.1232 | 5.0826 | 5.1036 | 5.1232 | 5.0765 | 5.0844 | 5.0570 | 5.0923 | 5.0710 | 2B |
| | | | 5.1118 | 5.1241 | 5.0823 | 5.1027 | 5.1241 | 5.0768 | 5.0847 | 5.0561 | 5.0920 | 5.0701 | |
| | | 3A | 5.1145 | 5.1250 | 5.0844 | 5.1070 | 5.1250 | 5.0799 | 5.0844 | 5.0570 | 5.0903 | 5.0658 | 3B |
| | | | 5.1136 | 5.1259 | 5.0841 | 5.1061 | 5.1259 | 5.0802 | 5.0847 | 5.0561 | 5.0900 | 5.0649 | |
| 5¼-4 or 5.250-4 | UN | 2A | 5.2183 | 5.2464 | 5.0840 | 5.1803 | 5.2464 | 5.0720 | 5.0876 | 4.9790 | 5.1032 | 5.0170 | 2B |
| | | | 5.2168 | 5.2479 | 5.0837 | 5.1788 | 5.2479 | 5.0723 | 5.0879 | 4.9775 | 5.1029 | 5.0155 | |
| | | 3A | 5.2219 | 5.2500 | 5.0876 | 5.1869 | 5.2500 | 5.0786 | 5.0876 | 4.9790 | 5.0993 | 5.0094 | 3B |
| | | | 5.2204 | 5.2515 | 5.0873 | 5.1854 | 5.2515 | 5.0789 | 5.0879 | 4.9775 | 5.0990 | 5.0079 | |
| 5¼-6 or 5.250-6 | UN | 2A | 5.2258 | 5.2468 | 5.1385 | 5.2001 | 5.2468 | 5.1279 | 5.1417 | 5.0700 | 5.1555 | 5.1000 | 2B |
| | | | 5.2245 | 5.2481 | 5.1382 | 5.1988 | 5.2481 | 5.1282 | 5.1420 | 5.0687 | 5.1552 | 5.0987 | |
| | | 3A | 5.2290 | 5.2500 | 5.1417 | 5.2060 | 5.2500 | 5.1338 | 5.1417 | 5.0700 | 5.1520 | 5.0896 | 3B |
| | | | 5.2277 | 5.2513 | 5.1414 | 5.2047 | 5.2513 | 5.1341 | 5.1420 | 5.0687 | 5.1517 | 5.0883 | |
| 5¼-12 or 5.250-12 | UN | 2A | 5.2351 | 5.2480 | 5.1939 | 5.2233 | 5.2480 | 5.1872 | 5.1959 | 5.1600 | 5.2046 | 5.1780 | 2B |
| | | | 5.2342 | 5.2489 | 5.1936 | 5.2224 | 5.2489 | 5.1875 | 5.1962 | 5.1591 | 5.2043 | 5.1771 | |
| | | 3A | 5.2371 | 5.2500 | 5.1959 | 5.2270 | 5.2500 | 5.1909 | 5.1959 | 5.1600 | 5.2025 | 5.1698 | 3B |
| | | | 5.2362 | 5.2509 | 5.1956 | 5.2261 | 5.2509 | 5.1912 | 5.1962 | 5.1591 | 5.2022 | 5.1689 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5¼-16 or 5.250-16 | UN | 2A | 5.2377 | 5.2482 | 5.2076 | 5.2286 | 5.2482 | 5.2015 | 5.2094 | 5.1820 | 5.2173 | 5.1960 | 2B |
| | | | 5.2368 | 5.2491 | 5.2073 | 5.2277 | 5.2491 | 5.2018 | 5.2097 | 5.1811 | 5.2170 | 5.1951 | |
| | | 3A | 5.2395 | 5.2500 | 5.2094 | 5.2320 | 5.2500 | 5.2049 | 5.2094 | 5.1820 | 5.2153 | 5.1908 | 3B |
| | | | 5.2386 | 5.2509 | 5.2091 | 5.2311 | 5.2509 | 5.2052 | 5.2097 | 5.1811 | 5.2150 | 5.1899 | |
| 5⅜-6 or 5.375-6 | UN | 2A | 5.3508 | 5.3718 | 5.2635 | 5.3251 | 5.3718 | 5.2529 | 5.2667 | 5.1950 | 5.2805 | 5.2250 | 2B |
| | | | 5.3495 | 5.3731 | 5.2632 | 5.3238 | 5.3731 | 5.2532 | 5.2670 | 5.1937 | 5.2802 | 5.2237 | |
| | | 3A | 5.3540 | 5.3750 | 5.2667 | 5.3309 | 5.3750 | 5.2587 | 5.2667 | 5.1950 | 5.2771 | 5.2146 | 3B |
| | | | 5.3527 | 5.3763 | 5.2664 | 5.3296 | 5.3763 | 5.2590 | 5.2670 | 5.1937 | 5.2768 | 5.2133 | |
| 5⅜-12 or 5.375-12 | UN | 2A | 5.3601 | 5.3730 | 5.3189 | 5.3483 | 5.3730 | 5.3122 | 5.3209 | 5.2850 | 5.3296 | 5.3030 | 2B |
| | | | 5.3592 | 5.3739 | 5.3186 | 5.3474 | 5.3739 | 5.3125 | 5.3212 | 5.2841 | 5.3293 | 5.3021 | |
| | | 3A | 5.3621 | 5.3750 | 5.3209 | 5.3520 | 5.3750 | 5.3159 | 5.3209 | 5.2850 | 5.3275 | 5.2948 | 3B |
| | | | 5.3612 | 5.3759 | 5.3206 | 5.3511 | 5.3759 | 5.3162 | 5.3212 | 5.2841 | 5.3272 | 5.2939 | |
| 5⅜-16 or 5.375-16 | UN | 2A | 5.3627 | 5.3732 | 5.3326 | 5.3536 | 5.3732 | 5.3265 | 5.3344 | 5.3070 | 5.3423 | 5.3210 | 2B |
| | | | 5.3618 | 5.3741 | 5.3323 | 5.3527 | 5.3741 | 5.3268 | 5.3347 | 5.3061 | 5.3420 | 5.3201 | |
| | | 3A | 5.3645 | 5.3750 | 5.3344 | 5.3570 | 5.3750 | 5.3299 | 5.3344 | 5.3070 | 5.3403 | 5.3158 | 3B |
| | | | 5.3636 | 5.3759 | 5.3341 | 5.3561 | 5.3759 | 5.3302 | 5.3347 | 5.3061 | 5.3400 | 5.3149 | |
| 5½-4 or 5.500-4 | UN | 2A | 5.4683 | 5.4964 | 5.3340 | 5.4302 | 5.4964 | 5.3219 | 5.3376 | 5.2290 | 5.3534 | 5.2670 | 2B |
| | | | 5.4668 | 5.4979 | 5.3337 | 5.4287 | 5.4979 | 5.3222 | 5.3379 | 5.2275 | 5.3531 | 5.2655 | |
| | | 3A | 5.4719 | 5.5000 | 5.3376 | 5.4368 | 5.5000 | 5.3285 | 5.3376 | 5.2290 | 5.3494 | 5.2594 | 3B |
| | | | 5.4704 | 5.5015 | 5.3373 | 5.4353 | 5.5015 | 5.3288 | 5.3379 | 5.2275 | 5.3491 | 5.2579 | |
| 5½-6 or 5.500-6 | UN | 2A | 5.4758 | 5.4968 | 5.3885 | 5.4500 | 5.4968 | 5.3778 | 5.3917 | 5.3200 | 5.4056 | 5.3500 | 2B |
| | | | 5.4745 | 5.4981 | 5.3882 | 5.4487 | 5.4981 | 5.3781 | 5.3920 | 5.3187 | 5.4053 | 5.3487 | |
| | | 3A | 5.4790 | 5.5000 | 5.3917 | 5.4559 | 5.5000 | 5.3837 | 5.3917 | 5.3200 | 5.4021 | 5.3396 | 3B |
| | | | 5.4777 | 5.5013 | 5.3914 | 5.4546 | 5.5013 | 5.3840 | 5.3920 | 5.3187 | 5.4018 | 5.3383 | |
| 5½-12 or 5.500-12 | UN | 2A | 5.4851 | 5.4980 | 5.4439 | 5.4733 | 5.4980 | 5.4372 | 5.4459 | 5.4100 | 5.4546 | 5.4280 | 2B |
| | | | 5.4842 | 5.4989 | 5.4436 | 5.4724 | 5.4989 | 5.4375 | 5.4462 | 5.4091 | 5.4543 | 5.4271 | |
| | | 3A | 5.4871 | 5.5000 | 5.4459 | 5.4770 | 5.5000 | 5.4409 | 5.4459 | 5.4100 | 5.4525 | 5.4198 | 3B |
| | | | 5.4862 | 5.5009 | 5.4456 | 5.4761 | 5.5009 | 5.4412 | 5.4462 | 5.4091 | 5.4522 | 5.4189 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5½-16 or 5.500-16 | UN | 2A | 5.4877 | 5.4982 | 5.4576 | 5.4786 | 5.4982 | 5.4515 | 5.4594 | 5.4320 | 5.4673 | 5.4460 | 2B |
| | | | 5.4868 | 5.4991 | 5.4573 | 5.4777 | 5.4991 | 5.4518 | 5.4597 | 5.4311 | 5.4670 | 5.4451 | |
| | | 3A | 5.4895 | 5.5000 | 5.4594 | 5.4820 | 5.5000 | 5.4549 | 5.4594 | 5.4320 | 5.4653 | 5.4408 | 3B |
| | | | 5.4886 | 5.5009 | 5.4591 | 5.4811 | 5.5009 | 5.4552 | 5.4597 | 5.4311 | 5.4650 | 5.4399 | |
| 5⅝-6 or 5.625-6 | UN | 2A | 5.6008 | 5.6218 | 5.5135 | 5.5749 | 5.6218 | 5.5027 | 5.5167 | 5.4450 | 5.5307 | 5.4750 | 2B |
| | | | 5.5995 | 5.6231 | 5.5132 | 5.5736 | 5.6231 | 5.5030 | 5.5170 | 5.4437 | 5.5304 | 5.4737 | |
| | | 3A | 5.6040 | 5.6250 | 5.5167 | 5.5808 | 5.6250 | 5.5086 | 5.5167 | 5.4450 | 5.5272 | 5.4646 | 3B |
| | | | 5.6027 | 5.6263 | 5.5164 | 5.5795 | 5.6263 | 5.5089 | 5.5170 | 5.4437 | 5.5269 | 5.4633 | |
| 5⅝-12 or 5.625-12 | UN | 2A | 5.6100 | 5.6229 | 5.5688 | 5.5980 | 5.6229 | 5.5619 | 5.5709 | 5.5350 | 5.5799 | 5.5530 | 2B |
| | | | 5.6091 | 5.6238 | 5.5685 | 5.5971 | 5.6238 | 5.5622 | 5.5712 | 5.5341 | 5.5796 | 5.5521 | |
| | | 3A | 5.6121 | 5.6250 | 5.5709 | 5.6018 | 5.6250 | 5.5657 | 5.5709 | 5.5350 | 5.5776 | 5.5448 | 3B |
| | | | 5.6112 | 5.6259 | 5.5706 | 5.6009 | 5.6259 | 5.5660 | 5.5712 | 5.5341 | 5.5773 | 5.5439 | |
| 5⅝-16 or 5.625-16 | UN | 2A | 5.6126 | 5.6231 | 5.5825 | 5.6034 | 5.6231 | 5.5763 | 5.5844 | 5.5570 | 5.5925 | 5.5710 | 2B |
| | | | 5.6117 | 5.6240 | 5.5822 | 5.6025 | 5.6240 | 5.5766 | 5.5847 | 5.5561 | 5.5922 | 5.5701 | |
| | | 3A | 5.6145 | 5.6250 | 5.5844 | 5.6068 | 5.6250 | 5.5797 | 5.5844 | 5.5570 | 5.5905 | 5.5658 | 3B |
| | | | 5.6136 | 5.6259 | 5.5841 | 5.6059 | 5.6259 | 5.5800 | 5.5847 | 5.5561 | 5.5902 | 5.5649 | |
| 5¾-4 or 5.750-4 | UN | 2A | 5.7182 | 5.7463 | 5.5839 | 5.6800 | 5.7463 | 5.5717 | 5.5876 | 5.4790 | 5.6035 | 5.5170 | 2B |
| | | | 5.7167 | 5.7478 | 5.5836 | 5.6785 | 5.7478 | 5.5720 | 5.5879 | 5.4775 | 5.6032 | 5.5155 | |
| | | 3A | 5.7219 | 5.7500 | 5.5876 | 5.6867 | 5.7500 | 5.5784 | 5.5876 | 5.4790 | 5.5995 | 5.5094 | 3B |
| | | | 5.7204 | 5.7515 | 5.5873 | 5.6852 | 5.7515 | 5.5787 | 5.5879 | 5.4775 | 5.5992 | 5.5079 | |
| 5¾-6 or 5.750-6 | UN | 2A | 5.7258 | 5.7468 | 5.6385 | 5.6999 | 5.7468 | 5.6277 | 5.6417 | 5.5700 | 5.6558 | 5.6000 | 2B |
| | | | 5.7245 | 5.7481 | 5.6382 | 5.6986 | 5.7481 | 5.6280 | 5.6420 | 5.5687 | 5.6555 | 5.5987 | |
| | | 3A | 5.7290 | 5.7500 | 5.6417 | 5.7058 | 5.7500 | 5.6336 | 5.6417 | 5.5700 | 5.6523 | 5.5896 | 3B |
| | | | 5.7277 | 5.7513 | 5.6414 | 5.7045 | 5.7513 | 5.6339 | 5.6420 | 5.5687 | 5.6520 | 5.5883 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 5¾-12 or 5.750-12 | UN | 2A | 5.7350 | 5.7479 | 5.6938 | 5.7230 | 5.7479 | 5.6869 | 5.6959 | 5.6600 | 5.7049 | 5.6780 | 2B |
| | | | 5.7341 | 5.7488 | 5.6935 | 5.7221 | 5.7488 | 5.6872 | 5.6962 | 5.6591 | 5.7046 | 5.6771 | |
| | | 3A | 5.7371 | 5.7500 | 5.6959 | 5.7268 | 5.7500 | 5.6907 | 5.6959 | 5.6600 | 5.7026 | 5.6698 | 3B |
| | | | 5.7362 | 5.7509 | 5.6956 | 5.7259 | 5.7509 | 5.6910 | 5.6962 | 5.6591 | 5.7023 | 5.6689 | |
| 5¾-16 or 5.750-16 | UN | 2A | 5.7376 | 5.7481 | 5.7075 | 5.7284 | 5.7481 | 5.7013 | 5.7094 | 5.6820 | 5.7175 | 5.6960 | 2B |
| | | | 5.7367 | 5.7490 | 5.7072 | 5.7275 | 5.7490 | 5.7016 | 5.7097 | 5.6811 | 5.7172 | 5.6951 | |
| | | 3A | 5.7395 | 5.7500 | 5.7094 | 5.7318 | 5.7500 | 5.7047 | 5.7094 | 5.6820 | 5.7155 | 5.6908 | 3B |
| | | | 5.7386 | 5.7509 | 5.7091 | 5.7309 | 5.7509 | 5.7050 | 5.7097 | 5.6811 | 5.7152 | 5.6899 | |
| 5⅞-6 or 5.875-6 | UN | 2A | 5.8507 | 5.8717 | 5.7634 | 5.8247 | 5.8717 | 5.7525 | 5.7667 | 5.6950 | 5.7809 | 5.7250 | 2B |
| | | | 5.8494 | 5.8730 | 5.7631 | 5.8234 | 5.8730 | 5.7528 | 5.7670 | 5.6937 | 5.7806 | 5.7237 | |
| | | 3A | 5.8540 | 5.8750 | 5.7667 | 5.8307 | 5.8750 | 5.7585 | 5.7667 | 5.6950 | 5.7773 | 5.7146 | 3B |
| | | | 5.8527 | 5.8763 | 5.7664 | 5.8294 | 5.8763 | 5.7588 | 5.7670 | 5.6937 | 5.7770 | 5.7133 | |
| 5⅞-12 or 5.875-12 | UN | 2A | 5.8600 | 5.8729 | 5.8188 | 5.8480 | 5.8729 | 5.8119 | 5.8209 | 5.7850 | 5.8299 | 5.8030 | 2B |
| | | | 5.8591 | 5.8738 | 5.8185 | 5.8471 | 5.8738 | 5.8122 | 5.8212 | 5.7841 | 5.8296 | 5.8021 | |
| | | 3A | 5.8621 | 5.8750 | 5.8209 | 5.8518 | 5.8750 | 5.8157 | 5.8209 | 5.7850 | 5.8276 | 5.7948 | 3B |
| | | | 5.8612 | 5.8759 | 5.8206 | 5.8509 | 5.8759 | 5.8160 | 5.8212 | 5.7841 | 5.8273 | 5.7939 | |
| 5⅞-16 or 5.875-16 | UN | 2A | 5.8626 | 5.8731 | 5.8325 | 5.8534 | 5.8731 | 5.8263 | 5.8344 | 5.8070 | 5.8425 | 5.8210 | 2B |
| | | | 5.8617 | 5.8740 | 5.8322 | 5.8525 | 5.8740 | 5.8266 | 5.8347 | 5.8061 | 5.8422 | 5.8201 | |
| | | 3A | 5.8645 | 5.8750 | 5.8344 | 5.8568 | 5.8750 | 5.8297 | 5.8344 | 5.8070 | 5.8405 | 5.8158 | 3B |
| | | | 5.8636 | 5.8759 | 5.8341 | 5.8559 | 5.8759 | 5.8300 | 5.8347 | 5.8061 | 5.8402 | 5.8149 | |
| 6-4 or 6.000-4 | UN | 2A | 5.9682 | 5.9963 | 5.8339 | 5.9298 | 5.9963 | 5.8215 | 5.8376 | 5.7290 | 5.8537 | 5.7670 | 2B |
| | | | 5.9667 | 5.9978 | 5.8336 | 5.9283 | 5.9978 | 5.8218 | 5.8379 | 5.7275 | 5.8534 | 5.7655 | |
| | | 3A | 5.9719 | 6.0000 | 5.8376 | 5.9366 | 6.0000 | 5.8283 | 5.8376 | 5.7290 | 5.8496 | 5.7594 | 3B |
| | | | 5.9704 | 6.0015 | 5.8373 | 5.9351 | 6.0015 | 5.8286 | 5.8379 | 5.7275 | 5.8493 | 5.7579 | |

## TABLE 11 SETTING GAGES FOR STANDARD THREAD SERIES, CLASSES, 1A, 2A, 3A, 1B, 2B, AND 3B
## UNIFIED SCREW THREADS — LIMITS OF SIZE (CONT'D)

| Nominal Size and Threads/in. | Series Designation | Class | W Thread-Setting Plugs | | | | | | W Thread-Setting Rings | | | | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GO | | | NOT GO (LO) | | | GO | | NOT GO (HI) | | |
| | | | Major Diameter | | Pitch Diam. | Major Diameter | | Pitch Diam. | Pitch Diam. | Minor Diam. | Pitch Diam. | Minor Diam. | |
| | | | Truncated | Full-Form | | Truncated | Full-Form | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| | | | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 6-6 or 6.000-6 | UN | 2A | 5.9757 | 5.9967 | 5.8884 | 5.9497 | 5.9967 | 5.8775 | 5.8917 | 5.8200 | 5.9059 | 5.8500 | 2B |
| | | | 5.9744 | 5.9980 | 5.8881 | 5.9484 | 5.9980 | 5.8778 | 5.8920 | 5.8187 | 5.9056 | 5.8487 | |
| | | 3A | 5.9790 | 6.0000 | 5.8917 | 5.9557 | 6.0000 | 5.8835 | 5.8917 | 5.8200 | 5.9024 | 5.8396 | 3B |
| | | | 5.9777 | 6.0013 | 5.8914 | 5.9544 | 6.0013 | 5.8838 | 5.8920 | 5.8187 | 5.9021 | 5.8383 | |
| 6-12 or 6.000-12 | UN | 2A | 5.9850 | 5.9979 | 5.9438 | 5.9730 | 5.9979 | 5.9369 | 5.9459 | 5.9100 | 5.9549 | 5.9280 | 2B |
| | | | 5.9841 | 5.9988 | 5.9435 | 5.9721 | 5.9988 | 5.9372 | 5.9462 | 5.9091 | 5.9546 | 5.9271 | |
| | | 3A | 5.9871 | 6.0000 | 5.9459 | 5.9768 | 6.0000 | 5.9407 | 5.9459 | 5.9100 | 5.9526 | 5.9198 | 3B |
| | | | 5.9862 | 6.0009 | 5.9456 | 5.9759 | 6.0009 | 5.9410 | 5.9462 | 5.9091 | 5.9523 | 5.9189 | |
| 6-16 or 6.000-16 | UN | 2A | 5.9876 | 5.9981 | 5.9575 | 5.9784 | 5.9981 | 5.9513 | 5.9594 | 5.9320 | 5.9675 | 5.9460 | 2B |
| | | | 5.9867 | 5.9990 | 5.9572 | 5.9775 | 5.9990 | 5.9516 | 5.9597 | 5.9311 | 5.9672 | 5.9451 | |
| | | 3A | 5.9895 | 6.0000 | 5.9594 | 5.9818 | 6.0000 | 5.9547 | 5.9594 | 5.9320 | 5.9655 | 5.9408 | 3B |
| | | | 5.9886 | 6.0009 | 5.9591 | 5.9809 | 6.0009 | 5.9550 | 5.9597 | 5.9311 | 5.9652 | 5.9399 | |

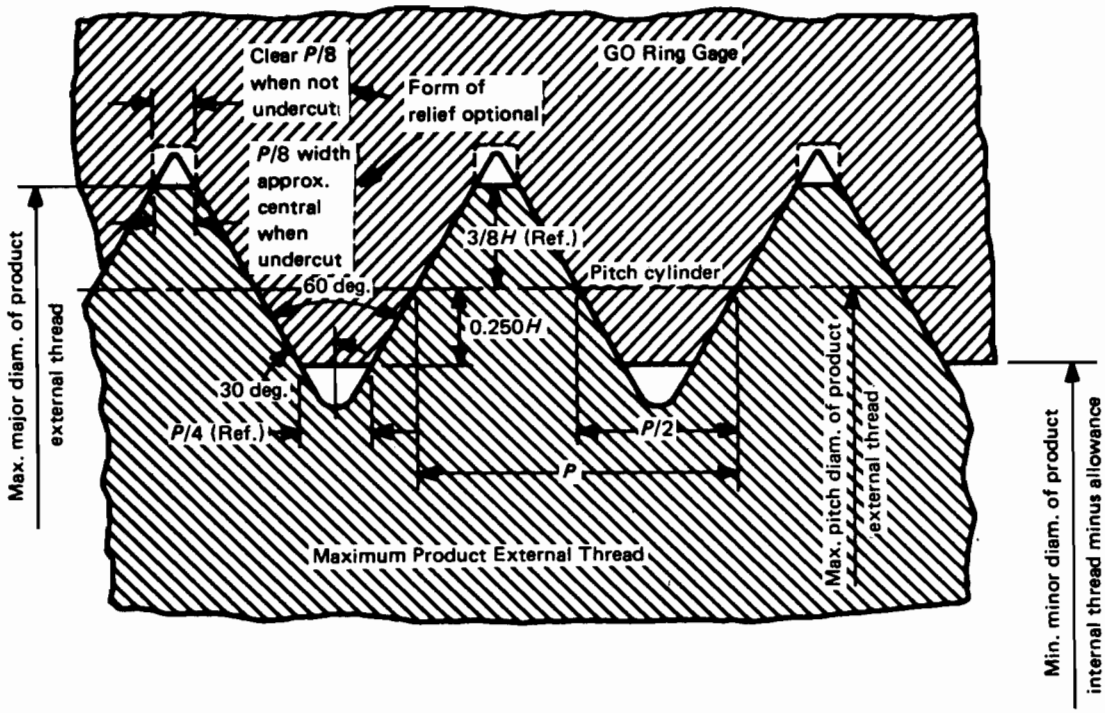



**FIG. 18 MAXIMUM-MATERIAL GO FUNCTIONAL LIMIT**

**5.1.6 Thread Roots.** The major diameter of the GO thread ring gage shall be cleared beyond $P/8$ width of flat by either an extension of the flanks toward a sharp vee or by a clearance cut of substantially $P/8$ width and approximately central. The root clearance must be such that the maximum major diameter of the full-form section of the truncated thread-setting plug gage is cleared after the gage has been properly set to size.

**5.1.7 Runout of Pitch and Minor Cylinders.** On thread ring gages, an eccentric condition results in an undersize effective minor diameter, having a width of flat less than $P/4$, which may encroach on the maximum permissible limit for the root profile of the product external thread. The permissible minimum effective minor diameter as determined by measurements of runout (full-indicator movement) with respect to the pitch cylinder shall not be less than the specified minimum minor diameter minus the sum of the gage tolerances for the pitch and minor diameters.

**5.1.8 Pitch Cylinder.** Pitch cylinder is transferred by the setting of the thread ring gage to the applicable truncated setting plug gage.

**5.1.9 Lead and Half-Angle Variations.** Lead and half-angle variations shall be within the limits specified in Table 6. Misalignment of the threads on each side of the adjustable slot may not exceed the lead limits.

**5.1.10 Incomplete Thread.** The feather edge at both ends of the thread ring gage shall be removed. On gages larger than 1/2 in. or with a pitch coarser than 20 threads/in., remove not more than one pitch of the partially formed thread at each end to obtain a full-thread blunt start. On gages 1/2 in. and smaller or with a pitch of 20 threads/in. or finer, the end threads may have a 60 deg. chamfer from the axis of the gage to a depth of half to one pitch. This is acceptable in lieu of the blunt start.

**5.1.11 Chip Grooves.** GO thread ring gages of the adjustable type do not require chip grooves as the adjusting slots serve this purpose. Solid working thread ring gages are made with or without chip grooves, depending upon the gage designer's requirements.

**5.1.12 Identification.** The GO thread ring gage should be identified by the nominal size, threads/in., thread series, class, GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A GO PD.2164

## 5.2 NOT GO (LO) Thread Ring Gages (Table 1 — Gage 1.2)

**5.2.1 Purpose and Use.** The NOT GO (LO) thread ring gage inspects the NOT GO (LO) functional diameter limit, $B_1$, of product external thread. The NOT GO (LO) thread ring gage, when properly set to its respective calibrated thread-setting plug, represents the NOT GO (LO) functional diameter limit of the product external thread. The NOT GO (LO) thread ring gage and NOT GO (LO) threaded segment type indicating gage are more reliable for checking thin-walled parts which might be deformed bv a NOT GO (LO) thread snap. NOT GO (LO) thread ring gages must be set to the applicable W tolerance-setting plugs.

NOT GO (LO) thread ring gages when applied to the product external thread may engage only the end threads (which may not be representative of the complete product thread).

Starting threads on NOT GO (LO) thread ring gages are subject to greater wear than the remaining threads. Such wear in combination with the incomplete threads at the end of the product thread permit further entry in the gage. NOT GO (LO) functional diameter is acceptable when the NOT GO (LO) thread ring gage applied to the product external thread does not pass over the thread more than three complete turns. The gage should not be forced. Special requirements such as exceptionally thin or ductile material, small number of threads, etc., may necessitate modification of this practice.

**5.2.2 Basic Design.** To better check the NOT GO (LO) functional diameter limit, the flank contact is less than that of the GO gage, and the length of the gaging element where practical is less than that of the GO gage.

**5.2.3 Gage Blanks.** For practical and economic reasons, the designs and thicknesses of thread ring gages have been standardized for various size ranges and pitches (see ANSI B47.1 or Table A4).

**5.2.4 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 19.

**5.2.5 Thread Crests.** The minimum minor diameter of the NOT GO (LO) thread ring gage shall be equal to the minimum pitch diameter of the external thread minus $0.25H$ with gage tolerance plus. This corresponds to a width of flat at the crest of the gage equal to $0.375p$. See Table 4.

**5.2.6 Thread Roots.** The major diameter of the NOT GO (LO) thread ring gage shall clear the product thread by using a clearance cut of $0.25p$ width approximately central. The NOT GO (LO) thread ring gage shall clear the maximum major diameter of the full-form portion of the truncated thread-setting plug for the NOT GO (LO) thread ring gage. Thus, contact of the thread gage can occur on the sides of the threads, but not on the crest or root. Also, the effect of angle variation on the fit of the gage with the product thread is minimized.

**5.2.7 Runout of Pitch and Minor Diameter Cylinders.** The permissible minimum effective minor diameter, as determined by subtracting runout measurement (full-indicator movement) with respect to the pitch cylinder from the measured minor diameter, shall not be less than the specified minimum minor diameter minus twice the sum of the gage tolerances for pitch and minor diameters.

**5.2.8 Pitch Cylinder.** Pitch cylinder is transferred by the setting of the thread ring gage to the applicable truncated setting plug gage.

**5.2.9 Lead and Half-Angle Variations.** Lead and half-angle variations shall be within the limits specified in Table 6.

**5.2.10 Incomplete Thread.** The feather edge at both ends of the thread ring gage shall be removed. On gages larger than 1/2 in. nominal size or having pitches coarser than 20 threads/in., not more than one complete turn of the end threads shall be removed to obtain a full-thread blunt start. On gages 1/2 in. nominal size and smaller or having pitches of 20 threads/in. or finer, a 60 deg. chamfer from the axis of the gage is acceptable in lieu of the blunt start.

**5.2.11 Identification.** The NOT GO (LO) thread gage should be identified by the nominal size, threads/in., thread series, class, NOT GO, PD, and pitch diameter.

EXAMPLE:
1/420 (or .250-20) UNC-2A NOT GO PD.2127

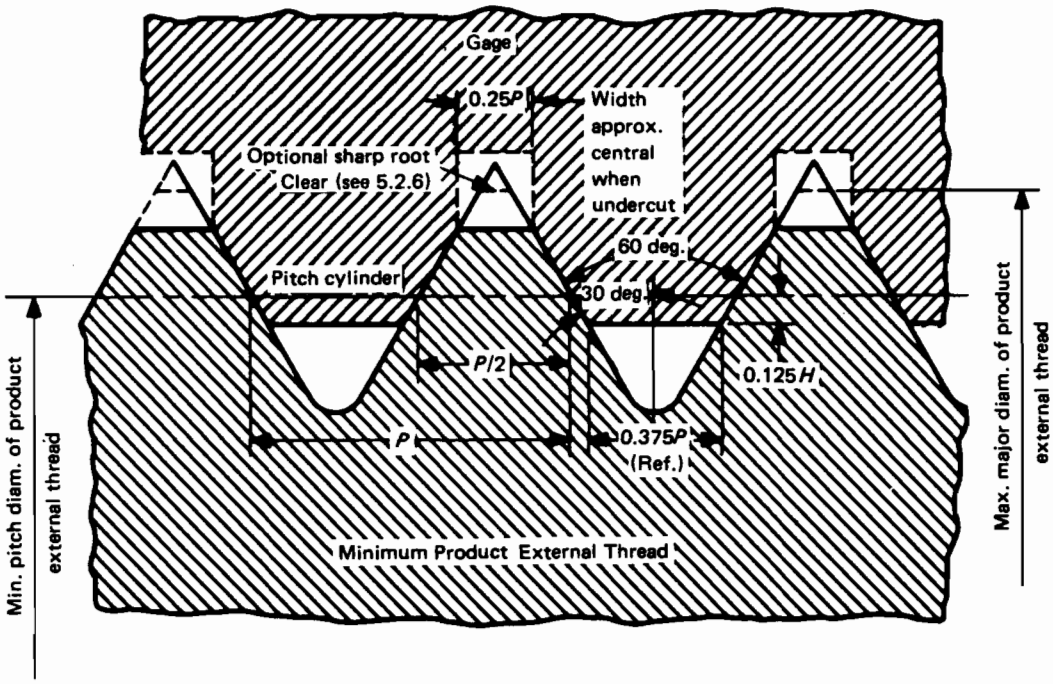



**FIG. 19 NOT GO (LO) FUNCTIONAL DIAMETER LIMIT**

### 5.3 Thread Snap Gages — GO Segments or Rolls (Table 1 — Gage 2.1 and 2.3)

**5.3.1 Purpose and Use.** The thread snap gage with two GO threaded segments or two GO zero lead rolls inspects the maximum-material GO functional limit, $A_1$, of product external thread. The setting of the GO segments or rolls represents the maximum material GO functional limit of the product external thread, and its purpose is to assure interchangeable assembly of maximum-material mating parts. The gaging length of the segments or rolls is equal to the length of the standard GO ring gages. The segments or rolls have a cumulative check of all thread elements except the major diameter.

The GO thread snap gage can also check roundness of the pitch cylinder for 180 deg. ovality by using the gage at different external diametral locations on the product thread.

**5.3.2 Basic Design.** The GO segments and rolls assembled into gage frames are the design of the individual gage manufacturer. The lengths of the two threaded segments and the two thread rolls spaced 180 deg. apart are equal to the standard GO ring gage blank lengths for practical and economic reasons. See ANSI B47.1 or Table A4.

GO thread segments shall engage 25% or more of the product circumference. Product shall be checked around full circumference of thread at sufficient axial positions to check the full-thread length.

Thread rolls shall be applied at several locations (three if possible) axially over the full-thread length of the product. The circumference shall be checked at each position.

**5.3.3 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 20.

**5.3.4 Thread Crests.** The distance between the minor diameter of the GO thread segments and the outside diameter of GO thread rolls shall be equal to the maximum pitch diameter of the product external thread minus $H/2$ with a minus gage tolerance when assembled in gage frame. This corresponds to a width of flat of $P/4$ on crests. The thread crests shall be flat in an axial plane and parallel to the axis.

**5.3.5 Thread Roots.** The major diameter of the GO thread segments and root diameter of the GO rolls shall be cleared beyond a $P/8$ flat either by an extension of the flanks of the thread toward a sharp vee or by an undercut no greater than $P/8$ maximum width and approximately central. The root clearance

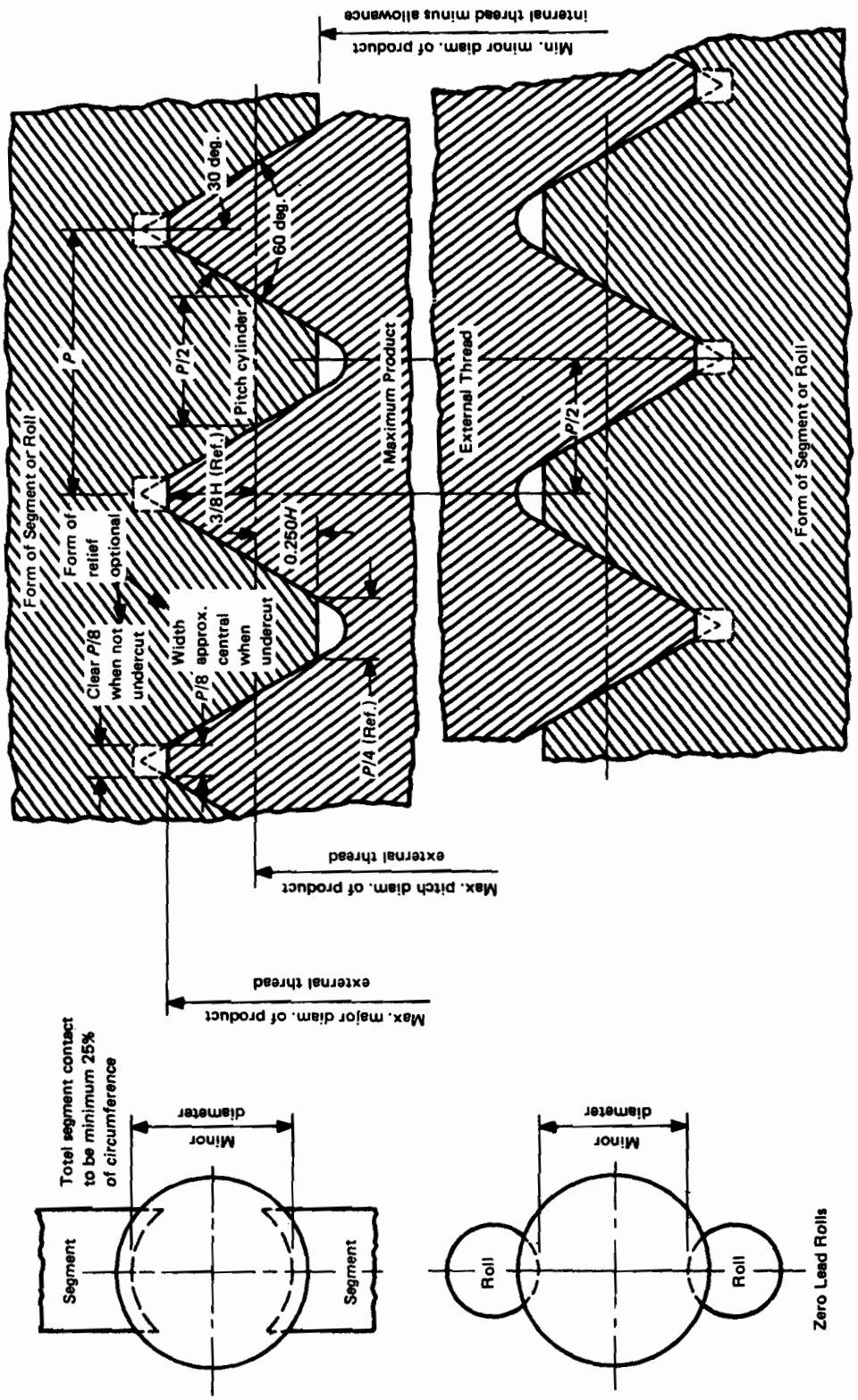



FIG. 20 THREAD SNAP GAGES — MAXIMUM-MATERIAL GO FUNCTIONAL LIMIT

must be such that the maximum major diameter of the full-form section of the truncated thread-setting plug gage is cleared after the gage has been properly set to size.

**5.3.6 Runout.** The pitch and minor cylinders of the threaded portion of the GO segments or rolls shall not exceed the specified runout as determined by measurements of runout (full-indicator movement). On each gaging member, with respect to the pitch cylinder, runout shall not exceed one-half the X gage minor diameter tolerance.

**5.3.7 Pitch Cylinder.** The pitch cylinder of the threaded GO segments and rolls shall be straight within the X gage pitch diameter limits specified.

**5.3.8 Lead, Pitch, and Half-Angle Variations.** Lead, pitch, and half-angle variations shall be within the limits specified. See Table 6.

**5.3.9 Identification.** The assembled gage should be marked by the nominal size, threads/in., thread series, class, GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A GO PD.2164

## 5.4 Thread Snap Gages — NOT GO (LO) Segments or Rolls (Table 1 — Gage 2.2 and 2.4)

**5.4.1 Purpose and Use.** The thread snap gage with two NOT GO (LO) segments or two NOT GO (LO) rolls inspects the NOT GO (LO) functional diameter limit, $B_1$, of product external thread. The setting of the NOT GO (LO) segments or rolls represents the NOT GO (LO) functional diameter limit of the product external thread. In applying the thread snap limit gage, the NOT GO (LO) functional diameter is acceptable when gaging elements do not pass over the product thread.

The NOT GO (LO) thread snap gage can also check roundness of the pitch cylinder for 180 deg. ovality by passing the gage over the thread at different diametral locations on the external thread.

The NOT GO (LO) thread snap gage can also check taper of pitch cylinder by passing the gage over the thread at different locations axially on external thread.

**5.4.2 Basic Design.** In order that the NOT GO (LO) thread snap gage may effectively check the NOT GO (LO) functional diameter limit, the flank contact is reduced by truncating the thread on segments and rolls. As the design of the segments or rolls is different with each gage manufacturer, the number of threads engaged in product thread will vary. Usually, the number of pitches engaged is approximately two.

**5.4.3 Thread Form.** The specifications for thread form are summarized in Table 4 and Fig. 21.

**5.4.4 Thread Crests.** The minor diameter of the NOT GO (LO) thread segments and the inner distance between the outside diameters of NOT GO (LO) thread rolls shall be equal to the minimum pitch diameter of the product external thread minus $0.25H$ with the gage tolerance plus when assembled in gage frame. This corresponds to a width of flat at the crest equal to $0.375p$. See Table 4.

**5.4.5 Thread Roots.** The major diameter of the NOT GO (LO) thread segments or root diameter of the NOT GO (LO) rolls shall clear the product thread by using a clearance cut of $0.25p$ width approximately central. Snap gage contacts shall clear the maximum major diameter of the full-form portion of the setting plug for the NOT GO (LO) thread snap gage. Thus, contact of the thread gage can occur on the sides of the thread but not on the crest or root. Also, the effect of angle variation on the fit of the gage with the product thread is minimized.

**5.4.6 Runout.** The pitch and minor cylinders of the threaded NOT GO (LO) segments or the pitch and outside cylinders of the rolls shall not exceed the specified runout as determined by measurement of runout (full-indicator movement). On each gaging member, with respect to the pitch cylinder, runout shall not exceed one-half the X gage minor diameter tolerance.

**5.4.7 Pitch Cylinder.** The pitch cylinder of the threaded NOT GO (LO) segments or rolls shall be straight within the X gage pitch diameter limits specified.

**5.4.8 Lead, Pitch, and Half-Angle Variations.** Lead, pitch, and half-angle variations shall be within the limits specified. See Table 6.

**5.4.9 Identification.** The assembled gage should be marked by the nominal size, threads/in., thread series, class, NOT GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A NOT GO PD.2127

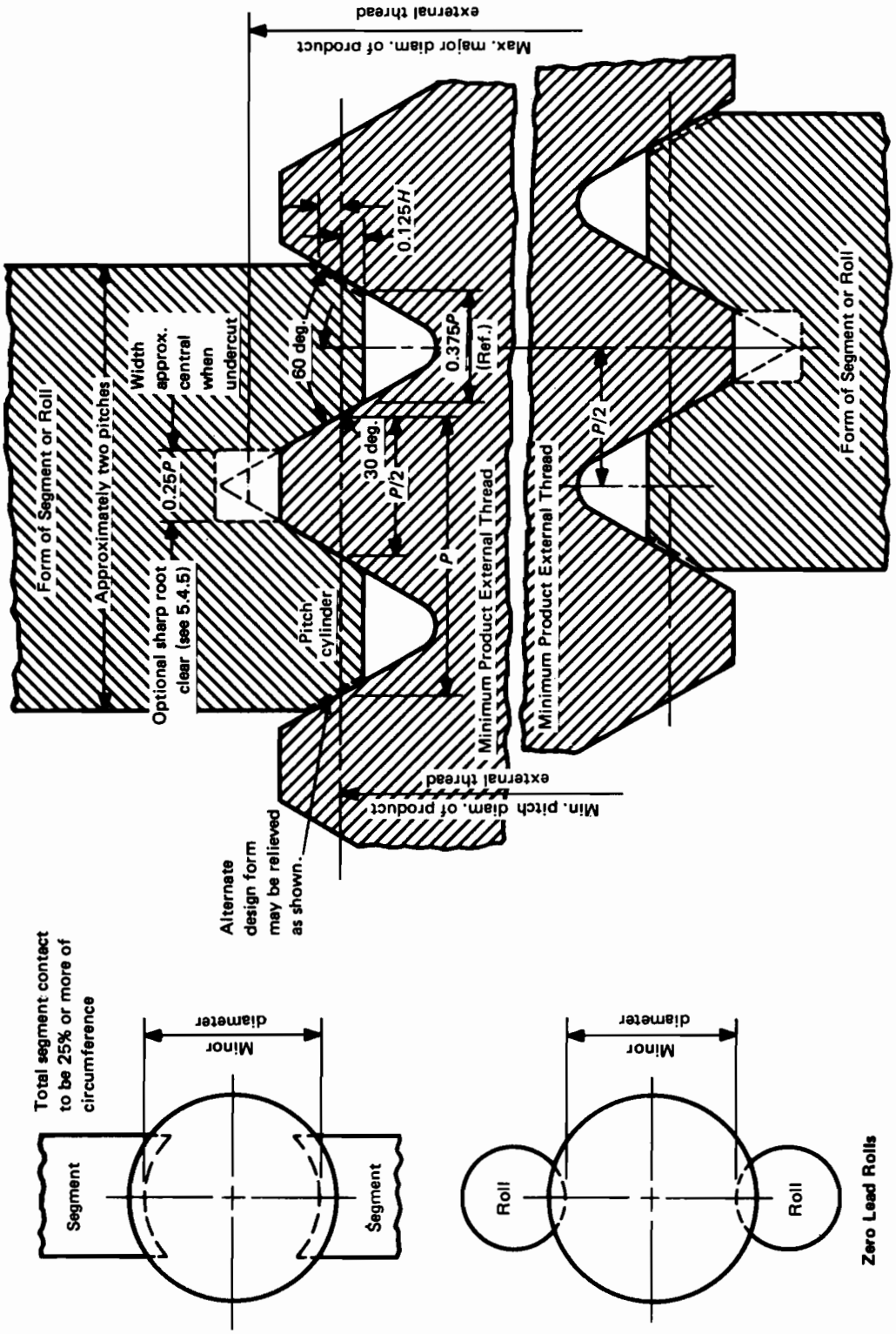



FIG. 21 THREAD SNAP GAGES — NOT GO (LO) FUNCTIONAL DIAMETER LIMIT

### 5.5 Thread Snap Gages — Cone and Vee (Table 1 — Gage 2.5)

**5.5.1 Purpose and Use.** The thread snap gage with cone and vee rolls or segments inspects minimum-material diameter limit, $C_1$. The setting of the cone and vee rolls or segments represents the minimum-material limit pitch diameter of the product external thread.

The cone and vee snap gage can check roundness of pitch diameter for 180 deg. ovality by passing the gage over the thread at different diametral locations on the external thread.

The cone and vee snap gage can check taper of pitch cylinder by passing the gage over the thread at different locations axially on external thread.

**5.5.2 Basic Design.** The segments are usually made having a surface contact at or slightly above the pitch line near the center of the flank. The rolls make point or line contacts approximately at the pitch line, depending upon the angle variations of the thread flanks. See Fig. 22 for details.

**5.5.3 Thread Form.** The specifications for thread form, thread crests, and thread roots are shown in Fig. 22.

**5.5.4 Identification.** The assembled gage should be marked by the nominal size, threads/in., thread series, class, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A PD.2127

### 5.6 Thread Snap Gages — Minimum Material: Thread Groove Diameter Type (Table 1 — Gage 2.6)

**5.6.1 Purpose and Use.** The thread snap gage with radius type ribbed rolls inspects minimum-material diameter limit, $D_1$. The setting of the thread groove diameter type snap gage by NOT GO (LO) setting plug gage represents the minimum-material limit pitch diameter of the product external thread.

The thread groove diameter type snap gage can check roundness for 180 deg. ovality by passing the gage over the thread at different diametral locations on the external thread.

The thread groove diameter type snap gage can check taper of pitch cylinder by passing the gage over the thread at different locations axially on external thread.

**5.6.2 Basic Design.** The thread groove diameter type has "best size" thread wire size radius ribbed rolls which contact at the pitch line.

**5.6.3 Thread Form.** The specifications for radius type rolls are shown in Fig. 23.

**5.6.4 Identification.** The assembled gage should be marked by the nominal size, threads/in., thread series, class, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A PD.2127

### 5.7 Plain Ring and Snap Gages to Check Major Diameter of Product External Threads (Table 1 — Gages 3.1, 3.2, and 3.4)

**5.7.1 Purpose and Use.** The GO and NOT GO cylindrical ring and plain snap gages inspect the major diameter of the product external thread. The GO gage must completely receive or pass over the major diameter of the product external thread to assure that the major diameter does not exceed the maximum-material limit. The NOT GO cylindrical ring gage or NOT GO plain snap gage must not pass over the major diameter of the product external thread to assure that the major diameter is not less than the minimum-material limit.

**5.7.2 Design of Gage Blanks and Gages.** Plain cylindrical ring blanks and plain progressive adjustable snap gages have been standardized for various size ranges (see ANSI B47.1 and Fig. 24).

**5.7.3 Identification.** Cylindrical rings or plain snap gages should be marked with nominal size, threads/in., thread series, class, GO and/or NOT GO, and major diameter limits.

EXAMPLE:
1/4-20 UNC-2A GO.2489 and/or NOT GO.2408

**5.7.4 Precision Instruments (Table 1 — Gage 14).** Precision instruments such as dial calipers, outside micrometers, vernier calipers, and pocket slide calipers can also be used to measure the major diameter of product external thread.

FIG. 22 THREAD SNAP GAGES — MINIMUM-MATERIAL PITCH DIAMETER LIMIT — CONE AND VEE

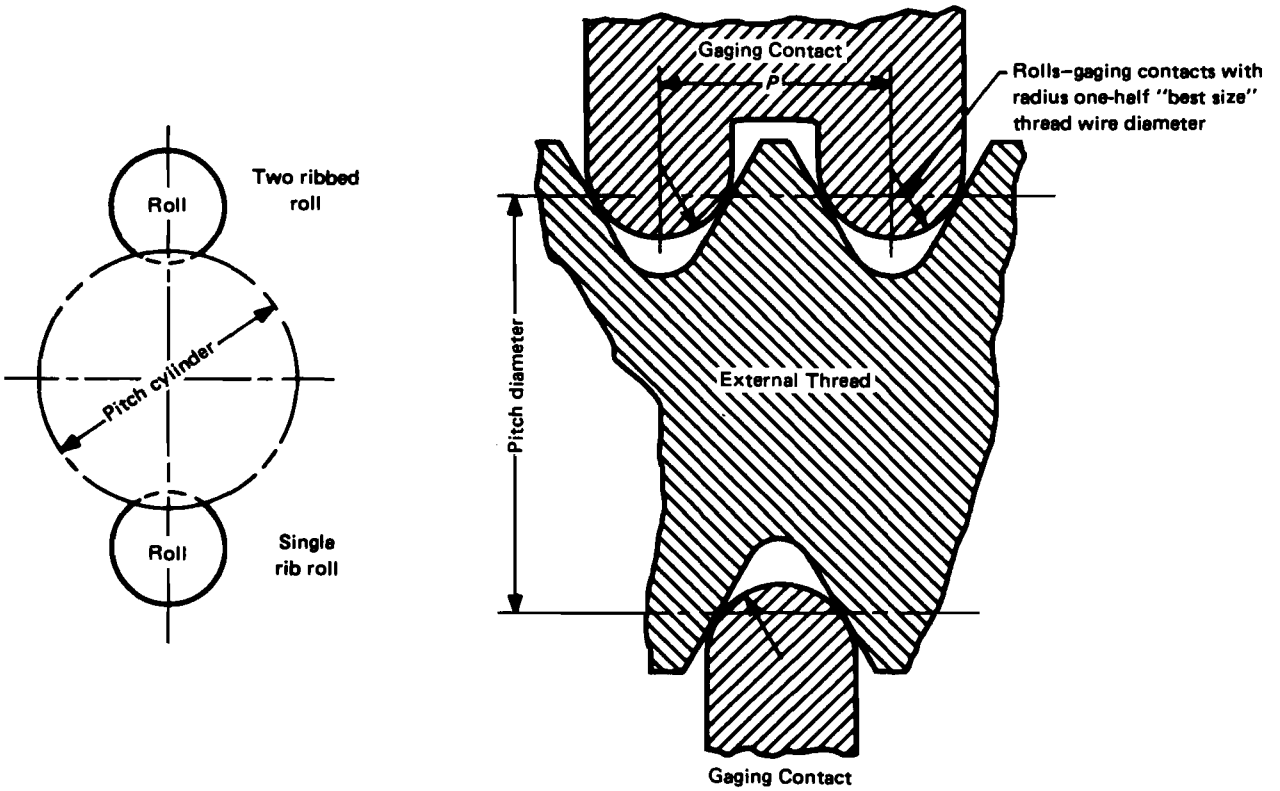



**FIG. 23 THREAD SNAP GAGES — MINIMUM-MATERIAL THREAD GROOVE DIAMETER LIMIT**

### 5.8 Snap Gages for Minor Diameter of Product External Threads (Table 1 — Gages 3.3 and 3.5)

**5.8.1 Purpose and Use.** The GO thread ring gages inspect the depth of thread equivalent to the minor diameter of the product internal thread. If the minor diameter of the external thread requires checking, a minimum-maximum thread snap gage may be used. GO segment or roll snap gage must pass over product thread. NOT GO segment or roll must not pass over product thread.

**5.8.2 Basic Design.** A thread snap gage has segments or rolls with a thread form of 55 deg. maximum. There usually are three threads on the segments or three ribs on the rolls on GO and NOT GO gaging elements. See Fig. 25.

**5.8.3 Identification.** Thread snap gages should be marked with nominal size, threads/in., thread series, class, GO and NOT GO minor diameter limits, and MINOR DIAMETER EXTERNAL.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A GO — NOT GO (Customer's Specifications) MINOR DIAMETER EXTERNAL

### 5.9 Functional Indicating Thread Gages for External Thread (Table 1 — Gages 4.1 and 4.3)

**5.9.1 Purpose and Use.** The GO indicating thread gage (4.1 and 4.3) inspects the maximum-material GO functional limit and size, $A_1$ and $A_2$, and the NOT GO (LO) functional diameter limit and size, $B_1$ and $B_2$, of product external thread. The gage is also used to check even or odd lobe roundness of pitch cylinder. Indicating thread gages must be set to the proper thread-setting plug gages. Readings indicate the position of product external thread within the tolerance range.

**5.9.2 Basic Design.** Indicating gages have two or three contacts at 180 deg. or 120 deg., respectively. Gages with segments or rolls are designed with the length of the GO functional maximum-material gag-

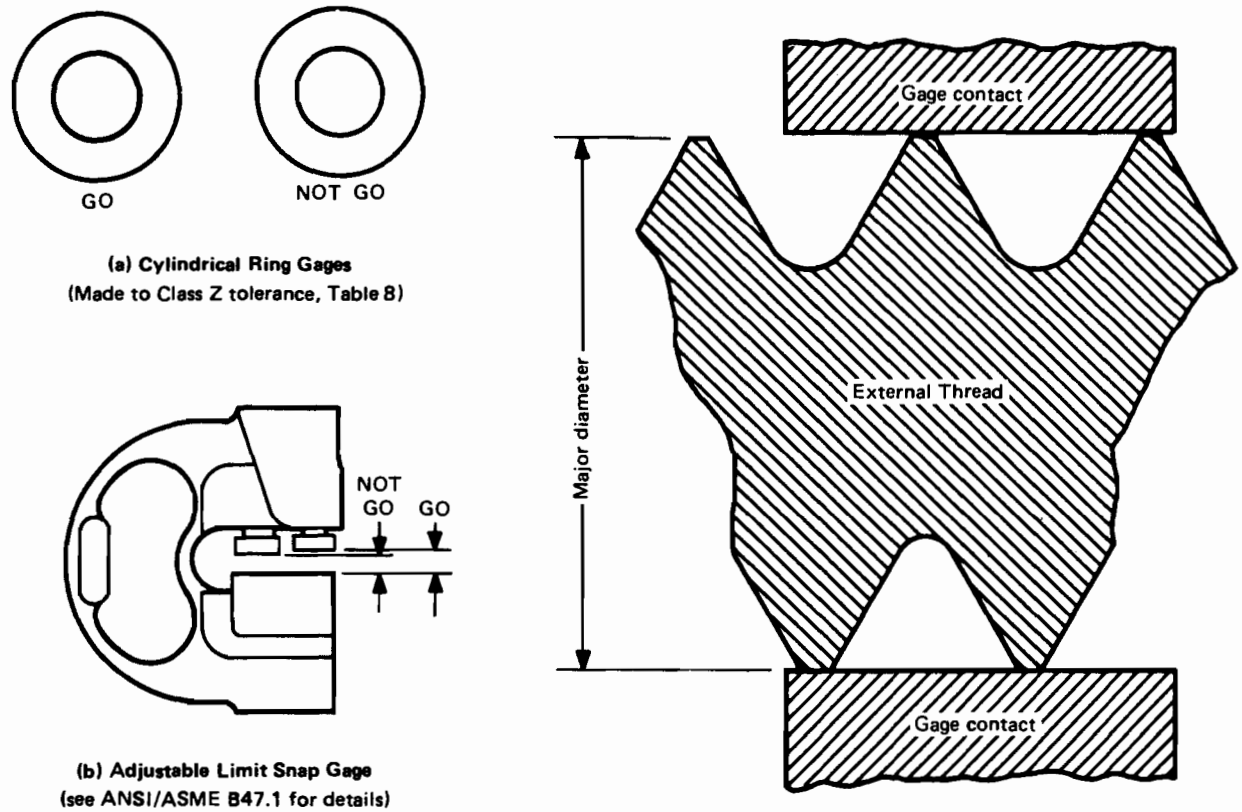



**FIG. 24 MAJOR DIAMETER LIMIT**

ing elements equal to the length of the standard GO ring gages.

**5.9.3 Thread Form.** The specifications for thread form for GO functional maximum-material segments and rolls are summarized in Table 4 and Fig. 26.

**5.9.4 Thread Crests.** The minor diameter of the GO functional maximum-material thread segments and the diameter of the circle surrounded by the roll cluster of GO functional maximum-material rolls shall be equal to the maximum pitch diameter of the product external thread minus $H/2$ with a minus X gage tolerance when assembled in gage frame. This corresponds to a width of flat of $P/4$ on crests. The thread crests shall be flat in an axial plane and parallel to the axis of segment or roll.

**5.9.5 Thread Roots.** The major diameter of the GO functional maximum-material thread segments and the root of the GO functional maximum-material rolls shall be cleared beyond a $P/8$ flat either by an extension of the flanks of the thread toward a sharp vee or by an undercut no greater than $P/8$ maximum width and approximately central. The root clearance must be such that the major diameter of the full-form section of the thread-setting plug gage is cleared after the assembled gage has been properly set to size.

**5.9.6 Runout.** The pitch and minor cylinders of the threaded segments and the pitch and outside cylinders of the rolls shall not exceed the specified runout as determined by measurements of runout (full-indicator movement). On each gaging member with respect to the pitch cylinder, runout shall not exceed one-half the X gage minor diameter tolerance.

**5.9.7 Pitch Cylinder.** The pitch cylinder of the thread segments and rolls should be straight within the X gage pitch diameter limits specified.

**5.9.8 Lead, Pitch, and Half-Angle Variations.** Lead, pitch, and half-angle variations shall be within the limits specified. See Table 6.

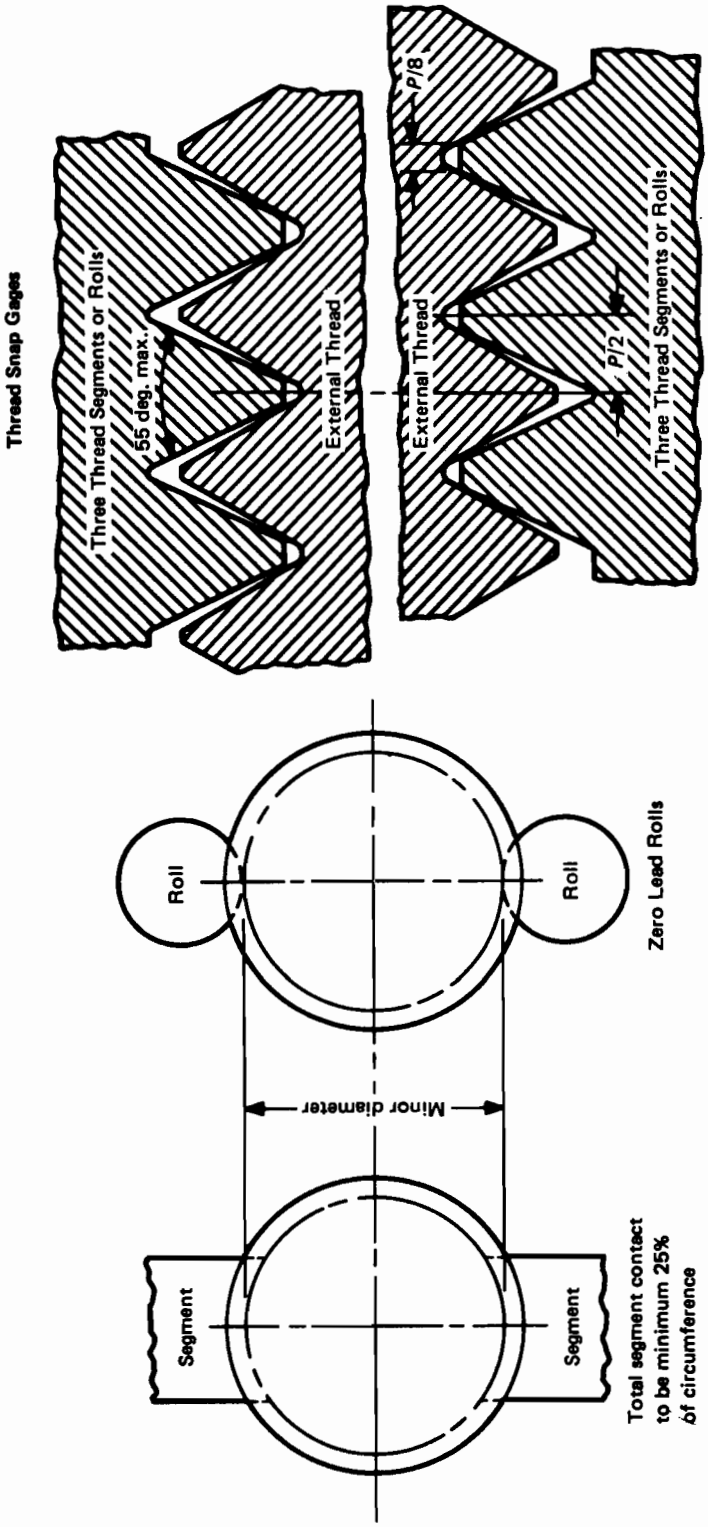



FIG. 25 MINOR DIAMETER LIMIT SNAP TYPE

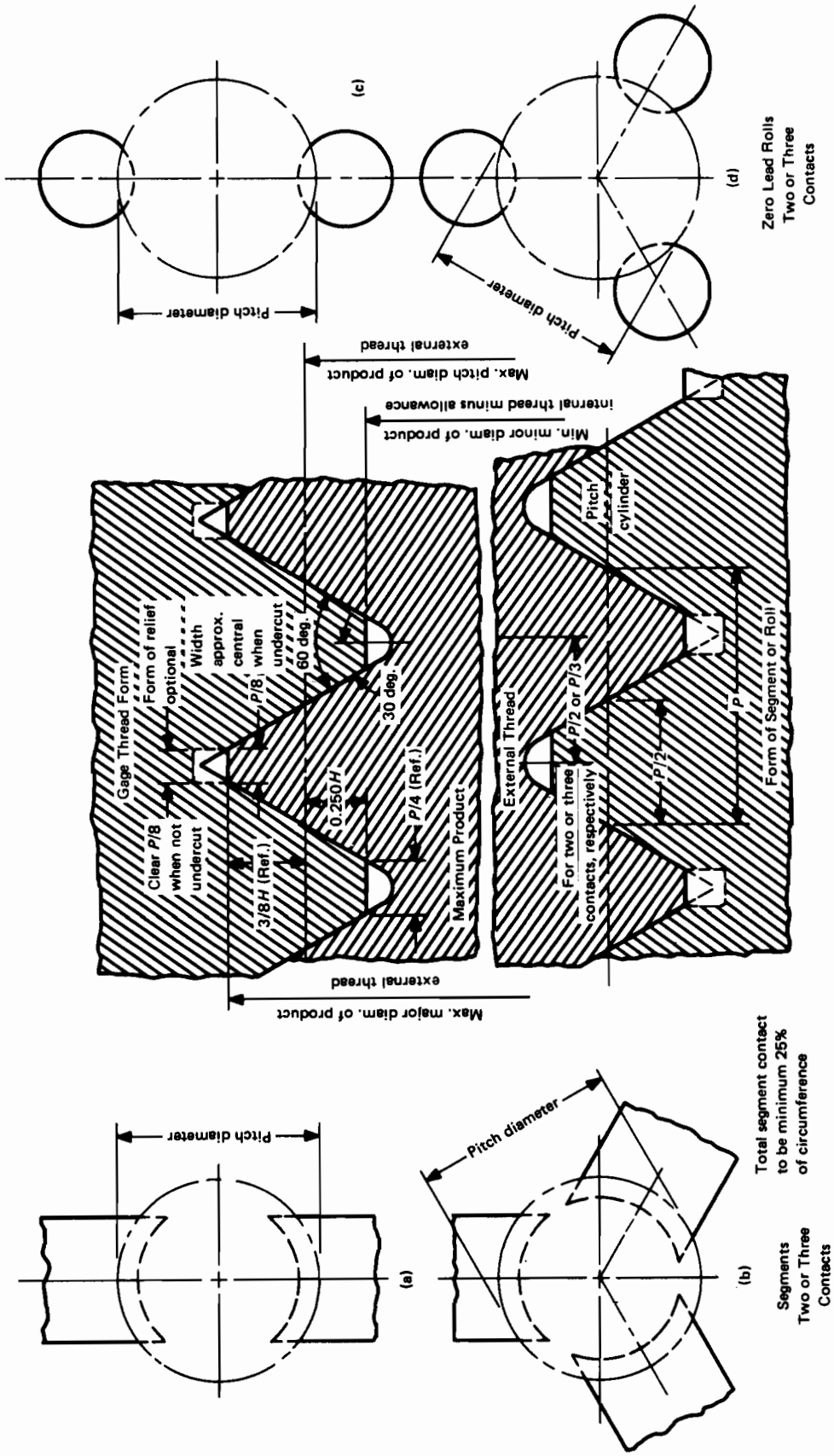



FIG. 26 INDICATING THREAD GAGES — MAXIMUM-MATERIAL GO FUNCTIONAL DIAMETER LIMIT AND SIZE

**5.9.9 Identification.** The segments and rolls shall be identified by the nominal size and threads/in. When indicating gage is assembled with proper contacts, the gage should be tagged with the nominal size, threads/in., thread series, class, PD, and pitch diameter limits.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A PD.2164-.2127

## 5.10 Minimum-Material Indicating Thread Gages for External Thread (Table 1 — Gages 4.5 and 4.6)

**5.10.1 Purpose and Use.** The indicating thread gage with cone and vee rolls or segments and the thread groove diameter type with rolls inspects the minimum-material limit and size ($C_1$ and $C_2$, $D_1$ and $D_2$) of product external thread. Either type of three-roll and three-segment gage can check roundness of pitch cylinder for 120 deg. lobing and taper of pitch cylinder. The two rolls and two segments check even lobing roundness and taper. The indicating gages are set to the proper thread-setting plug gage. Readings indicate the position of product external thread pitch diameter within the tolerance range.

**5.10.2 Basic Design.** The cone and vee indicating thread gage has rolls or segments with contact near the pitch line or contact slightly above the pitch line near the center of the flank. The thread groove diameter type indicating thread gage also has two or three rolls with the radii on the ribs of rolls made to "best size" thread wire size.

**5.10.3 Thread Form.** The specifications on form of cone and vee rolls and segments and thread groove diameter type rolls are shown in Figs. 27 and 28.

**5.10.4 Identification.** The assembled gage should be tagged with the nominal size, threads/in., thread series, class, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A PD.2127

## 5.11 Indicating Runout Gage for External Threads (Table 1 — Gage 4.7)

**5.11.1 Purpose and Use.** This indicating gage inspects the runout of the major diameter, $M_1$, to the pitch diameter of the product external thread. Readings indicate the position of product major diameter to the pitch diameter within the tolerance specified.

**5.11.2 Basic Design.** Indicating gages have three contacts, one plain and one threaded, at 120 deg., or two contacts, one plain and one threaded, at 180 deg. The threaded segments or roll contacts are minimum-material pitch diameter type. See Fig. 27. The length of the plain and threaded contacts are designed equal to the length of the standard GO ring gages. See ANSI B47.1 and Table A4. The indicating gage is set to a basic full-form thread-setting plug gage with plain gaging contact on outside diameter of thread-setting plug gage and thread contact on pitch diameter of thread-setting plug gage.

**5.11.3 Thread Form, Thread Crests, and Lead and Half-Angle Variations.** The specifications for thread form, thread crests, and lead and half-angle of thread segments and thread rolls are noted in 5.9. Plain contacts have a line bearing on major diameter of product. See Fig. 29.

**5.11.4 Identification.** The gaging elements, segments, or rolls should be marked with nominal size and threads/in. When indicating gage is assembled with proper gaging contacts, the indicating gage should be tagged with nominal size, threads/in., thread series, class, and RUNOUT.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A RUNOUT

## 5.12 Differential Gaging (Table 1 — Gage 4.8)

**5.12.1** The concept of differential gaging for product external threads makes use of fundamental geometric theorems that relate directly to size, position, and form.

For differential gaging, two methods are used for measuring screw thread size:

(*a*) GO functional size

(*b*) pitch diameter (or thread groove diameter)

Only when a screw thread has perfect position and form [i.e., zero variation in lead (including helical path), flank angle, taper, and roundness] are these two measurements equal. Differential gaging is a variables method of in-process inspection, final conformance inspection, or both, that provides the actual numerical values for both GO functional and pitch diameter sizes. These are the two extreme sizes of any product screw thread. One of the sizes, pitch diamter, is the size of the thread pitch diameter with essentially zero variation in all other thread elements, while the other size, GO functional size, is the size of the thread with the effects of all variations in all other

FIG. 27 INDICATING THREAD GAGES — MINIMUM-MATERIAL PITCH DIAMETER LIMIT AND SIZE — CONE AND VEE

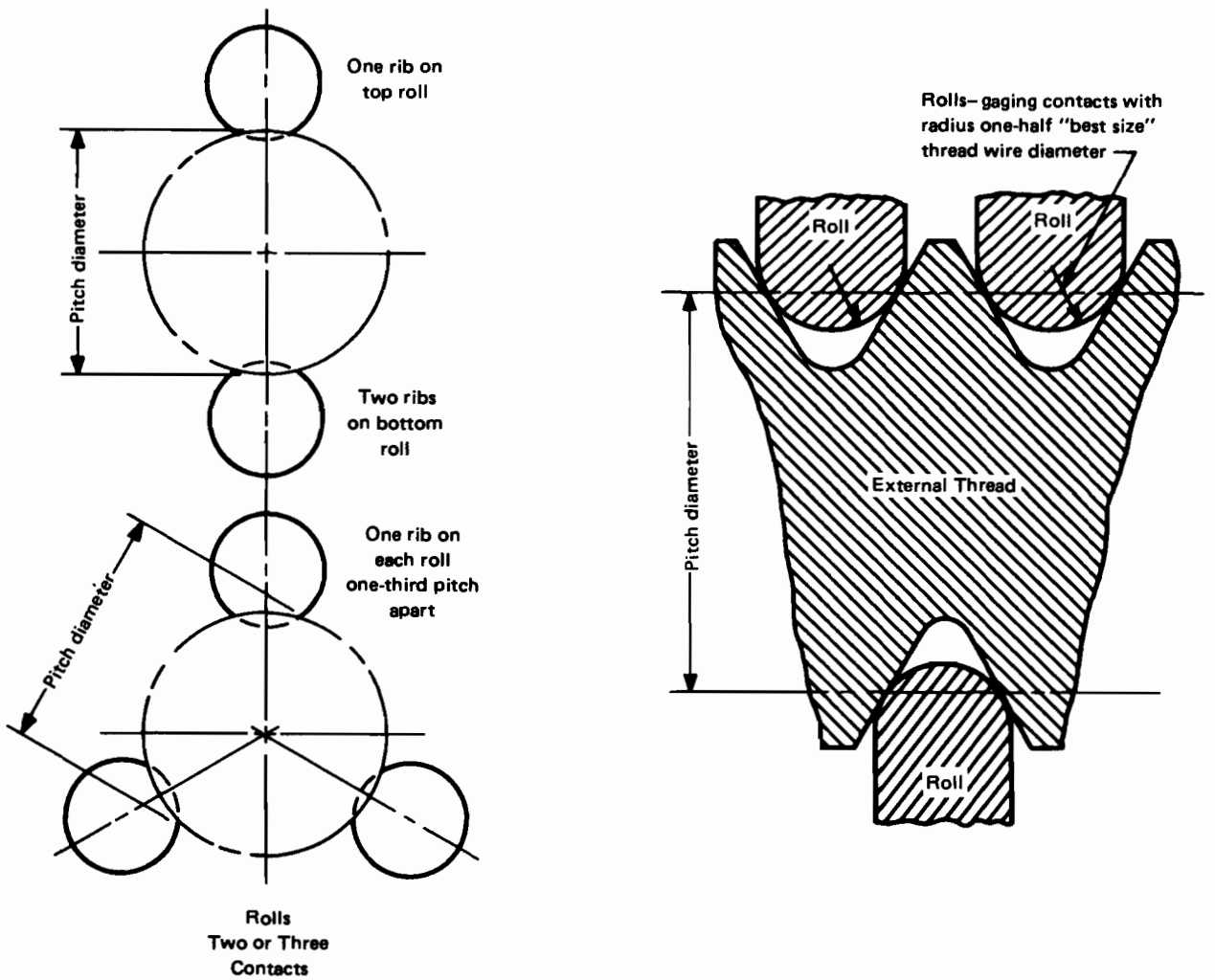



**FIG. 28 INDICATING THREAD GAGES—MINIMUM-MATERIAL THREAD GROOVE DIAMETER LIMIT AND SIZE**

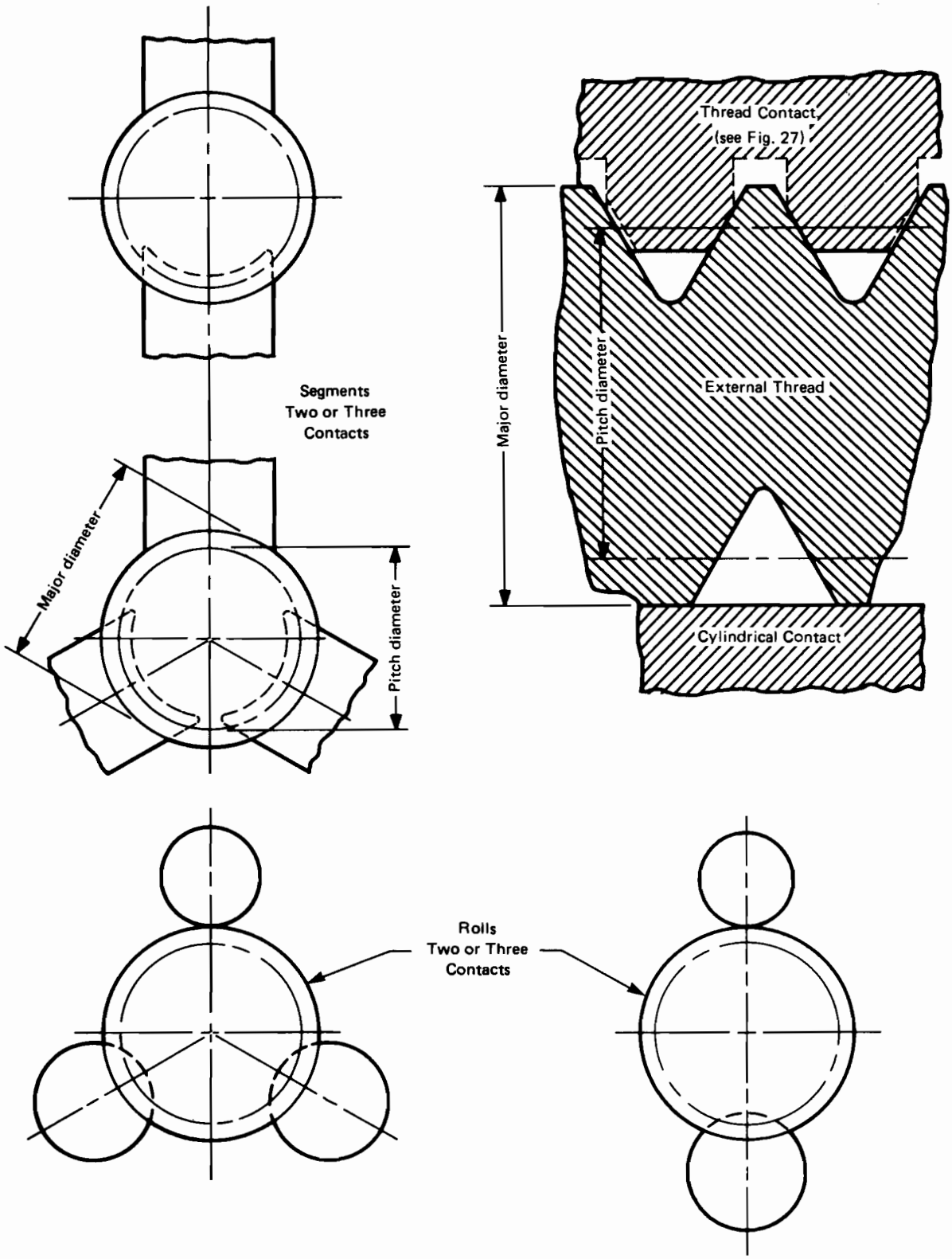



FIG. 29 INDICATING THREAD GAGES — DIAMETER RUNOUT — MAJOR TO PITCH

thread elements added to the pitch diameter. The numerical difference between these two sizes is called a *cumulative thread element variation differential* and represents the diametral effect of the total amount of thread element variation differential.

The inspection process that further refines the total amount of thread element variation so that the amount of variation for each individual element becomes known is called a *single thread element variation differential.*

**5.12.2 Cumulative Thread Element Variation Differential.** Indicating gages have either three contacts at 120 deg. spacing or two contacts at 180 deg. spacing. The indicating gages with segments or rolls as shown in Figs. 26 and 30, sketch (a), give the functional size indicating reading, Z. The indicating gage with cone and vee segments or rolls with one thread pitch engagement at pitch diameter line, Fig. 27; and thread groove diameter type, Fig. 28; or both, shown in Fig. 30, sketches (c) and (d), give the pitch diameter size indicating reading, X. The difference in the indicator readings, Z–X, between the two types of gages gives the cumulative form differential reading which corresponds to the pitch diameter equivalent, $\Delta d_2 C$, for for the combinatin of lead, helix, flank angle, roundness, and taper variations on the product thread. See Fig. 30.

**5.12.3 Single Thread Element Variation Differential**

**5.12.3.1 Lead (Helix) Differential Reading.** The indicating gage reading, Y, using the full-form thread segments or rolls with one thread pitch engagement, similar to Figs. 26 and 30, sketch (b), is compared to the reading, Z, using the functional size gage shown in Figs. 26 and 30, sketch (a). The difference between the measured values, $Z - Y$, is the lead differential reading which corresponds to the pitch diameter equivalent, $\Delta d_2 \lambda$, for the lead and helix variation on the product thread.

**5.12.3.2 Flank Angle Differential Reading.** The indicating gage reading, X, using segments or rolls with cone and vee design, Figs. 27 and 30, sketch (c), is compared to the reading, Y, using the full-form thread segments or rolls, similar to Figs. 26 and 30, sketch (b). Both designs have one thread pitch engagement. The difference between the measured values, $Y - X$, is the flank angle differential reading which corresponds approximately to the pitch diameter equivalent, $\Delta d_2 \alpha$, for the combined flank angle variation on product thread.

**5.12.3.3 Roundness and Taper Differential Readings.** By the use of full-form thread segments or rolls with one thread pitch engagement, similar to Figs. 26 and 30, sketch (b); cone and vee segments or rolls, Figs. 27 and 30, sketch (c); or thread groove diameter type, Figs. 28 and 30, sketch (d), the roundness and taper of pitch cylinder is checked. Rotate the product between contacts at different axial locations on thread for maximum difference in roundness and taper readings. Two contacts spaced 180 deg. apart give even lobing out-of-round measurement. Three contacts spaced 120 deg. apart give odd lobing out-of-round measurements.

**5.12.4 Thread Form.** The functional segments or rolls, Fig. 30, sketch (a), are described in 5.9. The full-form, one thread vee segment or roll, Figs. 26 and 30, sketch (b) lower contact, has a depth of thread equivalent to the functional type, but relieved on the outside thread flanks. The full-form cone segment or roll, Figs. 26 and 30, sketch (b) upper contact, has a $P/8$ flat on outside diameter. The cone and vee segments or rolls, Fig. 30, sketch (c), are described and shown in Fig. 27. Thread groove diameter type, Fig. 30, sketch (d), is described and shown in Fig. 28.

**5.12.5 Identification.** The gaging elements (segments or rolls) should be identified by nominal size and pitch. Indicating gages, assembled with proper contacts, should be tagged with nominal size, threads/in., thread series, class, and the type of differential reading specified above.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A
Flank angle differential variation

## 5.13 W Tolerance Thread-Setting Plug Gages

**5.13.1 Purpose and Use.** Thread-setting plug gages are used to set adjustable thread ring gages, check solid thread ring gages, set thread snap limit gages, and set indicating thread gages. Thread-setting plug gages are also applied to detect wear on gages and gaging elements in use. GO thread-setting plug gages are made to the maximum-material limit of the external thread specification, while NOT GO (LO) thread-setting plug gages are made to the minimum-material limit of the thread specification.

**5.13.2 Basic Design.** Thread-setting plug gages are of two standard designs which are designated as full-form and truncated setting plugs. The full-form

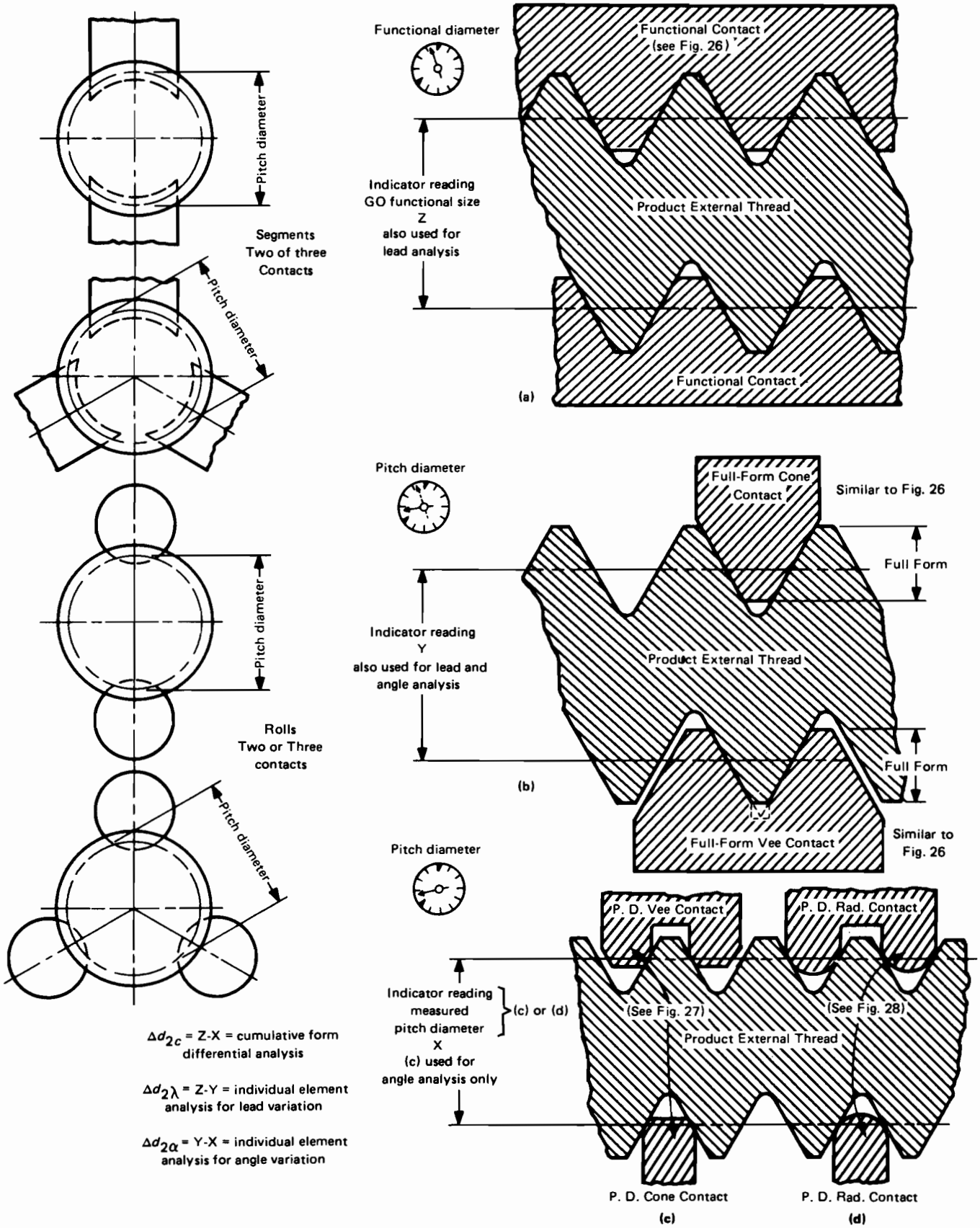



**FIG. 30 INDICATING THREAD GAGES — DIFFERENTIAL GAGING**

GO setting plug is one having a width of flat at the crest equal to $P/8$. The truncated GO setting plug is the same as the full-form setting plug except that it is longer and the crest of the thread is truncated a greater amount for one-half the length of the gage giving a full-form portion and a truncated portion. See Figs. 31 and 32 and Tables 5, 7, and 11.

**5.13.3 Gage Blanks.** For practical and economic reasons, the lengths of setting plug gages have been standardized for various size ranges and pitches (see ANSI B47.1 or Table A4). The length of the full form and the length of the truncated sections are each at least equal in length to the thickness of the corresponding thread ring gage.

**5.13.4 Thread Form.** The specifications for thread form of setting plug gages are stated in detail below and are summarized in Table 5 and Figs. 31 and 32.

**5.13.5 Thread Crests**

**5.13.5.1** The major diameter of the GO full-form setting plug and of the full-form portion of the truncated GO thread-setting plug is equal to the maximum major diameter of the product external thread.

**5.13.5.2** The major diameter of the truncated portion of the truncated GO thread-setting plug is equal to the maximum major diameter of the product external thread minus $0.060\sqrt[3]{p^2} + 0.017p$. See Table 5.

**5.13.5.3** The major diameter of the NOT GO (LO) full-form setting plug and of the full-form portions of the truncated NOT GO (LO) thread-setting plug is equal to the maximum major diameter of the product external thread (same as GO thread-setting plug). The maximum major diameter of any gage must correspond to a truncation that is not less than 0.0009 in. (equivalent to a crest width of 0.001 in. flat).

**5.13.5.4** The major diameter of the truncated portion of the truncated NOT GO (LO) thread-setting plug is equal to the minimum pitch diameter of the product external thread plus $H/2$.

**5.13.6 Thread Roots.** The minor diameter of thread-setting plug gages shall be cleared beyond a $P/8$ width of flat either by an extension of the sides of the thread toward a sharp vee or by an undercut no wider than $P/8$.

**5.13.7 Pitch Diameter Limitation of Taper.** The permissible taper shall be back taper (largest diameter at entering end) and shall be confined within the gage pitch diameter limits.

**5.13.8 Incomplete Thread.** The feather edge at both ends of the threaded section of the setting plug shall be removed. On pitches coarser than 28 threads/in., not more than one complete turn of the end threads shall be removed to obtain a full-thread blunt start. See Fig. 2. On pitches 28 threads/in. and finer, a 60 deg. chamfer from the axis of the gage is acceptable in lieu of the blunt start.

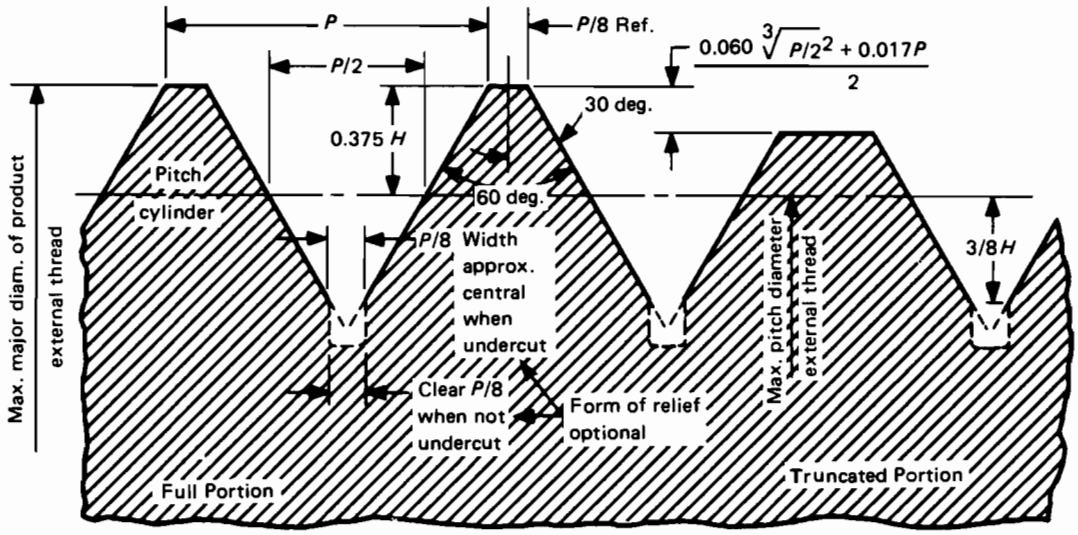
**5.13.9 Lead Variations.** In the case of truncated setting plugs, the lead variations present on the full-form portion and the truncated portion of an individual gage shall not differ from each other by more than 0.0001 in. over any portion equivalent to the length of the thread ring gage, or nine pitches, whichever is less. The specified tolerance shall be applicable to the thread length in the mating ring gage or nine pitches, whichever is smaller. The tolerance on lead establishes the width of a zone, measured parallel to the axis of the thread, within which the actual helical path must lie for the specified length of the thread. Measurements will be taken from a fixed reference point, located at the start of the first full thread, to a sufficient number of positions along the entire helix to detect all types of lead variations. The amounts that these positions vary from their basic (theoretical) positions will be recorded with due respect to sign. The greatest variation in each direction [plus or minus ($\pm$)] will be selected, and the sum of their values, disregarding sign, shall not exceed the tolerance limits specified in Table 7.

**5.13.10 Half-Angle Variations.** Variations in half-angle shall be within the limits specified in Table 7.

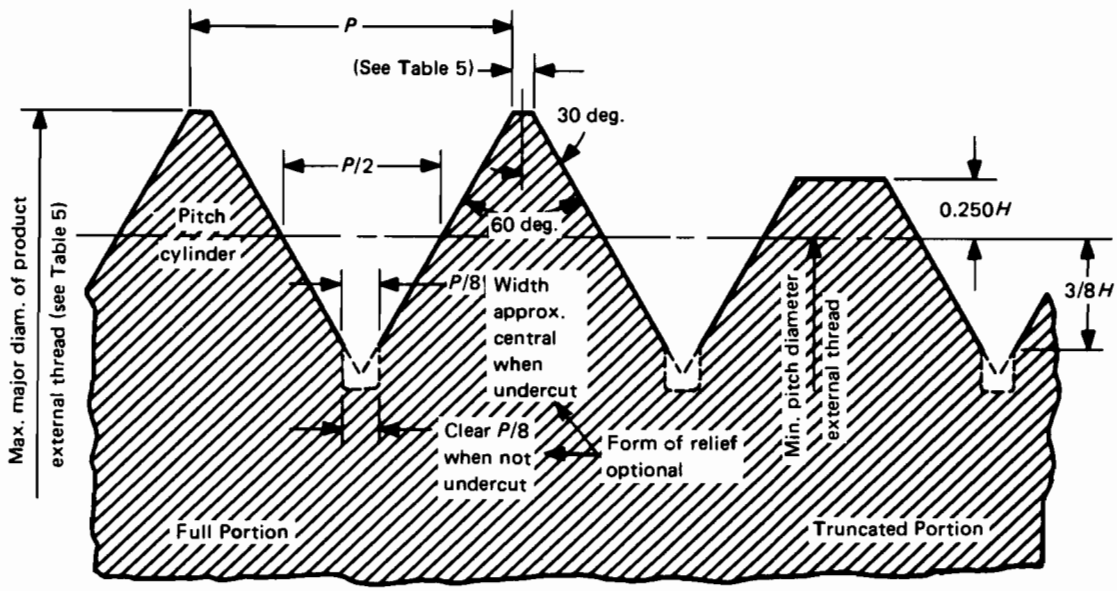
**5.13.11 Identification.** The GO thread-setting plug for Class 3A is basic, and is applicable to Class 2A after coating. Accordingly, it is recommended that the gage be identified by set plug nominal size, threads/in., thread series, GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC GO PD.2175

The GO thread-setting plug gages for Classes 1A and 2A are under basic, having a common allowance. Accordingly, it is recommended that the gage be identified by set plug nominal size, threads/in., thread series, GO, PD, and pitch diameter.

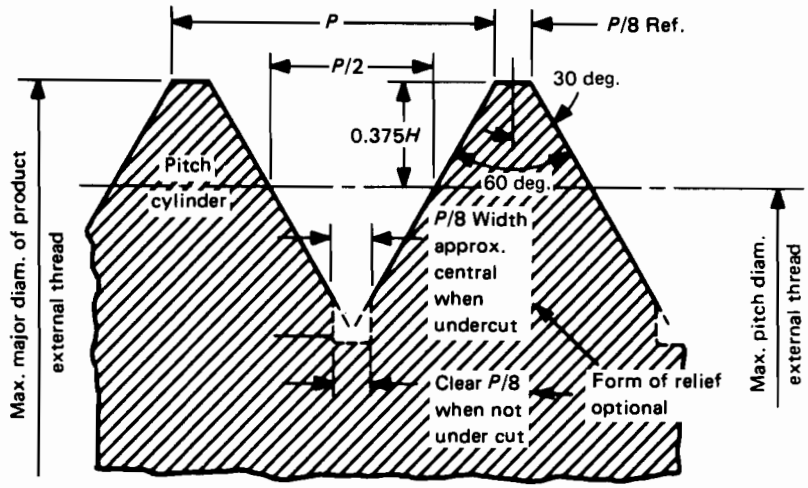



(a) Thread-Setting Plug for Maximum-Material Functional Limit and Functional Size GO Thread Gages

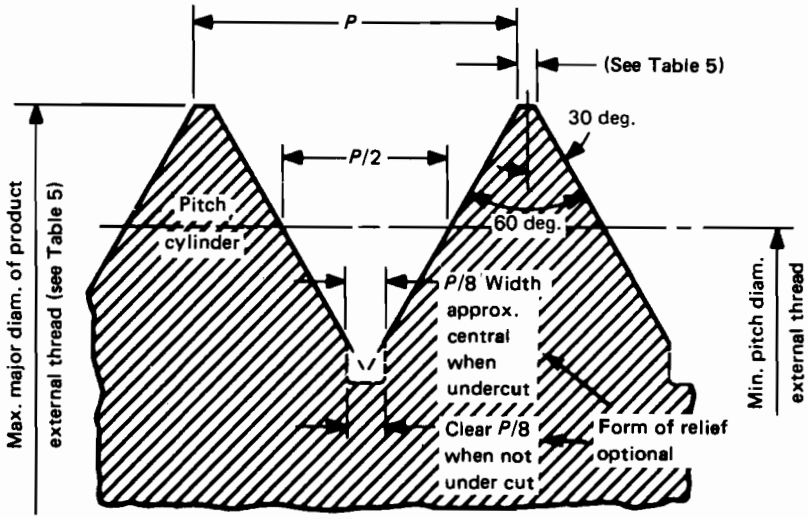



(b) Thread-Setting Plug for Minimum-Material Gages and NOT GO (LO) Functional Diameter Gages

FIG. 31 THREAD FORM OF TRUNCATED THREAD-SETTING PLUG GAGES




(a)Thread-Setting Plug for Maximum-Material Functional Limit and Functional Size GO Thread Gages




(b)Thread-Setting Plug for Minimum-Material Gages and NOT GO (LO) Functional Diameter Gages

**FIG. 32 THREAD FORM OF FULL-FORM THREAD-SETTING PLUG GAGES**

EXAMPLE:
1/4-20 (or .250-20) UNC 1A-2A GO PD.2164

The NOT GO (LO) thread-setting plug gage is different for each class and, accordingly, should be identified by set plug nominal size, threads/in., thread series, class, NOT GO, PD, and pitch diameter.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A NOT GO PD.2127

## 5.14 Plain Check Plug Gages for Thread Ring Gages

**5.14.1 Purpose and Use.** GO and NOT GO plain check plug gages verify the minor diameter limits of thread ring gages after the thread rings have been properly set with the applicable thread-setting plug gages.

**5.14.2 Basic Design.** The direction of the gage tolerances on GO and NOT GO plug gages for GO ring minor diameter and GO and NOT GO plain plug gages for NOT GO ring minor diameter is as follows: GO — tolerance plus; NOT GO — tolerance minus. Class X tolerance is used on gages up to No. 8 (0.164 in.) size. Class Y tolerance above No. 8 (0.164 in.) size (see Table 8).

**5.14.3 Gage Blanks.** For standardization and economic reasons, the gaging members and handles have been standardized for various size ranges (see ANSI B47.1).

**5.14.4 Identification.** The GO and NOT GO plain check plug gages for the GO thread ring gage should be marked with nominal size, threads/in., thread series, class, GO and NOT GO diameters, and GO minor diameter check plug. The GO and NOT GO plain check plug gages for the NOT GO (LO) thread ring gage should be marked with nominal size, threads/in., thread series, class, GO and NOT GO diameters, and NOT GO MINOR DIAMETER CHECK PLUG.

EXAMPLES:

For GO ring: 1/4-20 (or .250-20) UNC-2A GO.1942
NOT GO.1947
GO MINOR DIAMETER CHECK PLUG

For NOT GO ring: 1/4-20 (or .250-20) UNC-2A GO.2019
NOT GO.2024
NOT GO MINOR DIAMETER CHECK PLUG

## 5.15 Indicating Plain Diameter Gages — Major Diameter of Product External Threads (Table 1 — Gage 5.1)

**5.15.1 Purpose and Measuring Procedures.** The indicating plain diameter gage inspects the major diameter of the external thread. After the plain contacts of the indicating gage are set to a plain diameter setting plug and the dial is read, the gage is placed on the product thread major diameter for a second reading. The difference in readings is applied to the value of the set master to obtain the major diameter size.

**5.15.2 Basic Design.** Indicating gages have three plain contacts at 120 deg. or two plain contacts at 180 deg. The dimensions of segments or rolls are to manufacturer's standard. See Fig. 33.

**5.15.3 Identification.** Indicating gages, assembled with proper contacts, should be tagged with nominal size, threads/in., thread series, class, major diameter limits, and MAJOR DIAMETER.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A.2489-.2408 MAJOR DIAMETER

## 5.16 Indicating Gages to Check Minor Diameter of External Thread (Table 1 — Gage 5.2)

**5.16.1 Purpose and Use.** The maximum minor diameter limit of product external thread is considered acceptable if the product accepts GO thread gages. If further checking is required, the indicating gage with 55 deg. maximum included angle thread contacts is used to check the minor diameter.

**5.16.2 Basic Design.** A thread indicating gage with segments or rolls has a thread form of 55 deg. maximum. There are usually three threads in segments and three ribs on rolls. See Fig. 34.

**5.16.3 Identification.** Indicating gages, assembled with proper rolls, should be tagged with nominal size, threads/in., thread series, class, minor diameter limits (per customer's specifications), and MINOR DIAMETER EXTERNAL.

EXAMPLE:
1/4-20 (or .250-20) UNC-2A (Minor diameter limits as specified by customer) MINOR DIAMETER EXTERNAL

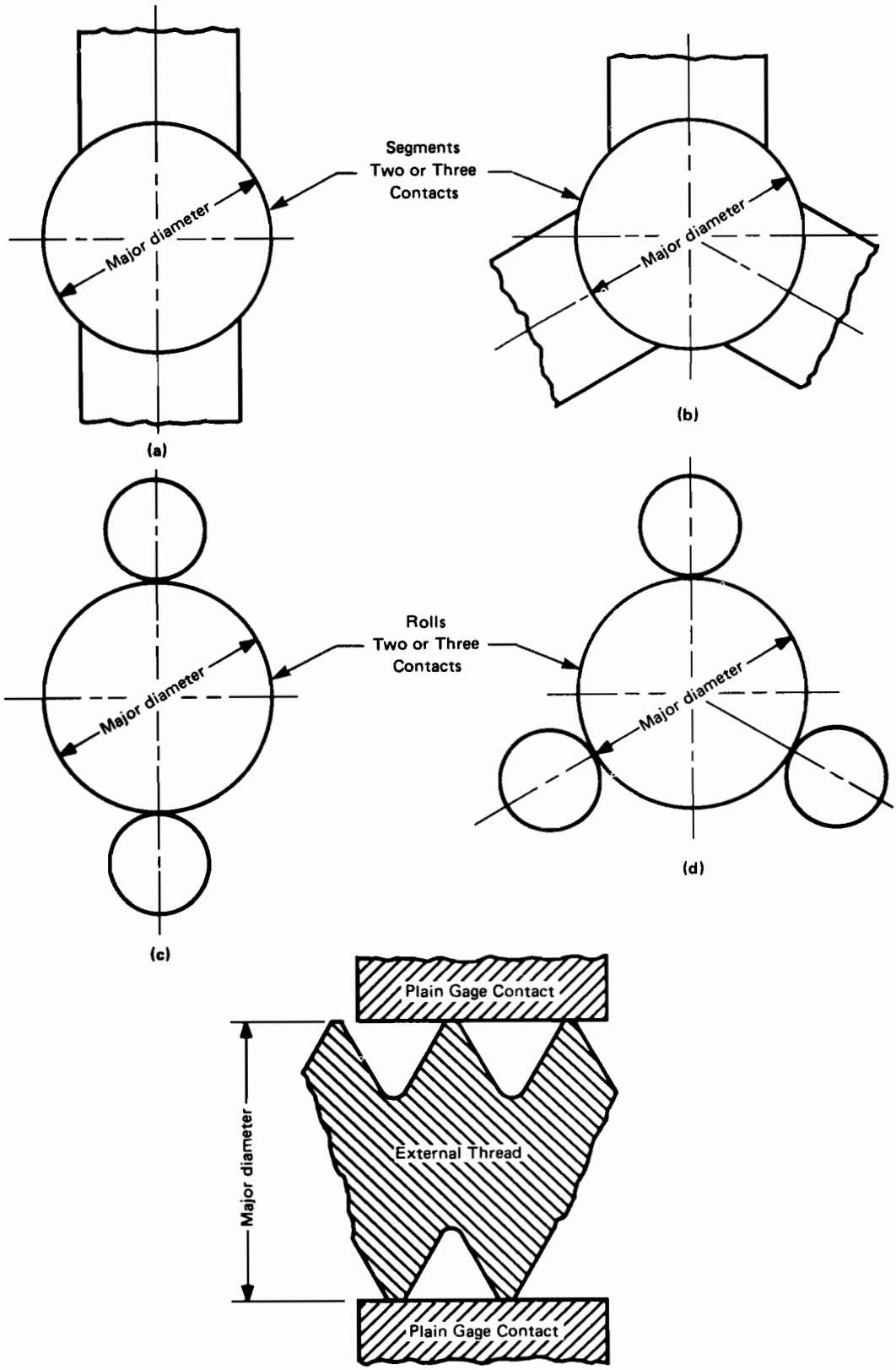



**FIG. 33 INDICATING PLAIN DIAMETER GAGE — MAX.-MIN. MAJOR DIAMETER LIMIT AND SIZE**

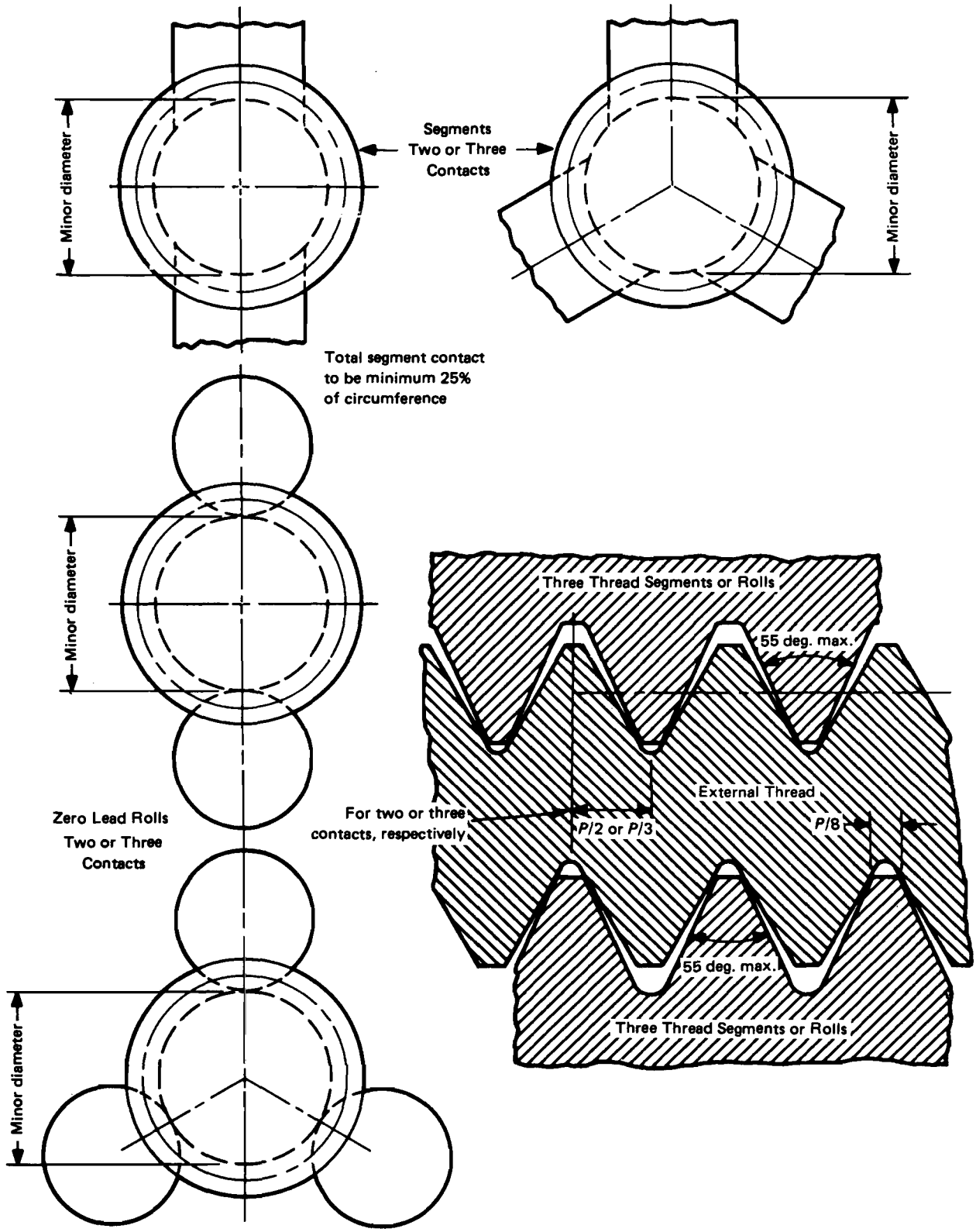



**FIG. 34 INDICATING DIAMETER GAGES — MAX.-MIN. MINOR DIAMETER LIMIT AND SIZE**

## TABLE 12 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREADS

| | Thread Gages and Measuring Equipment (Note 1) | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards (Note 7) |
|---|---|---|---|
| 1 | Thread rings (ANSI B47.1) | | |
| 1.1 | GO ring | Pitch (also helical offset at split; see A3.4), flank angles, minor diameter, pitch diameter, taper of pitch cylinder, straightness, roundness, clearance at root (Note 6) | W thread-setting plug for GO; X tolerance plain plug for minor diameter for small thread sizes |
| 1.2 | NOT GO (LO) ring | Pitch (also helical offset at split; see A3.4), flank angles, minor diameter, pitch diameter, taper of pitch cylinder, straightness, roundness, clearance at root (Note 6) | W thread-setting plug for NOT GO (LO); X tolerance plain plug for minor diameter for small thread sizes |
| 2 | Thread snap gages | | |
| 2.1 | GO segments | Pitch, flank angles, minor diameter, pitch diameter, taper, straightness, clearance at root (Notes 4–6) | W thread-setting plug for GO (Note 7) |
| 2.2 | NOT GO (LO) segments | Pitch, flank angles, minor diameter pitch diameter, clearance at root (Notes 4–6) | W thread-setting plug for NOT GO (LO) (Note 7) |
| 2.3 | GO rolls (zero lead) | Pitch, flank angles, width of flat at crest, taper of pitch cylinder on each roll, parallelism of axes of rolls, clearance at root (Notes 4–6) | W thread-setting plug for GO (Notes 7, 8) |
| 2.4 | NOT GO (LO) rolls, (zero lead) | Pitch, flank angles, width of flat at crest, clearance at root (Notes 4–6) | W thread-setting plug for NOT GO (LO) (Notes 7, 8) |
| 2.5 | Minimum-material, pitch diameter type, cone and vee | Pitch of vee, width of flat at crest, height of thread (Notes 4–6) | W thread-setting plug for NOT GO (LO) (Notes 7, 8) |
| 2.6 | Minimum-material, thread groove diameter type, cone only, "best size" thread wire | Radius of contacts corresponding to "best size" thread wire size (Notes 4–6) | W thread-setting plug for NOT GO (LO) (Notes 7, 8) |
| 3 | Plain diameter gages | | |
| 3.1 | Maximum plain cylindrical GO ring for major diameter | Taper, straightness, roundness, diameter | Series of plain plug gages in 0.0001 in. steps or direct diameter measurement with internal measuring equipment using gage blocks equal to the maximum major diameter |
| | Plain cylindrical NOT GO ring for major diameter | Taper, straightness, roundness, diameter | Series of plain plug gages in 0.0001 in. steps or direct diameter measurement with internal measuring equipment using gage blocks equal to the minimum major diameter |

## TABLE 12 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREADS (CONT'D)

| Thread Gages and Measuring Equipment (Note 1) | | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards (Note 7) |
|---|---|---|---|
| 3.2 | Major diameter snap type | Parallelism, flatness of contacts, distance between contacts | Plain Z tolerance plug gage or gage blocks with roll corresponding to maximum major diameter or direct measurement |
| 3.3 | Minor diameter snap type (55 deg. maximum included angle) | Pitch, diameter, included angle of thread form, clearance form at tips of snap contacts | Plain Z tolerance plug gage or gage blocks equal to the maximum minor diameter or direct measurement |
| 3.4 | Maximum and minimum major diameter snap type | Parallelism, flatness of contacts, distance between contacts | Plain Z tolerance plug gage or gage blocks with roll corresponding to maximum or minimum major diameter or direct measurement |
| 3.5 | Maximum and minimum minor diameter snap type (55 deg. maximum included angle) | Pitch, diameter, 55 deg. maximum included angle of thread form, clearance form at tips of snap contacts | Plain Z tolerance plug gage or gage blocks equal to the maximum or minimum minor diameter |
| 4 | Indicating thread gages having either two contacts at 180 deg. or three contacts at 120 deg. | | |
| 4.1 | GO segments | Pitch, flank angles, minor diameter, pitch diameter, taper, straightness, clearance at root, minor cylinder to pitch cylinder relationship of segments for coaxiality (Notes 4–6) | W thread-setting plug for GO (Note 7) |
| 4.3 | GO rolls (zero lead) | Pitch, flank angles, minor diameter, taper, straightness, parallelism of axes of rolls to each other, clearance of root (Notes 4–6) | W thread-setting plug for GO (Notes 7, 8) |
| 4.5 | Minimum-material, pitch diameter type, cone and vee | Pitch, width of flat at crest, height of thread (Notes 4–6) | W thread-setting plug for GO or for basic pitch diameter for NOT GO (LO) (Notes 7, 8) |
| 4.6 | Minimum-material, thread groove diameter type, cone only ("best-size" thread wire size) | Radius of contact (Notes 4–6) | W thread-setting plug for NOT GO (LO) (Notes 7, 8) |
| 4.7 | Major diameter and pitch diameter runout gage | Pitch and flank angles of thread segments, straightness of plain gages, major cylinder to pitch cylinder relationship of segments for coaxiality (Notes 4–6) | None |

## TABLE 12 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREADS (CONT'D)

| Thread Gages and Measuring Equipment (Note 1) | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards (Note 7) |
|---|---|---|
| 4.8 Differential segments and rolls | GO profile of one pitch segment or roll requires flank angles checked<br>GO full-form segments (see 4.1 above)<br>GO full-form rolls (see 4.3 above)<br>Minimum-material, pitch diameter type, cone and vee (see 4.5 above)<br>Minimum-material, thread groove diameter type, cone only "best size" thread wire size (see 4.6 above) | Not required: special lead standards and flank angle standards with generated variation portion and near perfect portion |
| 5 Indicating plain diameter gages | | |
| 5.1 Major diameter type | Parallelism and flatness of contacts (Note 5) | Plain Z tolerance plug gage for GO or basic major diameter or gage blocks |
| 5.2 Minor diameter type | Pitch, diameter, 55 deg. maximum included angle of thread form, width of flat on crests | Plain Z tolerance plug gage for basic minor diameter at radiused root |
| 6 Pitch micrometer with standard contacts [approximately NOT GO (LO) profile] cone and vee | Pitch, flank angles. Maximum error in indicated measurements up to 1.000 in. shall not exceed 0.00012 in. for pitches up to 40 TPI, 0.00015 in. for pitches greater than 40 TPI and up to 14 TPI, and 0.0002 in. for pitches greater than 14 TPI. For measurements greater than 1.000 in., error may be increased by 0.00004 in. | W thread-setting plug for basic pitch diameter, or GO pitch diameter standard or NOT GO (LO) (Note 7) |
| 7 Pitch micrometer with modified contacts (approximately pitch diameter contact) cone and vee | Pitch, flank angles, width of flat at crest, height of thread, maximum error in indicated measurements up to 1.000 in. shall not exceed 0.00012 in. for pitches up to 40 TPI, 0.00015 in. for pitches greater than 40 TPI and up to 14 TPI, and 0.0002 in. for pitches greater than 14 TPI. For measurements greater than 1.000 in., error may be increased by 0.00004 in. | W thread setting plug for basic pitch diameter, or GO, or NOT GO (LO) (Note 7) |
| 8 Thread measuring wires ("best size" thread wire size) with suitable measuring means | Flatness and parallelism of spindle and anvil faces, screw calibration, measuring force | Calibrated "best size" thread wire size measuring wires and gage blocks |
| 9 Optical comparator or toolmaker's microscope with suitable fixturing | Micrometer stage, magnification, radius chart, protractor head (Note 4) | Gage blocks, plug gages, sine bar |

## TABLE 12 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR EXTERNAL PRODUCT THREADS (CONT'D)

| | Thread Gages and Measuring Equipment (Note 1) | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards (Note 7) |
|---|---|---|---|
| 10 | Profile tracing equipment with suitable fixturing | Use manufacturer's instructions to test stylus traverse and electronic amplification | Special angle block supplied with instrument |
| 11 | Lead measuring machine with suitable fixturing | Traversing system, straightness of ways, stylus radius | Lead standard, gage blocks |
| 12 | Helical path attachment used with GO type indicating gage | Lead, flank angles, taper, straightness, clearance at root (Notes 4, 5) | Lead standard |
| 13 | Helical path analyzer | Use manufacturer's instructions to test the mechanical and electronic features | Lead standard |
| 14 | Plain micrometer and calipers, modified as required | Maximum error in indicated measurements up to 1.000 in. shall not exceed 0.00012 in. for pitches up to 40 TPI, 0.00015 in. for pitches greater than 40 TPI and up to 14 TPI, and 0.0002 in. for pitches greater than 14 TPI. For measurements greater than 1.000 in., error may be increased by 0.00004 in. | Gage blocks, or calibrated plain plug gages |
| 15 | Surface measuring equipment | Use manufacturer's instructions for calibration procedures | Precision roughness standard |
| 16 | Roundness equipment | Use manufacturer's instructions for calibration procedures | Precision glass sphere, roundness magnification standard |

NOTES:
(1) See Table 1.
(2) Use applicable X, W, or Z gage tolerance.
(3) Taper, straightness including bellmouth barrel shape and hourglass shape, and roundness shall be within the X, W, or Z tolerance depending on the element measured. In other words, if these features are measured at pitch cylinder, the tolerance for pitch diameter applies.
(4) Use manufacturer's recommended procedures for gage for checking the thread features and alignment of indicating gage components.
(5) New rolls and segments shall be within X tolerance. Worn rolls or segments shall be replaced when a single thread element wears outside of X tolerance.
(6) Pitch diameter is usually transferred from thread-setting gages.
(7) When the gage is set by adjustment based upon actual measured pitch diameter of the setting master, the master shall meet all W tolerances except for pitch diameter, which may have a tolerance increased to X.
(8) Pitch diameter size on some adjustable thread snap gages and indicating thread gages may be set from one or more of the following:
  (a) Z tolerance plain cylindrical plug gage
  (b) gage blocks
  (c) direct measurement
  (d) specially designed transfer standards
  Rolls must be qualified for setting from their outside diameters.

## TABLE 13 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREADS

| Thread Gages and Measuring Equipment (Note 1) | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards |
|---|---|---|
| 1 Thread plug (ANSI B47.1) | | |
| 1.1 GO plug | Lead, flank angles, major diameter, pitch diameter, taper, straightness, roundness, clearance at root | Three "best size" thread wires, gage blocks |
| 1.2 NOT GO (HI) plug | Lead, flank angles, major diameter, pitch diameter, taper, straightness, roundness, clearance at root | Three "best size" thread wires, gage blocks |
| 2 Thread snap gages | | |
| 2.1 GO segments | Lead, flank angles, major diameter, pitch diameter, taper, straightness, clearance at root (Notes 4, 5) | Solid W thread-setting ring for GO (if direct measurement of pitch diameter is not made) (Notes 6, 8) |
| 2.2 NOT GO (HI) segments | Pitch, flank angles, major diameter, pitch diameter, clearance at root (Notes 4, 5) | Solid W thread-setting ring for NOT GO (HI) (if direct measurement of pitch diameter is not made) (Notes 6, 8) |
| 2.3 GO rolls (zero lead) | Pitch, flank angles, width of flat at crest, taper of pitch cylinder on each roll, straightness, parallelism of assembled rolls, clearance at root (Notes 4, 5) | Solid W thread-setting ring for GO (Notes 6, 8) |
| 2.4 NOT GO (HI) rolls (zero lead) | Pitch, flank angles, width of flat at crest, clearance at root (Notes 4, 5) | Solid W thread-setting ring for NOT GO (HI) (Notes 6, 8) |
| 2.5 Minimum-material, pitch diameter type, cone and vee | Pitch, width of flat at crest, height of thread (Notes 4, 5) | Solid W thread-setting ring for NOT GO (HI) (Notes 6, 8) |
| 2.6 Minimum-material, thread groove diameter type, cone only ("best size" thread balls) | Radius of contacts (Notes 4, 5) | Solid W thread-setting ring for NOT GO (HI) (Notes 6, 8) |
| 3 Plain diameter gages | | |
| 3.1 Minimum plain cylindrical plug for minor diameter | Taper, straightness, roundness, diameter | Gage blocks |
| 3.2 Minimum major diameter snap type (55 deg. maximum included angle) | Pitch, included angle, dimension over segments or rolls, width of flat at crests (Note 4) | Plain Z tolerance ring gage for GO major diameter or gage blocks between jaws |
| 3.3 Minimum minor diameter snap type | Taper, straightness or coaxiality of cylindrical segments or rolls, dimension over segments or rolls (Note 4) | Plain Z tolerance ring gage for GO minor diameter or gage blocks between jaws |

## TABLE 13 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREADS (CONT'D)

| Thread Gages and Measuring Equipment (Note 1) | | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards |
|---|---|---|---|
| 3.4 | Maximum and minimum major diameter snap type (55 deg. maximum included angle) | Pitch, included angle, dimension over segments or rolls, width of flat at crests (Note 4) | Plain Z tolerance ring gage for GO major diameter; plain Z tolerance ring gage for NOT GO (HI) major diameter or gage blocks between jaws |
| 3.5 | Maximum and minimum minor diameter snap type | Taper, straightness, coaxiality of cylindrical segments or rolls, dimension over segments or rolls (Note 4) | Plain Z tolerance ring gage for GO minor diameter; plain Z tolerance ring gage for NOT GO (HI) minor diameter or gage blocks between jaws |
| 4 | Indicating thread gages having either two contacts at 180 deg. or three contacts at 120 deg. | | |
| 4.1 | GO segments | Lead, flank angles, major diameter, pitch diameter, taper, straightness, clearance at root, major cylinder to pitch cylinder, relationship of segments for coaxiality (Notes 4, 5) | Solid W thread-setting ring for GO or basic pitch diameter (Notes 6–8) |
| 4.3 | GO rolls (zero lead) | Pitch, flank angles, major diameter, taper, straightness, clearance at root, parallelism of axes of rolls to each other (Notes 4, 5) | Solid W thread-setting ring for GO (Notes 6, 9) |
| 4.5 | Minimum-material, pitch diameter type, cone and vee | Pitch, width of flat at crest, height of thread (Notes 4, 5) | Solid W thread-setting ring for GO or NOT GO (HI) or basic pitch diameter (Notes 6, 9) |
| 4.6 | Minimum-material, thread groove type, cone only | Radius of contacts (Notes 4,5) | W thread-setting ring for NOT GO (HI) (Notes 6, 9) |
| | Minimum-material, thread groove type, three "best size" thread balls, two ball contact spaced four pitches | Ball diameter (Notes 4, 5) | Plain Z tolerance ring gages whose diameter is basic pitch diameter plus ½ the "best size" thread ball size |
| 4.7 | Minor diameter and pitch diameter runout gage | Straightness of plain gage segment, pitch, flank angle, straightness of thread segment, minor cylinder to pitch cylinder, relationship of segments for coaxiality (Notes 4, 5) | None |

## TABLE 13 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREADS (CONT'D)

| Thread Gages and Measuring Equipment (Note 1) | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards |
|---|---|---|
| 4.8 Differential segment or roll | GO profile of one pitch in length, segment or roll, requires flank angles checked<br>GO full-form segment (see 4.1 above)<br>GO full-form roll (see 4.3 above)<br>Minimum material, pitch diameter type, cone and vee, (see 4.5 above)<br>Minimum material, thread groove type, cone only, (see 4.6 above) | Not required: special internal lead standard and internal flank angle standard with generated errors portion and near perfect portion |
| 5 Indicating plain diameter gages | | |
| 5.1 Major diameter type (55 deg. maximum included angle) | Pitch, included angle of flanks, width of flat on crests | Plain Z tolerance ring gage for basic major diameter or GO major diameter, gage blocks, direct measurement |
| 5.2 Minor diameter type | Straightness, parallelism of contacts (Note 5) | Plain Z tolerance ring gage for basic minor diameter, gage blocks, direct measurement |
| 6 Internal pitch micrometer with standard contacts (approximately NOT GO (HI) profile) cone and vee | Pitch, flank angles, maximum error in indicated measurement in the micrometer head shall not exceed 0.0002 in. | Solid W thread-setting ring gage for basic pitch diameter, measurement over wires (Note 6) |
| 7 Internal pitch micrometer with modified contacts (approximately pitch diameter contact) cone and vee | Pitch, flank angles, width of flat at crest, height of thread. Maximum error in indicated measurement in the micrometer head shall not exceed 0.0002 in. | Solid W thread-setting ring gage for basic pitch diameter (Note 6) |
| 8 Thread measuring ball with suitable measuring means | Flatness and parallelism of internal anvils, screw calibration, measuring force | Gage blocks, calibrated "best size" thread balls |
| 9 Optical comparator or toolmaker's microscope with suitable fixturing and cast replica | Micrometer stage, magnification, radius chart, protractor head (Note 4) | Gage blocks, plug gages, sine bar, stage micrometer |
| 10 Profile tracing equipment with suitable fixturing | Use manufacturer's instructions to test stylus traverse and electronic amplification | Special angle block supplied with instrument |

## TABLE 13 CALIBRATION REQUIREMENTS AND STANDARDS FOR X TOLERANCE THREAD GAGES, INDICATING GAGES, PLAIN GAGES, AND MEASURING EQUIPMENT FOR INTERNAL PRODUCT THREADS (CONT'D)

| | Thread Gages and Measuring Equipment (Note 1) | Calibration Requirements for Gages and Measuring Equipment (Notes 2, 3) | Setting Gages and Standards |
|---|---|---|---|
| 11 | Lead measuring machine with suitable fixturing | Traversing system, straightness of ways, stylus radius | Lead standard gage blocks |
| 12 | Helical path analyzer | Use manufacturer's instructions to test the mechanical and electronic features | Lead standard |
| 13 | Plain internal micrometer and calipers modified as required | Maximum error in indicated measurement in the micrometer head shall not exceed 0.0002 in. | Gage blocks, or calibrated plain plug gages |
| 14 | Surface measuring equipment | Use manufacturer's instructions for calibration procedures | Precision roughness standard |
| 15 | Roundness equipment | Use manufacturer's instructions for calibration procedures | Precision glass sphere, roundness magnification standard |

NOTES:
(1) See Table 2.
(2) Use applicable X, W, or Z gage tolerance.
(3) Taper, straightness including bellmouth barrel shape and hourglass shape, and roundness shall be within the X, W, or Z tolerance depending on the element measured. In other words, if these features are measured at pitch cylinder, the tolerance for pitch diameter applies.
(4) Use manufacturer's recommended procedures for gage for checking the thread features and alignment of indicating gage components.
(5) New rolls and segments shall be within X tolerance. Worn rolls or segments shall be replaced when a single thread element wears outside of X tolerance.
(6) Pitch diameter is usually transferred from thread-setting gage.
(7) When the gage is set by adjustment based on actual measured pitch diameter of the setting master, the master shall meet all W tolerances except for pitch diameter, which may have a tolerance increased to X.
(8) Pitch diameter size on some types of adjustable gages may be set from Z tolerance plain ring gages or direct measurement. Rolls must qualify for setting from their outside diameters.
(9) Pitch diameter size may be set by direct measurement over wires on 180 deg. segments, with specially designed transfer standards or by Z tolerance plain ring gages when rolls are qualified for setting from their outside diameters.

**TABLE 14 CALIBRATION REQUIREMENTS FOR THREAD- AND PLAIN-SETTING GAGES**

| Setting Gage | Calibration Requirements |
|---|---|
| GO, NOT GO (LO) and W thread setting plug gage, truncated and full form | Lead, flank angles, major diameter, pitch diameter, taper, straightness and roundness of major and pitch cylinders, clearance at root, coaxiality of major cylinder with pitch cylinder |
| GO, NOT GO (HI) and solid W thread-setting ring gage | Lead, flank angles, minor diameter, pitch diameter (Note 1), taper, straightness and roundness of minor and pitch cylinders, clearance at root, coaxiality of minor cylinder with pitch cylinder |
| Plain Z tolerance plug and ring gages | Diameter, taper, straightness, and roundness |

NOTE:
(1) Pitch diameter of an internal thread, measured by "best size" thread ball contacts, will be 0.0001 in. to 0.0002 in. larger than the pitch diameter, gaged indirectly by a snug-fitting master thread plug gage or locked segments of an indicating gage which have been measured by "best size" thread wire method. This difference is due to the functional size of the master thread plug gage or locked segments which unavoidably have small deviations in lead, flank angle, taper, and roundness.

## 5.17 Thread Micrometers (Table 1 — Gages 6, 7, and 14)

**5.17.1 Purpose and Use.** Thread micrometers with cone and vee anvils are used to inspect the minimum-material pitch diameter limit and size of external thread. Micrometer can check 180 deg. ovality of pitch diameter and taper of pitch diameter. Modified vernier calipers are used similarly.

**5.17.2 Basic Design.** The depth of thread on cone and vee is either approximately pitch diameter contact or the NOT GO (LO) limit profile. Measurements are made in 0 in. to 1.000 in., and 1.000 in. to 2.000 in. diameter ranges. The smallest graduation is 0.0001 in.

## 5.18 Thread-Measuring Wires (Table 1 — Gage 8)

**5.18.1 Purpose and Use.** Using a measuring machine, product thread can be checked using three measuring wires between product thread and parallel flat anvils of measuring machine. Wires are "best size" thread wire contacting at the thread groove diameter, with two wires on one side and one wire 180 deg. around. This type of measurement checks the minimum-material groove diameter limit and size. By rotating the product thread between wires, the 180 deg. ovality of groove diameter is checked. Measuring at different locations axially, the taper of the groove diameter is checked. It should be recognized that the measuring force shown for measuring hardened thread gages with wires may not be appropriate for softer product thread materials due to the possibility of the wires being forced into the surface of the thread flanks. This would indicate a smaller thread size than what actually exists. See Appendix B.

## 5.19 Optical Comparator and Toolmaker's Microscope (Table 1 — Gage 9)

**5.19.1 Purpose and Use.** The optical comparator magnifies and projects the thread profile on a screen. For best profile image, the threaded item is positioned so that the light is aligned with the thread lead angle. Since the thread profile is defined in a plane including the axis, a correction factor may be added to the measured flank angle observed normal to the lead angle. For most standard single lead threads, the correction factor is less than 0 deg. 5 min.

Optical comparators are generally fitted with lenses providing various magnifications between 10X and 100X. Profile dimensions are checked using appropriate linear and angular scales on the machine and by the application of thread profile, radius, and other overlay charts. Other groove and ridge dimensions, and axial plane pitch and lead may be checked. Major, minor, and pitch diameters are identified, then measured using table traverse readouts.

**5.19.2** The toolmaker's microscope is similar in function to the optical comparator but does not include screen projection or overlay charts. Magnifications are generally lower than those of optical comparators. Some microscopes have thread profile and radius templates which are inserted in the eyepiece.

### 5.20 Profile Tracing Instrument (Table 1 — Gage 10)

**5.20.1 Purpose and Use.** The instrument checks thread contours to an accuracy of 0.0002 in. for 1.000 in. of horizontal and 0.100 in. vertical travel at 100X magnifications. The chart paper trace may be analyzed for elements of the thread profile, including depth, crest width, lead, angle, and radius at root of thread.

### 5.21 Electromechanical Lead Tester (Table 1 — Gage 11)

**5.21.1 Purpose and Use.** The electromechanical lead tester consists of a precision, direct-reading headstock in combination with an axially movable carriage supporting a sine bar, two work-mounting centers, electronic thread locating head with a ball point and a milliammeter for registering the center position of the ball probes in the thread groove. Ball point stylus approximates the "best size" thread wire radius. To extend lead measurements beyond 1.000 in., gage blocks in 1.000 in. steps are used to displace the screw thread. Lead measurements accurate to 0.00002 in. are read directly from micrometer scales on headstock.

### 5.22 Helical Path Attachment Used With GO Type Thread Indicating Gage (Table 1 — Gage 12)

**5.22.1 Purpose and Use.** To observe the presence of helical path variation with a GO type indicating gage, Fig. 35, the following procedure is used:

(*a*) a suitable means is used to lock (restrict) axially the lower gaging element;

(*b*) the top gaging element is allowed to float freely (axially) on its own stud and at least one full pitch away from the frame;

(*c*) the product to be inspected is inserted into the gaging elements so that the conditions described in (a) and (b) above are met;

(*d*) an indicator (usually attached to the comparator) is positioned so that the indicator contact point locates at the face of the free floating (top) gaging element;

(*e*) the product is turned one full revolution. The presence of helical path variation causes the top gaging element to displace itself axially on its own stud.

(*f*) the full-indicator movement is observed.

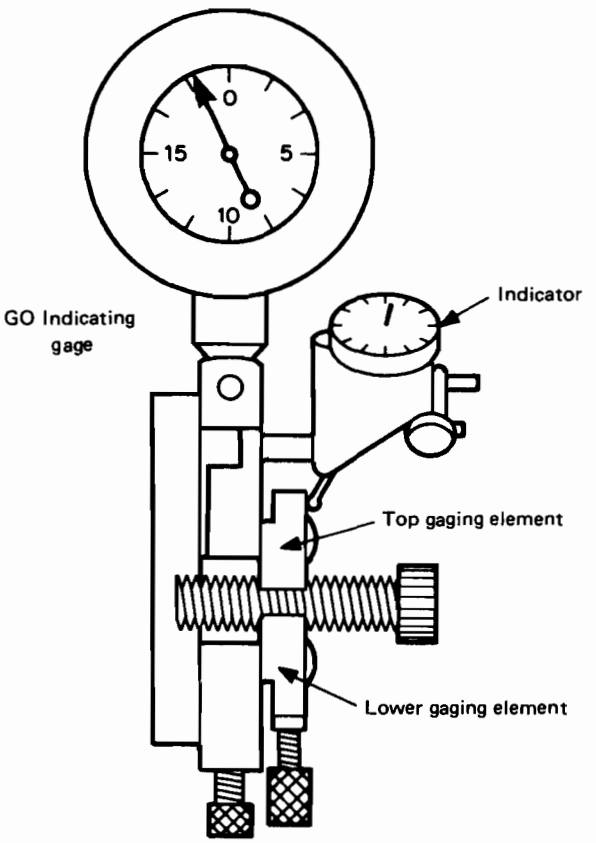



**FIG. 35 INDICATING GAGES — HELICAL PATH ATTACHMENT USED WITH GO TYPE INDICATING GAGE**

### 5.23 Helical Path Analyzer (Table 1 — Gage 13)

**5.23.1 Purpose and Use.** A helical path analyzer is a self-contained unit consisting of a motor-driven headstock, tailstock, electronic gaging head, sine bar, follower, pitch blocks, selsyn transmitter for chart recorder, and operator control panel.

The external workpiece to be measured is mounted between centers. The motor-driven headstock rotates the part through three revolutions at one setting. At the same time, this rotary motion is transmitted to the chart drive of the recorder. Simultaneously, the driving ribbon running off the headstock actuates the sine bar laterally on a ball slide in direct proportion to the spindle rotation. The sine bar is set previously to the proper angle for the particular pitch using the applicable pitch block. The electronic gage head floats axially on ball slides, the movement being controlled by constant spring pressure of the sine bar follower against the sine bar.

The chart gives readings in lead variation and so-called drunken thread variation. Chart division is equal to 0.00002 in. per division.

### 5.24 Surface Roughness Equipment (Table 1 — Gage 15)

**5.24.1 Purpose and Use.** Measurement of surface roughness on screw thread flanks is usually made with an instrument which traverses a radiused stylus across the lay. The stylus displacement due to the surface irregularities is electronically amplified and the meter reading displays the arithmetical average roughness height in microinches (see ANSI B46.1 Surface Texture: Surface Roughness, Waviness and Lay). Some instruments produce a chart of the traced path which shows the peak-to-valley heights of the surface irregularities. Special fixturing is required to position and guide stylus over thread surface.

### 5.25 Roundness Equipment (Table 1 — Gage 16)

**5.25.1 Purpose and Use.** There are two types of precision roundness measuring instruments: precision rotary tables and precision spindles. A special stylus coupled to an electric unit records the out-of-roundness on a circular chart as it traces around the cylindrical surface of the workpiece. The instrument provides a series of magnifications for stylus displacement, a filtering system for isolating lobing from surface irregularities, various means for centering the amplified stylus trace on the polar chart, and a selection of rotating speeds. For details on measuring and for other methods for checking roundness, see ANSI B89.3.1, Measurement of Out-of-Roundness.

### 5.26 Miscellaneous Gages and Gaging Equipment

**5.26.1** The description of the external gages, as noted in 5.1 through 5.25, is definitely not a complete catalog of the various types available for inspection purposes. The gages not described above may be used provided they adhere to the standard thread practice noted in this Standard (i.e., truncation, form of thread, tolerances, etc.) and have producer and consumer agreement.

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# APPENDIX A
# CALIBRATION AND INSPECTION OF LIMIT GAGES, SNAP GAGES, INDICATING GAGES, AND MEASURING INSTRUMENTS

(This Appendix is not part of American National Standard Gages and Gaging for Unified Inch Screw Threads, ANSI/ASME B1.2-1983, and is included for information purposes only.)

## A1 GENERAL

There are more ways to calibrate gages than those briefly described herein. Since this Appendix covers only the most commonly used designs of limit, snap, and indicating gages, the inspector may have to modify the method described to become applicable. Special fixturing may be necessary for the small and large gages.

Specially designed screw thread indicating gages may at times be more practical for making measurements on thread gage elements than the cumbersome all-purpose laboratory instruments which may lack adequate fixturing to do an efficient job.

Before one calibrates, sets, or uses limit, snap, and indicating gages, they should be cleaned and examined visually for nicks, burrs, and foreign matter, using a minimum of 10X magnification. Defects must be corrected.

## A2 THREAD PLUG GAGE CALIBRATION

| | |
|---|---|
| GO and NOT GO (HI) | Thread Plug Gages |
| GO and NOT GO (LO) | Truncated Setting Plug Thread Gages |
| GO and NOT GO (LO) | Full-Form Thread-Setting Plug Gages |

### A2.1 External Pitch Diameter Measurement

The formula and method of measuring pitch diameter on thread plug gages are described in Appendix B.

### A2.2 Pitch Variation Measurement

Only those thread plug gages that have their centers intact can be mounted on centers for evaluation. The measurements are made on a pitch-testing machine by using a hardened steel stylus with a radius matching the "best size" thread ball. The stylus, which contacts both the leading and following flanks, engages selected complete threads at the pitch line in a direction parallel to the axis of the gage.

The measurements are made at both ends of the gage and one or more positions in between along one line; then they are repeated along another line at 180 deg. around the gage. The mean of the two sets of readings is taken in order to eliminate the effect of any misalignment of the measuring axis with respect to the gage axis. The importance of pitch measurement is to estimate its effect on functional size. The diameter equivalent of a pitch variation of 0.0001 in. is 0.00017 in.

Since gages have very small pitch tolerances, the measurement of pitch by optical projection is not recommended.

### A2.3 Helix Variation Measurement

Helical variation may be measured with helix measuring machines or on special fixtured indicating gages. Manufacturer's instructions should be used.

### A2.4 Major Diameter Measurement

The measuring instrument is set with gage blocks, cylindrical standards, or cylindrical standard and gage block combination which approximate the major diameter size. Then the outside diameter of the thread is placed between parallel anvils of a measuring machine or micrometer. The measuring faces are brought into contact with the threads using the specified measuring force. Additional readings are taken along the axis and around the gage to verify that the variations in roundness and taper are within the major diameter tolerance.

**TABLE A1 MINIMUM MAGNIFICATION**

| TPI | Minimum Magnification |
|---|---|
| More than 14 | 20X |
| 14–40 | 50X |
| 40 and less | 100X |

### A2.5 Thread Form

Thread form is checked by either optical projection or toolmaker's microscope. After the recommended magnification is selected, the profile may be compared to thread templates, and the root radius may be compared to a series of radii on a chart. The truncation, width of flat, and root clearance can be measured by using the micrometer screws to translate the image of the thread feature with respect to cross lines in the projector or hairlines in the microscope.

### A2.6 Flank Angle Measurement

**A2.6.1** If both centers are available, the flank angles may be measured by optical projection or toolmaker's microscope using magnifications shown in Table A1.

The plug gage is mounted on the centers in a fixture which can be tilted to the helix so that both flanks are in focus. See corrective angles shown in Table A2.

The leading and following 30 deg. angles are each measured with respect to the major cylinder or axial to the thread axis. The protractor head should read out to 1 min of arc. The cross line or hairline is set parallel to the thread feature permitting a very narrow slit of light between. If the thread flank is not straight, the inspector may either position the line to average out the flank irregularities or measure both the addendum and dedendum flank angles.

**A2.6.2** Profile tracing equipment is available for making profile charts of each flank on 10 threads/in. and coarser.

### A2.7 Runout Between Major Cylinder and Pitch Cylinder

The fixed anvil of the measuring instrument or micrometer engages the major cylinder of the gage, and the movable anvil straddles two thread-measuring wires which are pressed against the pitch cylinder with a force appropriate for pitch diameter measurement. This reading is taken and is followed by a series of readings obtained by rotating the threaded gage until the maximum and minimum values are found. The maximum difference in measurements shall be within the runout tolerance between the major cylinder and pitch cylinder.

### A2.8 Minor Diameter Measurement

Minor diameter can be measured with measuring machine or micrometer, provided special 55 deg. maximum conical contacts with radius or small flat tips are used. Gage axis must be mounted normal to the measuring screw axis. A gage block combination corresponding to the basic minor diameter should be used to set the measuring screw. Optical projection may be used also.

## A3 THREAD RING GAGE INSPECTION

GO and NOT GO (LO) Thread Ring Gages
GO and NOT GO (HI) Thread-Setting Ring Gages

### A3.1 Internal Pitch Diameter Measurement

**A3.1.1** Measurement of internal pitch diameter has seldom been practiced in the United States because instrumentation has not been readily available. Thus, the pitch cylinder is transferred to split ring gages from the GO and NOT GO (LO) thread-setting plugs by adjustment. Solid working and setting ring gages are sized by lapping until a light drag is noticed as they are screwed on the setting plugs. Sizes under 3/16 in. can only be gaged with plug gages.

**A3.1.2** The measured pitch diameter on rings fitted to a setting plug may be 0.0001 in. to 0.0002 in. larger than the measured pitch diameter on the plug because the pitch diameter equivalents from permissible pitch, lead, and flank angle tolerances on matched plug and ring cause some unavoidable discrepancy.

**A3.1.3** Measurement of internal pitch diameter using "best size" thread ball is restricted to sizes from 3/16 in. and larger. It is measured with ball contacts mounted to caliper jaws and coupled to an indicating gage. One jaw has a fixed ball and the other jaw a pair of floating balls with center spacing of two or more pitches. The caliper jaws are usually set to zero on an X tolerance plain ring whose diameter is the sum of the basic pitch diameter of the gage plus one-half the "best size" thread ball diameter. The ball contacts are brought in contact with the flanks of the internal

## TABLE A2 60 deg. INCLUDED THREAD ANGLE

| Helix Angle | | Correction | | Helix Angle | | Correction | |
|---|---|---|---|---|---|---|---|
| deg. | min. | deg. | min. | deg. | min. | deg. | min. |
| 2 | | 0 | 54 | 9 | | 18 | 23 |
| 2 | 10 | 1 | 4 | 9 | 10 | 19 | 4 |
| 2 | 20 | 1 | 14 | 9 | 20 | 19 | 46 |
| 2 | 30 | 1 | 24 | 9 | 30 | 20 | 29 |
| 2 | 40 | 1 | 36 | 9 | 40 | 21 | 12 |
| 2 | 50 | 1 | 48 | 9 | 50 | 21 | 57 |
| 3 | | 2 | 2 | 10 | | 22 | 42 |
| 3 | 10 | 2 | 16 | 10 | 10 | 23 | 28 |
| 3 | 20 | 2 | 31 | 10 | 20 | 24 | 15 |
| 3 | 30 | 2 | 47 | 10 | 30 | 25 | 2 |
| 3 | 40 | 3 | 4 | 10 | 40 | 25 | 50 |
| 3 | 50 | 3 | 21 | 10 | 50 | 26 | 38 |
| 4 | | 3 | 38 | 11 | | 27 | 28 |
| 4 | 10 | 3 | 56 | 11 | 10 | 28 | 19 |
| 4 | 20 | 4 | 16 | 11 | 20 | 29 | 11 |
| 4 | 30 | 4 | 35 | 11 | 30 | 30 | 2 |
| 4 | 40 | 4 | 56 | 11 | 40 | 30 | 55 |
| 4 | 50 | 5 | 18 | 11 | 50 | 31 | 47 |
| 5 | | 5 | 40 | 12 | | 32 | 42 |
| 5 | 10 | 6 | 2 | 12 | 10 | 33 | 37 |
| 5 | 20 | 6 | 27 | 12 | 20 | 34 | 33 |
| 5 | 30 | 6 | 31 | 12 | 30 | 35 | 29 |
| 5 | 40 | 7 | 17 | 12 | 40 | 36 | 27 |
| 5 | 50 | 7 | 43 | 12 | 50 | 37 | 25 |
| 6 | | 8 | 10 | 13 | | 38 | 23 |
| 6 | 10 | 8 | 37 | 13 | 10 | 39 | 23 |
| 6 | 20 | 9 | 5 | 13 | 20 | 40 | 25 |
| 6 | 30 | 9 | 35 | 13 | 30 | 41 | 25 |
| 6 | 40 | 10 | 5 | 13 | 40 | 42 | 26 |
| 6 | 50 | 10 | 35 | 13 | 50 | 43 | 30 |
| 7 | | 11 | 6 | 14 | | 44 | 33 |
| 7 | 10 | 11 | 38 | 14 | 10 | 45 | 37 |
| 7 | 20 | 12 | 11 | 14 | 20 | 46 | 42 |
| 7 | 30 | 12 | 46 | 14 | 30 | 47 | 47 |
| 7 | 40 | 13 | 20 | 14 | 40 | 48 | 55 |
| 7 | 50 | 13 | 55 | 14 | 50 | 50 | 2 |
| 8 | | 14 | 31 | 15 | | 51 | 10 |
| 8 | 10 | 15 | 8 | | | | |
| 8 | 20 | 15 | 46 | | | | |
| 8 | 30 | 16 | 24 | | | | |
| 8 | 40 | 17 | 2 | | | | |
| 8 | 50 | 17 | 42 | | | | |

## TABLE A3 LENGTHS OF AGD TAPERLOCK AND TRILOCK THREAD PLUG GAGE BLANKS SELECTED FROM ANSI B47.1

| Thread Sizes | | Thread Lengths | | | | | |
|---|---|---|---|---|---|---|---|
| Decimal Range | | Thread Plug Gages | | | | Fine-Pitch Instrument Thread Plug Gages | |
| Above | To and Including | GO | | | NOT GO (HI) | GO | NOT GO (HI) |
| 1 | 2 | 3 | | | 4 | 5 | 6 |
| in. | in. | in. | | | in. | in. | in. |
| 0.059 | 0.105 | 1/4 | | | 3/16 | 3/16 | 1/8 |
| 0.105 | 0.150 | 5/16 | | | 7/32 | 7/32 | 5/32 |
| 0.150 | 0.230 | 13/32 | | | 9/32 | 9/32 | 7/32 |
| 0.230 | 0.365 | 1/2 | | | 5/16 | 5/16 | 1/4 |
| 0.365 | 0.510 | 3/4 | | | 3/8 | 3/8 | 5/16 |
| 0.510 | 0.825 | 7/8 | | | 1/2 | 1/2 | 3/8 |
| 0.825 | 1.135 | 1 | | | 5/8 | 5/8 | 7/16 |
| | | 12 TPI and finer | Coarser than 12 TPI | | | | |
| 1.135 | 1.510 | 1 | 1 1/4 | | 3/4 | 3/4 | 1/2 |
| | | 7 TPI and coarser | Finer than 7 TPI and coarser than 16 TPI | 16 TPI and finer | | | |
| 1.510 | 2.010 | 1 7/8 | 1 1/4 | 7/8 | 7/8 | 3/4 | 5/8 |
| 2.010 | 2.510 | 2 | 1 3/8 | 7/8 | 7/8 | 3/4 | 5/8 |
| 2.510 | 3.010 | 2 1/8 | 1 1/2 | 1 | 1 | . . . | . . . |
| 3.010 | 12.010 | 2 1/4 | 1 1/2 | 1 | 1 | . . . | . . . |

GENERAL NOTE:
For trilock plug blanks above 0.760 in. to and including 1.510 in., and wire type plug blanks in sizes below 0.760 in., see ANSI B47.1.

thread. A series of measurements are made around the gage at both ends and in the middle. The indicator reading gives the variation from the size to which the gage was set.

### A3.2 Internal Pitch Variation Measurement

The ground face of the thread ring gage is clamped to a face plate and mounted normal to the measuring axis of the pitch-testing machine. A modified stylus with "best size" thread ball radius is needed to contact the internal threads. Measurements are made along one line parallel to thread axis at two or more intervals, and then these same intervals are measured on another line after rotating the gage 180 deg. The means of the variations of corresponding intervals are taken to eliminate the effect of misalignment of measuring axis with gage axis.

### A3.3 Helix Variation Measurement

Helical variations are measured on a special fixtured indicating gage. Manufacturer's instructions should be used.

### A3.4 Helix Offset Measurement on Adjustable Thread Ring Gages

When an adjustable thread ring gage is reset, the helix offset at the split line must be checked and may not exceed the X tolerance for pitch. One way to measure the misalignment is to screw the adjustable ring partially onto its setting plug, which is clamped to a vee block on a surface plate. With the face of the ring gage parallel to the surface plate, allow the spherical probe of an electronic height gage to contact the exposed thread flank near the edge of the slit. Note the

reading. Next, slowly rotate the ring so that the probe crosses the slit and rests on the thread flank again and note the reading. The difference in readings shall not exceed X tolerance for lead. Sometimes the offset can be realigned by resetting and gently tapping it into alignment and relocking the gage.

### A3.5 Minor Diameter

There are varieties of internal gages with plain cylindrical segments coupled to mechanical and electronic indicators which are suitable for the measurement. The indicating gages are set to a master gage made with parallel jaws attached to gage block combinations corresponding to the basic minor diameter. Measurements are made to locate the maximum and minimum diameters to prove that the ring minor diameter is within tolerance.

### A3.6 Thread Form

Casts made of nonshrinking and nondeforming material such as dental plaster, selected resins, and silicone are necessary to evaluate thread form. The profiles are examined by optical projection or by toolmaker's microscope. Thread form templates are used for comparison purposes. Also, truncation, width of flat, and root clearance can be measured with the micrometer-driven table.

### A3.7 Flank Angle Measurements

Casts are required. They are mounted with plasticine to a fixture which can be tilted in the field of the optical projector or toolmaker's microscope. Further details are given in A2.6. Profile tracing equipment is available for making profile charts of each flank angle on 10 threads/in. or coarser. Manufacturer's instructions describe the process.

### A3.8 Major Diameter Measurement

Threaded segments with 55 deg. maximum included angles and slightly truncated at the crests are used with an internal indicating gage. The segments are set to a plain ring gage or to the inner sides of parallel jaws attached to a gage block combination equivalent to the basic major diameter of the ring gage. The thread ring gage is explored for maximum and minimum diameter.

### A3.9 Runout Between Minor Cylinder and Pitch Cylinder

Horizontally clamp handle end of setting plug in vee block which is clamped on a surface plate. Next, screw thread ring gage part way onto plug. Lubricate threads if there is a snug fit. Position ball contact of electronic height gage on the exposed minor cylinder of the ring gage. Next, slowly rotate ring to obtain the full-indicator reading for the runout.

## A4 PLAIN PLUG GAGE CALIBRATION

| | |
|---|---|
| GO and NOT GO | Plain Plug Gages, Z Tolerance |
| GO and NOT GO | Plain Setting and Check Plug Gages, X and Y Tolerances |

### A4.1 Outside Diameter Measurement

**A4.1.1** The Z tolerance plug gage is measured between flat parallel contacts of a micrometer which has a resolution of 0.00004 in. The micrometer is set with a tolerance Grade 3 gage block close to the size of the plug to minimize error in micrometer screw. Readings around and along the plug are taken to verify that the gage is within Z tolerance.

**A4.1.2** The X or Y tolerance plug gage is measured between flat parallel anvils of a measuring machine which has a resolution to 0.00001 in. or less, with a measuring force of 1 lb. The flatness and parallelism of the anvils should be within 0.00001 in. The calibration history of the measuring screw should not exceed 0.00003 in. The measuring machine anvils are set with a tolerance Grade 3 gage block combination which corresponds to the marked diameter of the plug gage. Measurements are made around the plug near the ends and middle to determine that ovality, out-of-roundness, barrel shape, and taper are within tolerance. Also, one measured diameter is marked, and this mark is used as the starting position for generating a roundness chart on a roundness testing instrument for compliance to tolerance. Roundness is assessed by the minimum circumscribed circle method on the chart. The out-of-roundness is the radial separation between the minimum circumscribed circle and the maximum inscribed circle. Refer to ANSI B89.3.1, Measurement of Out-of-Roundness, for details on roundness measurement.

## A5 PLAIN RING GAGE CALIBRATION

| | |
|---|---|
| GO and NOT GO | Plain Ring Gages, Z Tolerance |
| GO and NOT GO | Plain Setting Ring Gages, X Tolerance |

### A5.1 Diameter Measurement

**A5.1.1** The Z tolerance ring gage is measured with internal indicating gage or measuring instrument which has a resolution of 0.00004 in. The measuring device is usually set with a master gap produced by clamping jaws to the selected gage block combination. Measurements are taken around the bore near ends and in the middle.

**A5.1.2** The X tolerance ring gage is measured over two radius contacts on an internal measuring instrument. Internal measuring procedure is given in ANSI B89.1.6, Measurement of Qualified Plain Internal Diameters for Use as Master Rings and Ring Gages. The measuring device is set with a master gap produced by clamping flat parallel jaws on the gage block combination corresponding to the ring gage dimension. The gage blocks and the jaws which are accessories to gage block sets must meet the requirements specified in ANSI B89.1.9, Precision Inch Gage Blocks for Length Measurement (Thru 20 Inches). The small displacement between ring gage diameter and master gap is read on the meter. Measurements are taken around the gage, near the ends, and in the middle. The measuring instrument should have a readout of at least 0.00001 in. A referenced position at the middle of the bore is used to index the out-of-roundness check as described in A4.1.2.

## A6 PLAIN SNAP GAGES

GO and NOT GO plain snap gages for external major diameter check are set with plain Z tolerance plug gages. When the adjustable anvil is locked, there should be a very light drag felt when plug gage or roll is pushed between anvils for its entire travel. If this does not occur, anvils are worn out of parallel and should be relapped. The snap may be set with gage blocks and roll whose combined thickness equals the major diameter limit. When the adjustable anvil is locked, the small roll should have a very light drag when moved across the anvil.

## A7 ROLLS WITH ZERO LEAD THREAD FORM USED ON SNAP AND INDICATING GAGES

Rolls may be checked for thread form and size by optical projection (see A2.5 and A2.6). Pitch is measured as described in A2.2. New rolls should be manufactured to X tolerances. Worn rolls should be replaced when a single thread element wears outside of X tolerance.

## A8 INSPECTING PERIPHERAL CONTACTING SEGMENTS USED ON EXTERNAL PRODUCT THREAD

### A8.1 Inspection of the Threaded Section Used on External Product Threads

#### A8.1.1 Straightness (Taper, Bellmouth, and Barrel Shape)

*(a)* Using the last three threads of the *full-form* portion of the truncated type setting plug (handle end on taperlock blanks), engage the *first* three threads on *one* end of the segments. Note the reading.

*(b)* Using the same procedure, engage the *last* three threads on the *other* end of the segments. Note the reading.

*(c)* Repeat step (a) using *first* three threads of the *truncated* portion of the plug (opposite the handle end on taperlock blanks). Note the reading.

*(d)* Repeat step (b) using the first three threads of the *truncated* portion of the plug. Note the reading.

Indicated differences exceeding X tolerance for pitch diameter between reading (a) and (b) or (c) and (d) reveal the segments as having an end-to-end straightness deviation.

NOTE: More definitive analysis for bellmouth or barrel shape can be made by using a check plug (full-form or truncated) having a maximum length of three pitches, rotating the plug through the full length of the segments, and noting the plus and minus (±) indicator variation at specific points in the segments.

#### A8.1.2 Flank Angle Wear

*(a)* Indicated differences exceeding X tolerance for pitch diameter values obtained by A8.1.1 procedure (a) and (c), or (b) and (d), reveal that the segments have excessive flank angle wear; or

*(b)* Indicated differences exceeding X tolerance for pitch diameter values obtained between the full-form portion and the truncated portion of the setting plug when engaging the segments over their full length also reveal that the segments have excessive flank angle wear.

## TABLE A4 LENGTHS OF AGD THREAD RING GAGE BLANKS AND TOTAL THREAD LENGTHS OF STANDARD TRUNCATED-SETTING PLUG GAGE BLANKS SELECTED FROM ANSI B47.1

| Thread Sizes, Decimal Range | | Lengths of Thread Ring Gages | | | Total Thread Lengths of Truncated Thread-Setting Plugs | | |
|---|---|---|---|---|---|---|---|
| Above | To And Including | Thin Ring | Thick Ring | Fine-Pitch Instrument Ring | For Thin Ring | For Thick Ring | For Fine-Pitch Instrument Ring |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0.059 | 0.090 | 3/32 | . . . | . . . | 7/32 | . . . | . . . |
| 0.090 | 0.150 | 5/32 | . . . | . . . | 3/8 | . . . | . . . |
| 0.150 | 0.230 | 3/16 | . . . | . . . | 13/32 | . . . | . . . |
| 0.230 | 0.365 | 11/32 | . . . | 1/4 | 3/4 | . . . | 9/16 |
| 0.365 | 0.510 | 7/16 | . . . | 5/16 | 1 | . . . | 11/16 |
| 0.510 | 0.825 | 9/16 | 3/4 | 15/32 | 1 1/4 | 1 7/8 | 1 |
| 0.825 | 1.135 | 11/16 | 15/16 | 17/32 | 1 1/2 | 2 1/8 | 1 1/8 |
| 1.135 | 1.510 | 3/4 | 1 1/8 | 5/8 | 1 5/8 | 2 3/8 | 1 5/16 |
| 1.510 | 2.010 | 13/16 | 1 1/4 | 5/8 | 1 7/8 | 2 7/8 | 1 5/16 |
| 2.010 | 2.510 | 7/8 | 1 5/16 | 11/16 | 2 | 3 | 1 7/16 |
| 2.510 | 3.010 | 7/8 | 1 3/8 | . . . | 1 7/8 | 3 | . . . |
| 3.010 | 3.510 | 15/16 | 1 7/16 | . . . | 2 | 3 1/8 | . . . |
| 3.510 | 4.010 | 15/16 | 1 1/2 | . . . | 2 | 3 1/4 | . . . |
| 4.010 | 6.260 | 1 | 1 1/2 | . . . | 2 1/8 | 3 1/4 | . . . |

GENERAL NOTES:

(a) Thin gage blanks are used for all NOT GO (LO) thread ring gages. Counterbore sides as applicable.

(b) For GO thread ring gages:

(1) 0.059 in. to 0.510 in., use thin blank for all pitches, recessing sides where applicable;

(2) above 0.510 in. to 1.135 in., use thick blank for pitches coarser than 12 TPI, thin blank for pitches 12 TPI to 28 TPI, and fine-pitch instrument blank for pitches 30 TPI and finer;

(3) above 1.135 in. to 6.260 in., inclusive, use thick blank for pitches coarser than 10 TPI, thin blank for pitches 10 TPI to 28 TPI, and fine-pitch instrument blank for pitches 30 TPI and finer.

**A8.1.3 Lead Error.** Should the preceding checks for straightness and flank angle wear fall within X tolerance, the check for lead error is performed as follows:

*(a)* Using the last three threads of the *full-form* portion of the setting plug (handle end on taperlock blanks), engage the *first* three threads on one end of the segments. Note the reading.

*(b)* With the three thread engagement above, rotate the *full-form* portion of the plug through the segments to full length engagement. Note the reading.

An indicated difference exceeding X tolerance for pitch diameter between the first and second readings above reveals that the segments have excessive lead error.

(*c*) Repeat steps (a) and (b) with the *truncated* portion of the plug. Note the reading.

An indicated difference exceeding X tolerance for pitch diameter between the first and second readings reveals that the segments have a lead error.

**A8.1.4 Thread Form and Cylindrical Form Continuity.** For checking continuity of threaded and plain surfaces (helical profile uniformity, continuous thread flank contact with setting plug, and cylindrical contacts), the conventional bluing procedure is used.

**A8.1.5 Minor Cylinder to Pitch Cylinder Relationship of Each Segment**

*(a)* With each like coded segment, measure from its mounting hole over the outside diameter of a plain plug whose diameter is that of the specified maximum minor diameter and which is resting on the minor diameter of the segment. Note the two readings.

*(b)* With each like coded segment, measure from its mounting hole over the outside diameter of the W

tolerance GO thread plug — full-form section — as it rests in the segment thread. Note the readings.

The differences between matching sets of readings from steps (a) and (b) for each segment must be within the X tolerance for minor diameter.

NOTE: Inspection fixtures can be used for the above.

### A8.1.6 Minor Cylinder Size Compared to Pitch Cylinder Diameter Size and Minor Diameter Straightness (As a Coded Pair)

*(a)* Using the full-form portion of the W tolerance-setting plug, engage its entire length into the segments and zero-out the indicator.

*(b)* Using a plain cylindrical plug having a size equal to the maximum-material minor diameter of the thread size in question, engage that plug fully into the segments and note the reading.

The difference in reading must be within the X tolerance specified for minor diameter.

*(c)* To verify the taper of the minor diameter, partially engage the plain cylindrical plug from each end of the segments.

*(d)* Measure directly for straightness from the segment mounting hole directly to the minor diameter flats of each thread in the segment.

### A8.1.7 Minor Cylinder to Pitch Cylinder Coaxiality Relationship (As a Coded Pair)

NOTE: Even though the size of the minor diameter may be within tolerances, they may not be coaxial.

*(a)* Using the full-form portion of the W tolerance-setting plug, engage the entire length into the segments and zero-out the indicator at the high point. Lock the segments on the studs, with the set screws provided in the backs of the segments to prevent them from pivoting. Lift the pivot arm and back out the plug.

NOTE: The pivot arm will not lift high enough to allow total disengagement. Consequently, the plug must be screwed out.

*(b)* Using the plain cylindrical plug having a size equal to the maximum-material minor diameter of the thread size in question, engage the plug by sliding it in (right to left or left to right) from the end. Note the reading.

*(c)* The indicated difference between steps (a) and (b) above should not exceed X tolerance for minor diameter.

*(d)* Loosen and reverse the top segment 180 deg. (ledge side out) and using the full-form portion of the W tolerance-setting plug, engage the entire length into the segments and zero-out the indicator at the high point. With the bottom segment still locked as in step (a), lock the top segment on the stud with the set screw provided in the back of the segment to prevent it from pivoting. Lift the pivot arm and back out the plug.

NOTE: The pivot arm will not lift high enough to allow total disengagement. Consequently, the plug must be screwed out.

*(e)* Repeat step (b) above.

*(f)* The indicated difference between steps (d) and (e) above should not exceed X tolerance for minor diameter.

## A9 INSPECTION OF THREAD CONTACT SEGMENTS USED ON INTERNAL PRODUCT THREAD

The coded pairs of segments are locked or clamped when engaging the plain ring gage or thread-setting ring. Then thread form, pitch diameter, major diameter, pitch, and straightness can be inspected by methods described in A2.1 through A2.8.

## A10 CHECK FOR MAGNIFICATION DISCREPANCIES DUE TO INDICATING SYSTEM LINKAGE

Two X tolerance plain plug gages for the external thread indicating gages and two X tolerance plain ring gages for the internal thread indicator gages, whose diameter difference corresponds with the working range of the indicator dial, are required. When they are applied to the cluster of rolls or segments, the difference in indicator dial readings should not deviate by more than ±1 least graduation from the calibrated difference between the two gages.

## A11 CALIBRATION OF DIAL AND ELECTRONIC INDICATORS

Calibration of the indicator may be done by displacing the spindle with a calibrated micrometer screw or with tolerance Grade 3 gage blocks inserted between a fixed anvil and the spindle. The accuracy of the micrometer screw should be 0.00003 in. and is used for calibrating indicators with resolution of 0.00008 in. and larger. The zero setting for calibrating dial indicators is at the 12 o'clock position. A minimum of four equally spaced increments per revolution is calibrated. On electronic indicators each numbered division is calibrated.

## A12 ASSESSMENT OF SURFACE QUALITY

Product threads which exhibit torn or rough surface may be assessed with indicating gages. The rapid fluctuation of the indicating needle when the part is rotated slowly between the gage contacts may not exceed 0.0001 in. For external threads, a roll type indicating gage with "best size" thread radius rolls is used.

For internal threads, a gage with "best size" thread ball contacts is used.

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# APPENDIX B
# METROLOGY OF 60 deg. SCREW THREADS

(This Appendix is not part of American National Standard Gages and Gaging for Unified Inch Screw Threads, ANSI/ASME B1.2-1983, and is included for information purposes only.)

## B1 WIRE METHOD OF MEASUREMENT OF PITCH DIAMETER (THREAD GROOVE DIAMETER)

This Section presents specifications and techniques for the measurement of screw thread plug gages and setting plugs by measuring over accurate cylinders or wires inserted in the thread grooves. The purpose is to make available a standard United States method for making such measurements. The practices described measure groove diameter, which is equal to pitch diameter only on a thread with perfect pitch spacing.

## B2 SIZE OF WIRES

In the three-wire method of measuring pitch diameter, hardened steel cylinders or wires of appropriate size are placed in the thread groove, two on one side of the screw and one on the opposite side, as shown in Fig. B1. The contact face of the comparator, measuring machine, or micrometer anvil or spindle which is over the two wires must be sufficiently large in diameter or width to touch both wires; that is, it must be greater than the pitch of the thread. It is best to select wires of such a size that they touch the sides of the thread at points where the groove is equal to $0.5p$ (groove diameter). This is done so that the measurement of pitch diameter is least affected by any error in thread angle. The size of wire which touches exactly at the groove diameter of a perfect thread of a given pitch is termed the "best size" thread wire for that pitch.

The depth at which a wire of given diameter will rest in a thread groove depends primarily on the pitch and included angle of the thread; and, secondarily, on the angle made by the helix at the point of contact of the wire and the thread, with a plane perpendicular to the axis of the screw. Variation in the lead angle has a very small effect in the measurement of groove diameter with wires. It is desirable to use one size of wire to measure all threads of a given pitch and included angle. The "best size" thread wire is taken as that size which will touch at the groove diameter of a groove cut around a cylinder perpendicular to the axis of the cylinder. The size of the "best size" thread wire, resting in a zero lead angle 60 deg. vee thread, is given by the formula:

$$w = 0.5p \times \sec \alpha \qquad (1)$$

where

$w$ = diameter of wire
$p$ = pitch
$\alpha$ = half-angle of thread

Reduce this formula to

$$w = 0.57735 \times p \qquad (2)$$

for 60 deg. threads.

On occasion, it may be necessary when a "best size" thread wire is not available to measure pitch diameter by means of wires of other than the "best size." The minimum size which may be used is limited to that permitting the wire to project above the crest of the thread, and the maximum, to that permitting the wire to rest on the flanks of the thread just below the crest and not ride on the crest of the thread. The diameters of the best size, maximum, and minimum wires for 60 deg. threads are given in Table B1.

## B3 METHODS OF MEASURING WIRES CONSIDERING THE EFFECT OF DEFORMATION

Measurement of the pitch diameter of a thread gage by means of the three-wire method is most conveniently made when sufficient force is applied to the wires by the measuring instrument to properly align the wires and gage. Since a wire touches a minute area on each

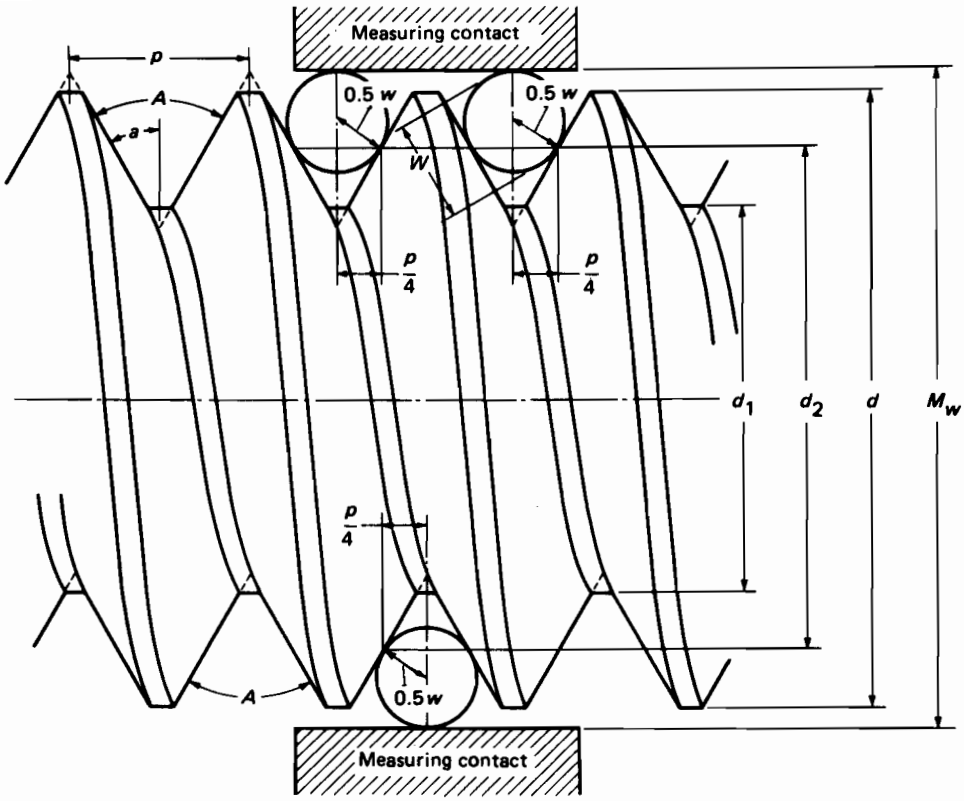


**FIG. B1 A THREE-WIRE METHOD OF MEASURING PITCH (THREAD GROOVE) DIAMETER OF THREAD PLUG GAGES**

thread flank, the deformation of the wire and thread will be sufficiently large to require some type of correction and the measuring force must be limited to avoid permanent deformation of the wire and gage. As an indication of the need for compensation for the deformations, it can be shown that the total effect on pitch diameter of the deformations of three wires and a 1/2-20 thread gage is 0.00019 in. when measured under 2.5 $lb_{force}$. It is practical to compensate for the major portion of this deformation by a simple procedure described in the following paragraphs.

*(a)* It would be possible to prepare tables of the deformation of all standardized sizes of gages, but this would not take care of special combinations of pitch and diameter. Another method of compensating for the deformations is to measure the thread wires under conditions which provide deformations equivalent to those which occur when the wires are used to measure a thread. This can be accomplished by the measurement of the thread wires between a flat anvil and a cylinder with the axes of cylinder and wire at 90 deg. to each other if an appropriate selection of cylinder diameter and the measuring force is made. Optimum compensation for the deformations which occur in the measurement of pitch diameter would require the calibration of wires with a different cylinder or force for every thread diameter–pitch combination. Calibration of wires involving such a variety of conditions is neither practical nor necessary, as the measurement procedure which is generally followed will assure uniformity of values. It is desirable to keep the effects of deformation small.

*(b)* It can be shown, for example, that all sizes of threads from 0.138 in. to 1.500 in. can be measured with wires calibrated against a 0.750 in. diameter cylinder using the forces recommended for pitch diameter measurements in Table B2 with deviations from true pitch diameter (neglecting the effect of lead angle) not in excess of 0.000035 in. Slightly larger discrepancies in the 2 in. to 4 in. size range are relatively unimportant because these sizes have larger tolerances. For sizes smaller than 0.138 in. it is necessary to calibrate wires against a 0.125 in. cylinder which has a radius more nearly equal to the radius of curvature of the thread flank.

## TABLE B1 THREAD-MEASURING WIRES FOR 60 deg. SCREW THREADS

| Threads/in., $n$ | Pitch, $p = \frac{1}{n}$ | Wire Sizes, $W$ | | | $C$, "Best Size" Thread Wire Constant,[3] $0.866025p$ |
|---|---|---|---|---|---|
| | | Best[1] $0.577350p$ | Maximum[2] $1.010363p$ | Minimum[2] $0.505182p$ | |
| | in. | in. | in. | in. | in. |
| 80 | 0.012500 | 0.00722 | 0.01263 | 0.00631 | 0.010825 |
| 72 | .013889 | .00802 | .01403 | .00702 | .012028 |
| 64 | .015625 | .00902 | .01579 | .00789 | .013532 |
| 56 | .017857 | .01031 | .01804 | .00902 | .015465 |
| 50 | .020000 | .01155 | .02021 | .01010 | .017321 |
| 48 | .020833 | .01203 | .02105 | .01052 | .018042 |
| 44 | .022727 | .01312 | .02296 | .01148 | .019682 |
| 40 | .025000 | .01443 | .02526 | .01263 | .021651 |
| 36 | .027778 | .01604 | .02807 | .01403 | .024056 |
| 32 | .031250 | .01804 | .03157 | .01579 | .027063 |
| 30 | .033333 | .01924 | .03368 | .01684 | .028868 |
| 28 | .035714 | .02062 | .03608 | .01804 | .030929 |
| 27 | .037037 | .02138 | .03742 | .01871 | .032075 |
| 26 | .038462 | .02221 | .03886 | .01943 | .033309 |
| 24 | .041667 | .02406 | .04210 | .02105 | .036084 |
| 22 | .045455 | .02624 | .04592 | .02296 | .039365 |
| 20 | .050000 | .02887 | .05052 | .02526 | .043301 |
| 18 | .055556 | .03208 | .05613 | .02807 | .048113 |
| 16 | .062500 | .03608 | .06315 | .03157 | .054127 |
| 14 | .071429 | .04124 | .07217 | .03608 | .061859 |
| 13 | .076923 | .04441 | .07772 | .03886 | .066617 |
| 12 | .083333 | .04811 | .08420 | .04210 | .072169 |
| 11½ | .086957 | .05020 | .08786 | .04393 | .075307 |
| 11 | .090909 | .05249 | .09185 | .04593 | .078730 |
| 10 | .100000 | .05774 | .10104 | .05052 | .086603 |
| 9 | .111111 | .06415 | .11226 | .05613 | .096225 |
| 8 | .125000 | .07217 | .12630 | .06315 | .108253 |
| 7½ | .133333 | .07698 | .13472 | .06736 | .115470 |
| 7 | .142857 | .08248 | .14434 | .07217 | .123718 |
| 6 | .166667 | .09623 | .16839 | .08420 | .144338 |
| 5½ | .181818 | .10497 | .18370 | .09185 | .157459 |
| 5 | .200000 | .11547 | .20207 | .10104 | .173205 |
| 4½ | .222222 | .12830 | .22453 | .11226 | .192450 |
| 4 | .250000 | .14434 | .25259 | .12630 | .216506 |

NOTES:
(1) The diameters of "best size" thread balls are the same as the diameters of "best size" thread wires.
(2) Measured PD = $M_w + 0.886025p - 3W$
(3) If "best size" thread wire is used, PD = $M - C$.

**TABLE B2 MEASURING FORCE FOR OVER-WIRE MEASUREMENTS OF EXTERNAL PITCH DIAMETER AND WIRE CALIBRATION, AND CYLINDRICAL DIAMETER FOR WIRE CALIBRATION**

| Threads/in. | Measuring Force (±10%) | Cylinder Diameter, in. |
|---|---|---|
| 20 or less | 2.5 lb | 0.750 |
| Over 20 but not over 40 | 1 lb | 0.750 |
| Over 40 but not over 80 | 8 oz | 0.125 |
| Over 80 but not over 140 | 4 oz | 0.050 |
| Over 140 | 2 oz | 0.020 |

*(c)* As previously noted, the force applied by the measuring device must be limited to avoid permanent deformation of the wires or gage, or both. Even for large diameter threads having coarse pitches, the maximum compressive stress at the points where a wire touches the thread flanks is high, and it increases to a point where permanent deformation may occur for the small diameter threads. It therefore becomes necessary to reduce the measuring force progressively as the sizes of threads decrease. See Table B2.

## B4 METHODS OF MEASUREMENT USING WIRES

The computed value for the pitch diameter of a screw thread gage obtained from readings over wires will depend upon the accuracy of the measuring instrument used, the measuring force, and the value of the diameter of the wires used in the computations. In order to measure the pitch diameter of a screw thread gage to an accuracy of 0.0001 in., strict adherence to the methods specified is required.

*(a)* The "best size" thread wires shall comply with the specifications listed in B2. The diameter of the wires must be known to within 0.000020 in.

*(b)* The measurement over wires should be made with a measuring instrument which reads directly to 0.000010 in. and has flat parallel contacts within 0.000004 in.

*(c)* A wire presses on the flanks of a 60 deg. thread with the force that is applied to the wire by the measuring instrument. Inasmuch as the wire and thread deform at the contact areas, it is desirable to determine the size of the wire under conditions which will compensate for this deformation. It is recommended for standard practice that diameters of wires be measured between a flat contact and a hardened and accurately ground and lapped steel cylinder having a diameter in accordance with Table B1 with the measuring force specified in Table B2. The plane of the flat contact should be parallel to the contact element of the cylinder within 0.000004 in.

To avoid a permanent deformation of the material of the wire or gages, it is necessary to limit the contact force and, for consistent results, a uniform practice as to contact force in making wire measurements of hardened screw threads gages is necessary. The recommended force for external pitch diameter measurements is given in Table B2.

The use of other contact forces will cause a difference in the reading over the wires, and to completely compensate for such errors is impractical. Variations in diameter around the wire should be determined by rotating the wire between a spherical or flat measuring contact and an anvil having the form of a 60 deg. vee groove. Variations in diameter along the wire should be determined by measuring between a spherical or flat contact and a cylindrical anvil.

*(c)* The wires should be free to assume their positions in the thread grooves without restraint. (The practice of holding wires in position with elastic bands can introduce errors in measurement.)

*(d)* To assure accurate values for pitch diameter measurement, the measured value should be given to five decimal places.

*(e)* Measurements shall be standard at 68° F.

## B5 STANDARD SPECIFICATION FOR WIRES AND STANDARD PRACTICE IN MEASUREMENT OF WIRES OF 60 deg. THREADS

The following specifications represent present practice relative to thread-measuring wires.

(*a*) *Composition.* The wires shall be accurately finished steel cylinders, the hardness of which shall not be less than that corresponding to a Knoop indentation number of 776 minimum. The surface texture shall not exceed the equivalent of 2 $\mu$in. aa (arithmetic average).

*(b) Length of Wires.* The working surface shall be at least 1.000 in. in length. The wire may be provided with a suitable means of suspension.

*(c) Diameter of Wires.* One set of wires shall consist of three wires which shall have the same diameter within 0.00001 in., and this common diameter shall be within 0.00002 in. of that corresponding to the "best size" for the pitch for which the wires are to be used. Wires shall be measured between a flat contact and a hardened and accurately finished cylinder having a surface texture not over 2 $\mu$in. aa. The measuring forces and cylinder diameter shall be per Table B2.

*(d) Variation in Diameter.* Variations in diameter along a wire (taper) over the 1.000 in. interval at the center of its length shall not exceed 0.00001 in. as determined by measuring between a spherical or flat contact and a cylindrical contact.

Variations from true cylindrical contour of a wire (out-of-roundness, or noncircular cross section) over its 1.000 in. central interval shall not exceed 0.00001 in. as determined by measuring between a spherical or flat measuring contact and a well-finished 60 deg. vee groove. For the 80 pitch wire, the spherical contact is attached to the tip of a 55 deg. or less cone, or the flat contact is formed by truncating a 55 deg. or less cone point to an approximate 0.010 in. width.

*(e) Container and Marking.* A suitable container shall be provided for each set of wires. The pitch for which the wires are the "best size" and the diameter of the 1.000 in. central interval of the wires, as determined by measurements under standard conditions as specified, shall be marked on the container. The measuring force and $C$ corrections shall be marked in the container.

## B6 GENERAL FORMULA FOR MEASUREMENT OF PITCH DIAMETER

The general formula for determining the pitch diameter of any thread whose sides are symmetrical with respect to a line drawn through the vertex and perpendicular to the axis of the thread in which the slight effect of lead angle is taken into account is:

$$d_2 = M_w + \left(\frac{\cot \alpha}{2}\right)(p) - w[1 + (\operatorname{cosec}^2 \alpha + \cot^2 \alpha \tan^2 \lambda')^{1/2}] \qquad (3)$$

where

$d_2$ = pitch diameter
$M_w$ = measurement over wires
$\alpha$ = half-angle of thread
$p$ = pitch

$\tan \lambda' = \dfrac{\text{lead}}{3.1416 d_2}$ = lead angle (angle between axis of wire and plane perpendicular to axis of thread)

$W$ = mean diameter of wires

This formula is a very close approximation, being based on certain assumptions regarding the positions of the points of contact between the wire and the thread.

Formula (3) can be converted to the following simplified form, which is particularly useful when measuring threads of large lead angle:

$$d_2 = M_w + \left(\frac{\cot \alpha}{2}\right)(p) - W(1 + \operatorname{cosec} \alpha') \qquad (4)$$

in which $\alpha'$ = the angle whose tangent equals $\tan \alpha \cos \lambda'$.

When formula (3) is used, the usual practice is to expand the square root term as a series, retaining only the first and second terms, which gives the following:

$$d_2 = M_w + \left(\frac{\cot \alpha}{2}\right)(p) - W\left(1 + \operatorname{cosec} \alpha + \frac{\tan^2 \lambda \cos \alpha \cot \alpha}{2}\right) \qquad (5)$$

## B7 SIMPLIFIED FORMULA FOR PITCH DIAMETER

In the measurement of pitch diameter, the term

$$\left(\frac{w \tan^2 \lambda' \cos \alpha \cot \alpha}{2}\right)$$

is neglected, as its value is small, being in all cases less than 0.00015 in. for standard single lead fastening screws when the "best size" thread wire is used. Formula (5) takes the simplified form:

$$d_2 = M_w + \left(\frac{\cot \alpha}{2}\right)(p) - W(1 + \operatorname{cosec} \alpha) \qquad (6)$$

The practice of using formula (6) for such threads is

permissible in order to maintain uniformity of practice in the United States and thus avoid confusion.

For a 60 deg. thread of correct angle and thread form, formula (6) simplifies to

$$d_2 = M_w + 0.86602\,p = 3W \qquad (7)$$

For a given set of "best size" thread wires

$$d_2 = M_w - C$$

where

$$C = W\left[1 + \operatorname{cosec}\alpha - \left(\frac{\cot\alpha}{2}\right)(p)\right]$$

The quantity $C$ is a constant for a given thread angle and, when the wires are used for measuring threads of the pitch and angle for which they are the "best size," the pitch diameter is obtained by the simple operation of subtracting this constant from the measurement taken over the wires. In fact, when "best size" thread wires are used, this constant is changed very little by a moderate variation or error in the angle of the thread. Consequently, the constants for the various sets of wires in use may be tabulated, thus saving a considerable amount of time in the inspection of gages. However, when wires of other than the best size are used, this constant changes appreciably with a variation in the angle of the thread.

With the exception of large pitch screws, it has been shown that variation in angle from the basic size causes no appreciable change in the quantity $C$ for the "best size" thread wires. (For angle variation of 2 deg., $C$ increases by 0.00004 in. for 16 threads/in., and 0.00008 in. for 8 threads/in.) On the other hand, when a wire near the maximum or minimum allowable size is used, a considerable change occurs, and the values of the cotangent and the cosecant of the actual measured half-angle are to be used. It is apparent, therefore, that there is a great advantage in using wires very closely approximating the best size. For convenience in carrying out computations, the value $C$ for pitches as shown in Table B1 should be used.

## B8 SETTING MEASURING INSTRUMENTS WITH VARIABLE MEASURING FORCE

Recommended practice for setting measuring instruments using gage blocks is as follows.

*(a)* Wipe anvils and gage blocks free from dirt and dust.

*(b)* Wring the gage blocks to both anvils at maximum measuring force setting, or press with fingers the tailstock spindle against the gage blocks while wringing them to the anvils.

*(c)* With the gage blocks still in the instrument, reduce the measuring force to that which will be used and reset the instrument at this working measuring force. This procedure provides adequate force for wringing gage blocks in with relatively large areas of anvil faces. The final setting at the working measuring force to be used compensates for any instrument deflection variation that may occur at the higher measuring forces.

## B9 THREAD BALLS

### B9.1 "Best Size" Thread Balls Specifications

Thread balls shall meet the following requirements:

*(a)* for a 60 deg. thread, the "best size" thread ball sizes are identical to the "best size" thread wire sizes and are given in Table B1;

*(b)* one set of "best size" thread balls consists of three hardened steel balls that have the same diameter within 0.00001 in., and their common diameter should be within 0.00002 in. of the corresponding "best size" thread ball for the specified pitch. The sphericity should not exceed 0.00001 in.

### B9.2 Method of Measuring Thread Balls

The following procedures shall be used when measuring pitch diameter thread balls.

*(a)* In order to measure the pitch diameter of a 60 deg. thread ring gage to an accuracy of within 0.0001 in. by means of thread balls, it is necessary to know the thread ball diameters to within 0.00002 in. Thus, it is necessary to use a measuring instrument that reads accurately to 0.000010 in.

*(b)* The thread ball presses on the flanks of a 60 deg. thread with the force that is applied to the thread ball by the measuring instrument. Since the thread ball and thread deform at the contact areas, the size of the thread ball should be determined under conditions which nearly compensate for this deformation. The thread ball should be measured between parallel, flat, hardened steel contacts which are set with calibrated gage blocks. The contact should be parallel within 0.000004 in.

*(c)* To avoid exceeding the elastic limit of the thread balls and thread gages and to prevent excessive deformation compensation, it is necessary to recommend a uniform practice for measuring force for the calibra-

**TABLE B3 MEASURING FORCE OVER BALLS FOR INTERNAL PITCH DIAMETER MEASUREMENT AND BALL CALIBRATION**

| Threads/in. Range | Measuring Force (±10%), lb |
|---|---|
| 32–20 | 0.250 |
| 20–8 | 0.375 |
| 8 and coarser | 0.500 |

tion of thread balls and for their use in measuring internal pitch diameter. Table B3 gives the recommended measuring forces.

*(d)* Variations in diameter around the thread ball should be determined by rotating the thread ball between parallel measuring contacts.

## B10 INTERNAL PITCH DIAMETER MEASUREMENT

Indicating gages with "best size" thread ball contacts are set to either a calibrated plain ring gage or a gage block gap which is larger than the basic pitch diameter of the product thread by one-half of the diameter of the "best size" thread ball. The measured internal pitch diameter is obtained by adding the indicator reading change directly to the basic pitch diameter size. Setting to a plain ring gage permits less uncertainty in deformation compensation. The recommended measuring force over thread balls for internal pitch diameter measurement is given in Table B3.

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