

AS 1722.2—1992

Australian Standard<sup>®</sup>

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**Pipe threads of Whitworth form**

**Part 2: Fastening pipe threads**

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This Australian Standard was prepared by Committee ME/28, Screw Threads. It was approved on behalf of the Council of Standards Australia on 15 October 1991 and published on 17 January 1992.

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The following interests are represented on Committee ME/28:

Confederation of Australian Industry  
Department of Defence  
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Fasteners Institute of Australia  
Federal Chamber of Automotive Industries  
Institute of Engineers, Australia  
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AS 1722.2—1992

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**Pipe threads of Whitworth form**  
**Part 2: Fastening pipe threads**

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## PREFACE

This Standard was prepared by the Standards Australia Committee on Screw Threads to supersede AS 1722.2—1989. This Standard is technically equivalent to ISO 228/1, *Pipe threads where pressure-tight joints are not made on the threads*, Part 1: *Designation, dimensions and tolerances*, and ISO 228/2, *Pipe threads where pressure-tight joints are not made on the threads*, Part 2: *Verification by means of limit gauges*.

The 1989 edition which was based on the ISO 228/1 and 228/2 documents contained certain gauging/tolerance errors and omissions which could result in improper assessment of thread's geometric qualities and was withdrawn.

No changes to basic dimensions in the 1992 edition have been made with regard to the 1975 edition. Components made to the current edition are functionally identical and interchangeable with components made to 1975 edition.

Gauges manufactured to comply with the limits specified in AS 1722.2—1975 were intended to check the same basic dimensions as those listed in AS 1722.2 —1992 and may therefore continue to be used until they become worn beyond the permitted limits.

The principal differences between this edition and the 1975 edition are as follows:

- (a) The design features of screw gauges are now explained.
- (b) Modified tables of dimensions for fastening pipe threads.
- (c) Modified tables for screw gauge limits.
- (d) Figures for thread profiles of GO ring gauges and their check plugs, relative positions of pitch diameter tolerance zones for NOT GO ring gauges and their check plugs, are now included.
- (e) GO gauges now have wear allowance.
- (f) Symbols now align with ISO practice.
- (g) Provision for the use of roller type screw calliper gauges which are currently used in Australian practice.
- (h) Setting plugs for GO and NOT GO screw calliper gauges are included.

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STANDARDS AUSTRALIA

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**Australian Standard**

**Pipe threads of Whitworth form**

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Part 2: Fastening pipe threads

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SECTION 1 SCOPE AND GENERAL

**1.1 SCOPE** This Standard specifies thread form, thread dimensions, tolerance, and associated gauges and gauging practices for threads used for fastening pipes.

The Standard covers pipe threads for pipe of nominal bore size 4 mm to 150 mm.

NOTES:

- 1 Where these threads are used on pipes for conveying fluids, the sealing is effected by means other than thread interference (e.g. gaskets on flanges or O-rings).
- 2 Pipe threads of Whitworth form where pressure tight joints are made on the threads are specified in AS 1722.1.

**1.2 REFERENCED DOCUMENTS** The following Standards are referred to in this Standard:

AS

- |        |   |
|--------|---|
| 1098   | Roller-type screw calliper gauges   |
| 1722   | Pipe threads of Whitworth form  |
| 1722.1 | Part 1: Sealing pipe threads  |
| 3501   | Parallel screw threads of Whitworth form (BSW and BSF) and associated gauges and gauging practice |
| 3528   | Cylindrical screw threads—Vocabulary  |
| B129   | Designs for geometric limit gauges (plain and screwed in inch units)                              |

**1.3 DEFINITIONS** For the purpose of this Standard, the definitions given in AS 3528 apply.

**1.4 SYMBOLS** The symbols used in this Standard are listed below.

Symbol	Term
$b_3$	width of clearance groove at the major and minor diameter, respectively, of the thread profile with truncated flanks
$D$	basic major diameter of the internal thread ( $= d$ )
$D_1$	basic minor diameter of the internal thread ( $= D - 1.280\ 654P = d_1$ )
$D_{1,max}$	maximum minor diameter of internal thread
$D_{1,min}$	minimum minor diameter of internal thread
$D_2$	basic pitch diameter of the internal thread ( $= D - 0.640\ 327P = d_2$ )
$d$	basic major diameter of the external thread
$d_{max}$	maximum major diameter of external thread
$d_{min}$	minimum major diameter of external thread
$d_1$	basic minor diameter of the external thread ( $= d - 1.280\ 654P = D_1$ )
$d_2$	basic pitch diameter of the external thread ( $= d - 0.640\ 327P = D_2$ )
$H$	height of the triangle of the thread profile
$h$	height of the thread profile with rounded crests and roots
$m$	distance between the middle of the tolerance zone ( $T_R$ ) of the threaded ring gauge and the middle of the tolerance zone ( $T_{CP}$ ) of the GO check plug
$P$	pitch
$R$	radius of rounded crests and roots
$S$	tolerance for $b_3$
$s$	displacement of the clearance groove with truncated flanks

Symbol	Term
$T_{CP}$	tolerance for the pitch diameter of GO and NOT GO threaded check plugs and wear check plugs
$T_{D,1}$	tolerance for the minor diameter of the internal thread
$T_{D,2}$	tolerance for the pitch diameter of the internal thread
$T_d$	tolerance for the major diameter of the external thread
$T_{d,2}$	tolerance for the pitch diameter of the external thread
$T_{PL}$	tolerance for the pitch diameter of GO and NOT GO threaded plug gauges
$T_R$	tolerance for the pitch diameter of GO and NOT GO threaded ring gauges
$u$	twice the radial height of rounding at crest and root of thread (= 0.147 84P)
$W_{GO}$	average amount available for the permissible wear of GO threaded plug gauge and GO threaded ring gauge
$W_{NG}$	average amount available for the permissible wear of NOT GO threaded plug gauge and NOT GO threaded ring gauge
$Z_{PL}$	distance between the middle of the tolerance zone ( $T_{PL}$ ) of the GO threaded plug gauge and the lower limit of the thread
$Z_R$	distance between the middle of the tolerance zone ( $T_R$ ) of the GO threaded plug gauge and the lower limit of the thread

**1.5 CLASSIFICATION** For internal threads, one class of tolerance entirely positive is provided. For external threads, two classes of tolerance on the pitch diameter are provided, as follows:

- (a) Class A tolerance: entirely negative of equal numerical value to that provided for the internal thread tolerance (see Table 2.1).
- (b) Class B tolerance: entirely negative of value twice that of the Class A tolerance (see Table 2.1).

NOTES:

- 1 Where no tolerance class is stated, Class B is assumed.
- 2 The tolerance zones are shown in Figure 2.2.
- 3 The choice of fit for a particular purpose rests with the purchaser's designer.

**1.6 DESIGNATION** Internal and external threads shall be designated by the letter 'G' followed by the thread size designation given in Table 2.1, and, for external threads, the tolerance class. For example,  $G^{1/2}$  for an internal thread,  $G^{1/2}A$  for a Class A external thread, and  $G^{1/2}B$  for a Class B external thread.

NOTE: Where no tolerance class is stated for an external thread, Class B is assumed.

SECTION 2 THREAD PROFILES AND DIMENSIONS

**2.1 PROFILE OF THREAD** The basic profile of the thread shall be the basic Whitworth form as shown in Figure 2.1. This form is identical with that specified for the parallel thread in AS 1722.1. The internal and external threads covered by this Standard are both parallel.

The crests of the threads may be truncated to the limits of tolerance as given in Figure 2.2.

**2.2 DIMENSIONS AND TOLERANCES**

**2.2.1 Dimensions** The basic dimensions for the threads shall be as given in Table 2.1.

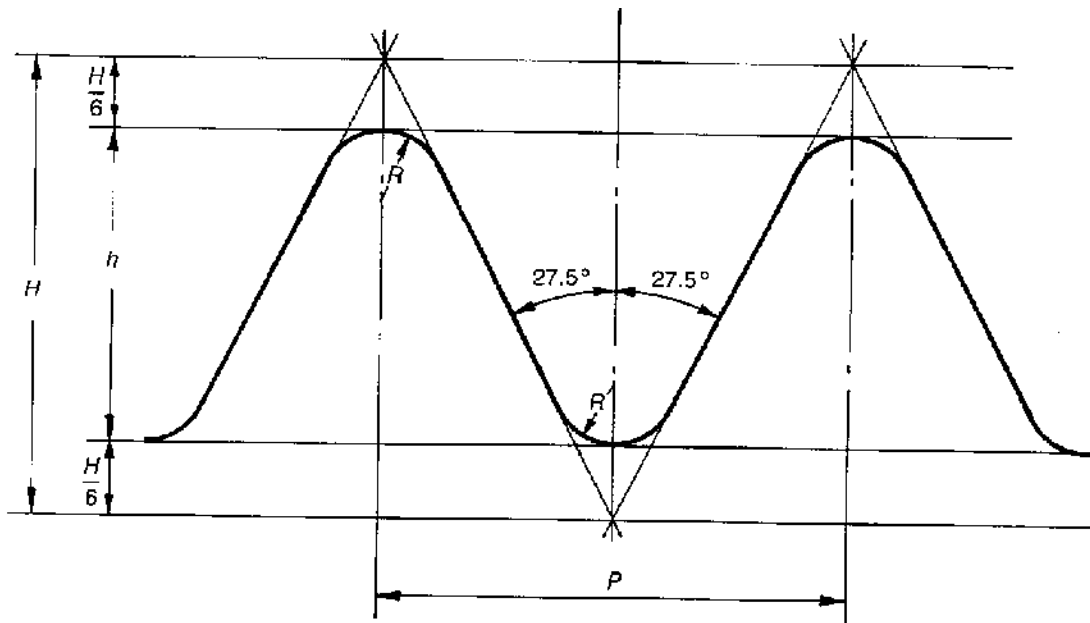
**2.2.2 Limiting dimension** The limiting dimensions for major, pitch, and minor diameter shall be as given in Table 2.1. The pitch diameter tolerances are intended to include the diametral effect of pitch and angle errors.

**TABLE 2.1  
DIMENSIONS FOR FASTENING PIPE THREADS**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Designation of threads	Number of threads in 25.4 mm	Pitch (P)	Basic diameter, mm			Limits for external thread diameters, mm						Limits for internal thread diameters, mm			
			Major (d = D)	Pitch (d <sub>2</sub> = D <sub>2</sub> )	Minor (d <sub>1</sub> = D <sub>1</sub> )	Major diameter (Classes A and B)		Pitch diameter				Pitch diameter		Minor diameter	
						Min.	Max.	Class		Min.	Max.	Min.	Max.	Min.	Max.
			A	B											
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.					
G1/16	28	0.907	7.723	7.142	6.561	7.509	7.723	7.035	7.142	6.928	7.142	7.142	7.249	6.561	6.843
G1/8	28	0.907	9.728	9.147	8.566	9.514	9.728	9.040	9.147	8.933	9.147	9.147	9.254	8.566	8.848
G1/4	19	1.337	13.157	12.301	11.445	12.907	13.157	12.176	12.301	12.051	12.301	12.301	12.426	11.445	11.890
G3/8	19	1.337	16.662	15.806	14.950	16.412	16.662	15.681	15.806	15.556	15.806	15.806	15.931	14.950	15.395
G1/2	14	1.814	20.955	19.793	18.632	20.671	20.955	19.651	19.793	19.509	19.793	19.793	19.935	18.632	19.173
G5/8	14	1.814	22.911	21.749	20.588	22.627	22.911	21.607	21.749	21.465	21.749	21.749	21.891	20.588	21.129
G3/4	14	1.814	26.441	25.279	24.118	26.157	26.441	25.137	25.279	24.995	25.279	25.279	25.421	24.118	24.659
G7/8	14	1.814	30.201	29.039	27.878	29.917	30.201	28.897	29.039	28.755	29.039	29.039	29.181	27.878	28.419
G1.0	11	2.309	33.249	31.770	30.292	32.889	33.249	31.590	31.770	31.410	31.770	31.770	31.950	30.292	30.932
G1 1/8	11	2.309	37.897	36.418	34.940	37.537	37.897	36.238	36.418	36.058	36.418	36.418	36.598	34.940	35.580
G1 1/4	11	2.309	41.910	40.431	38.953	41.550	41.910	40.251	40.431	40.071	40.431	40.431	40.611	38.953	39.593
G1 1/2	11	2.309	47.803	46.324	44.846	47.443	47.803	46.144	46.324	45.964	46.324	46.324	46.504	44.846	45.486
G1 3/4	11	2.309	53.746	52.267	50.789	53.386	53.746	52.087	52.267	51.907	52.267	52.267	52.447	50.789	51.429
G2.0	11	2.309	59.614	58.135	56.657	59.254	59.614	57.955	58.135	57.775	58.135	58.135	58.315	56.657	57.297
G2 1/4	11	2.309	65.710	64.231	62.753	65.276	65.710	64.014	64.231	63.797	64.231	64.231	64.448	62.753	63.393
G2 1/2	11	2.309	75.184	73.705	72.227	74.750	75.184	73.488	73.705	73.271	73.705	73.705	73.922	72.227	72.867
G2 3/4	11	2.309	81.534	80.055	78.577	81.100	81.534	79.838	80.055	79.621	80.055	80.055	80.272	78.577	79.217
G3.0	11	2.309	87.884	86.405	84.927	87.450	87.884	86.188	86.405	85.971	86.405	86.405	86.622	84.927	85.567
G3 1/2	11	2.309	100.330	98.851	97.373	99.896	100.330	98.634	98.851	98.417	98.851	98.851	99.068	97.373	98.013
G4.0	11	2.309	113.030	111.551	110.073	112.596	113.030	111.334	111.551	111.117	111.551	111.551	111.768	110.073	110.713
G4 1/2	11	2.309	125.730	124.251	122.773	125.296	125.730	124.034	124.251	123.817	124.251	124.251	124.468	122.773	123.413
G5.0	11	2.309	138.430	136.951	135.473	137.996	138.430	136.734	136.951	136.517	136.951	136.951	137.168	135.473	136.113
G5 1/2	11	2.309	151.130	149.651	148.173	150.696	151.130	149.434	149.651	149.217	149.651	149.651	149.868	148.173	148.813
G6.0	11	2.309	163.830	162.351	160.873	163.396	163.830	162.134	162.351	161.917	162.351	162.351	162.568	160.873	161.513

NOTE: Tolerances are not specified for the minor diameters of external threads nor for the major diameters of internal threads. In practice, these diameters will be controlled by the profiles of the tools used to cut the threads. The minor diameter of external threads should be not greater than the basic minor diameter, while the major diameter of internal threads should be not smaller than the basic major diameter.





LEGEND  
 $H = 0.960491P$   
 $h = 0.640327P$   
 $R = 0.137329P$

FIGURE 2.1 BASIC PROFILE INTERNAL THREADS EXTERNAL THREADS

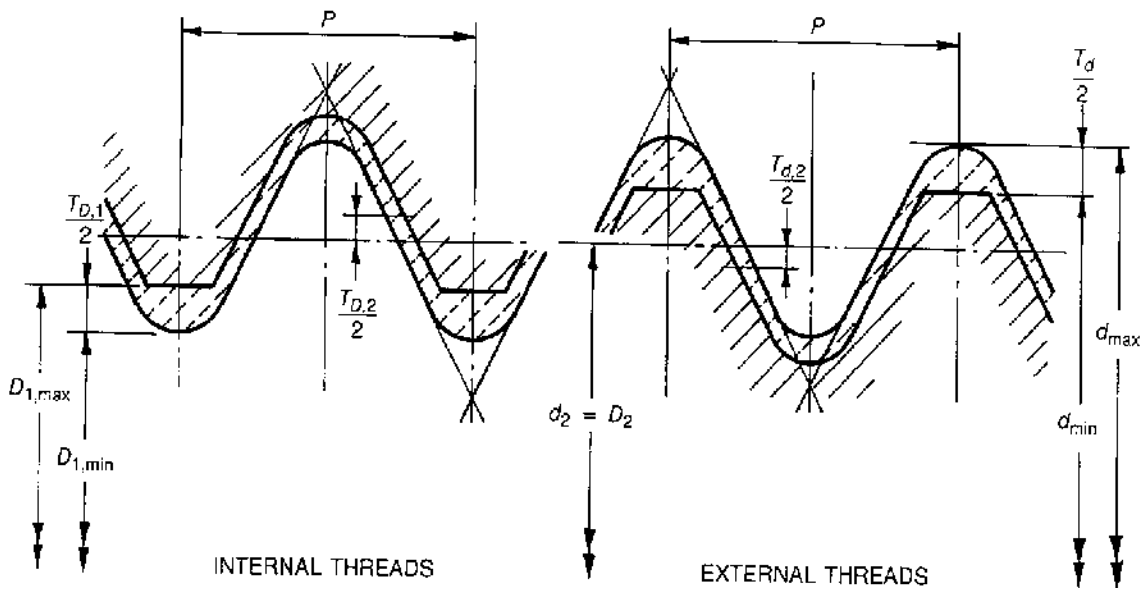


FIGURE 2.2 LIMITING PROFILES

## SECTION 3 GAUGES AND GAUGING PRACTICE

**3.1 SCOPE OF SECTION** This Section recommends the verification, by means of limit gauges, of fastening pipe threads of Whitworth form.

The limiting dimensions of screw gauges, including associated check and setting gauges for fastening pipe threads of Whitworth form, are given in Appendix A.

**3.2 TYPES OF GAUGES** Since the profile has different elements to be verified, it is necessary to provide for several GO and several NOT GO gauges as follows:

- (a) New threaded GO gauges (see Clauses 3.4.2 and 3.4.3) shall ensure that the profile of the threaded product does not exceed the maximum of material provided for by the tolerances applied to the dimensions of the profile defined in Clause 2.1.

Worn gauges may allow the component to marginally exceed the maximum material limit as shown in Figures 3.3 and 3.4.

- (b) The threaded NOT GO gauges for the thread of the product (see Clauses 3.4.4 and 3.4.5) fix the minimum material limit on the flanks of the thread.

**3.3 GENERAL CONSIDERATIONS** All gauges and their setting plugs and check plugs should be designed to be in accordance with the Taylor principle as far as possible. Although the use of a NOT GO ring gauge or a GO calliper gauge is not in accordance with the Taylor principle, the practice of using these gauges is considered satisfactory.

### 3.4 GAUGES FOR EXTERNAL THREADS AND THEIR CHECK PLUGS

#### 3.4.1 Solid GO threaded ring gauge

**3.4.1.1 Function** The threaded GO ring gauge ensures that the maximum material limit of the thread is not exceeded. It checks the virtual size of the external thread, taking into account deviations of form (departures from roundness, lack of straightness of the thread axis over the gauge length) and pitch errors, helix variations, errors in the flank angles, which produce an apparent enlargement of the pitch diameter (virtual pitch diameter). In addition, this gauge checks whether the length of the straight flank is adequate, i.e. that the rounding at the root of the profile does not encroach too far upon the flank of the thread.

**3.4.1.2 Control** The solid threaded GO ring gauge manufactured according to the prescribed sizes shall be checked by the threaded GO and NOT GO check plugs, and should be regularly controlled with the wear check plug.

If the NOT GO check plug is not used, other provisions shall be made so as to ensure that the maximum size of the pitch diameter of the threaded GO ring gauge is not exceeded.

**3.4.1.3 Use** The threaded GO ring gauge screwed by hand, without excessive force, shall pass over the whole length of the thread. If this is not possible, the thread does not comply with the specifications.

#### 3.4.2 Threaded check plugs for new solid threaded GO ring gauge

**3.4.2.1 Function** These threaded check plugs (GO and NOT GO) are used to check the limits of the pitch diameter of the new solid threaded GO ring gauge. The threaded GO check plug checks the GO limit of the total profile of the appropriate new solid threaded GO ring gauge.

**3.4.2.2 Use** The threaded GO check plug screwed by hand, without excessive force, shall pass through the new solid threaded GO ring gauge.

The threaded NOT GO check plug screwed by hand, without excessive force, may enter into both ends of the new solid threaded GO ring gauge, but not more than one turn of thread.\*

#### 3.4.3 Wear check plug for solid threaded GO ring gauge

**3.4.3.1 Function** The wear check plug is used to ascertain that the pitch diameter of the threaded GO ring gauge has not exceeded the wear limit. It embodies the pitch diameter of the threaded GO ring gauge at the prescribed limit of wear.

**3.4.3.2 Use** The wear check plug screwed by hand, without excessive force, may enter into both ends of the threaded GO ring gauge, but not more than one turn of thread.\*

If the wear check plug can be screwed in more than one turn of thread, the threaded GO ring gauge no longer complies with the specifications.

#### 3.4.4 Solid threaded NOT GO ring gauge

**3.4.4.1 Function** The threaded NOT GO ring gauge is intended to check whether the actual pitch diameter exceeds the specified minimum size. The checking with the threaded NOT GO ring gauge does not correspond to the Taylor principle when checking rigid machined pieces. For non-rigid machined pieces, the departure from the Taylor principle is of less importance because of the flexibility of the pieces.

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\* The number of turns of thread is determined when the plug or ring gauge is unscrewed.

**3.4.42 Control** The solid threaded NOT GO ring gauge manufactured according to the prescribed sizes shall be checked by the threaded GO and NOT GO check plugs and should be regularly controlled with the wear check plug.

If the NOT GO check plug is not used, other provisions shall be made to ensure that the maximum limit of the pitch diameter of the new threaded NOT GO ring gauge is not exceeded.

**3.4.43 Use** The threaded NOT GO ring gauge, screwed by hand, without excessive force, onto the thread, may be screwed on both sides but not more than two turns of thread.\*

If the gauge can be screwed more than two turns of thread, the thread does not comply with the specifications. The threaded NOT GO ring gauge shall not pass completely over a threaded part having a length of three threads or less.

#### **3.4.5 Threaded check plugs for new solid NOT GO threaded ring gauge**

**3.4.51 Function** The check plugs (GO and NOT GO) are used to check the pitch diameter limits of the new solid threaded NOT GO ring gauge. The threaded GO check plug makes sure that the clearance diameter of the new solid threaded NOT GO ring gauge is not too small.

**3.4.52 Use** The threaded GO check plug screwed by hand, without excessive force, shall pass through the corresponding new solid threaded NOT GO ring gauge.

The NOT GO check plug gauge screwed by hand, without excessive force, may enter the new solid threaded NOT GO ring gauge at both ends, but not more than one turn of thread.\*

#### **3.4.6 Wear check plug for solid NOT GO threaded ring gauge**

**3.4.61 Function** The wear check plug checks whether the pitch diameter of the threaded NOT GO ring gauge has exceeded the wear limit. It embodies the pitch diameter of the threaded NOT GO ring gauge at the prescribed limit of wear.

**3.4.62 Use** The wear check plug screwed by hand, without excessive force, may enter into both ends of the threaded NOT GO ring gauge but not more than one turn of thread.\*

If the wear check plug can be screwed in more than one turn of thread, the threaded NOT GO ring gauge no longer meets the specifications.\*

#### **3.4.7 Roller type GO screw calliper gauge†**

**3.4.7.1 Function** When used instead of a solid GO screw ring gauge this type of gauge has limitations and is particularly insensitive to certain errors of geometry (e.g. lobing) which may be present on the screw thread. In any dispute, gauging with a GO screw ring gauge shall be authoritative.

**3.4.7.2 Control** The roller type GO screw calliper gauge shall be set using a GO setting plug which has been manufactured to the sizes set out in Table A6, Appendix A.

**3.4.7.3 Use** These gauges are generally applied under their own weight or under a fixed working load to at least three positions evenly spaced around the circumference of the product thread. Each gauge must completely pass over the product thread at all positions at which it is applied.

#### **3.4.8 Roller type NOT GO thread calliper gauge†**

**3.4.8.1 Function** A NOT GO screw calliper gauge conforms more closely to the Taylor principle than the alternative NOT GO screw ring gauge, and is intended to check whether the actual pitch diameter of the product thread exceeds the minimum size.

**3.4.8.2 Control** The roller type screw calliper gauge is set using a setting plug manufactured to the limits of size set out in Table A6, Appendix A.

**3.4.8.3 Use** These gauges are generally applied under their own weight or under a fixed working load to at least three positions evenly spaced around the circumference of the product thread. Other than for the first two turns at the leading edge of the product thread, the gauge must not pass over the product thread at any position at which it is applied.

**3.4.9 Setting plug for GO screw calliper gauge** A screw plug manufactured to the size shown in Table A6, Appendix A and having the form shown in Figure 3.5‡ is used for setting the GO screw calliper gauge to the limiting size.

**3.4.10 Setting plug for NOT GO screw calliper gauge** A screw plug manufactured to the sizes shown in Table A6, Appendix A and having the form shown in Figure 3.5‡ is used for setting the NOT GO screw calliper gauge to the limiting size.

**3.4.11 NOT GO plain calliper gap gauges for external threads** The maximum and minimum limits of size of the gap are shown in Table A4, Appendix A.

\* The number of turns of thread is determined when the plug or ring gauge is unscrewed.

† For a more detailed description see AS 1098.

‡ Form is the same for GO and NOT GO setting plugs.

### 3.5 GAUGES FOR INTERNAL THREADS

#### 3.5.1 Threaded GO plug gauge

**3.5.1.1 Function** The threaded GO plug gauge checks the virtual size of the internal thread on the GO side (gauging the virtual pitch diameter), i.e. it checks the minimum limit of the pitch diameter, taking into account pitch errors, errors in the flank angles, helix variations and deviations of form (departures from roundness and lack of straightness of the thread axis over the gauge length) which produce an apparent reduction of the pitch diameter (virtual pitch diameter). In addition, it checks the minimum limit of the major diameter and also whether the length of straight flank is sufficient, i.e. that the rounding at the root of the profile does not encroach too far upon the flank of the thread. This gauge checks the maximum material limit.

**3.5.1.2 Control** The threaded GO plug gauge should be checked regularly for wear. The wear of the threaded GO plug gauge is found by measuring.

**3.5.1.3 Use** The threaded GO plug gauge screwed by hand, without excessive force, shall pass through the whole length of the thread. If this is not possible, the thread does not comply with the specifications.

#### 3.5.2 Threaded NOT GO plug gauge

**3.5.2.1 Function** The threaded NOT GO plug gauge checks whether the actual pitch diameter exceeds the specified maximum size.

**3.5.2.2 Control** The threaded NOT GO plug gauge shall be checked regularly for wear. The wear of the threaded NOT GO plug gauge is found by measuring.

**3.5.2.3 Use** The threaded NOT GO plug gauge screwed by hand, without excessive force, may enter into both ends of the threaded part, but not more than two turns of thread.\*

If it can be screwed in more than two turns of thread,\* the thread does not comply with the specifications. The threaded NOT GO plug gauge shall not pass completely through a machined piece with a length of three threads or less.

**3.5.3 NOT GO plain plug gauges for internal threads** The maximum and minimum limits of size of the gauge are shown in Table A7, Appendix A.

### 3.6 DESIGN FEATURES OF SCREW GAUGES

**3.6.1 Material** All types of gauges (or gauging elements where applicable) shall be manufactured from a stable, high quality tool steel or material having similar properties.

**3.6.2 Reference temperature** The temperature to which the dimensions of the gauges is referred is 20°C.

**3.6.3 Marking** Each gauge shall be clearly and permanently marked with sufficient information necessary for positive identification. For plug gauges having renewable inserts, the information shall be marked on both the handle and the gauging member (where practicable).

The following particulars shall be included in the marking:

- (a) Thread designation (see Clause 1.6).
- (b) GO or NOT GO.
- (c) SET PLUG for setting plugs for adjustable screw gauges
- (d) The manufacturer's name or trademark.
- (e) A serial number, if required.

Examples:

- 1 GO screw plug: G<sup>1/2</sup> GO XYZ Ltd.
- 2 NOT GO screw plug: G<sup>1/2</sup> NOT GO XYZ Ltd.
- 3 GO screw ring: G<sup>1/2</sup> GO XYZ Ltd.
- 4 NOT GO screw calliper: G<sup>1/2</sup> B NOT GO XYZ Ltd.

**3.6.4 Construction** To facilitate the use of standard gauge blanks and associated handles, the general construction of screw gauges should preferably be in accordance with AS B129; however, the axial length of the gauging surface may require modification in accordance with the following:

- (a) *GO gauges for external and internal threads* Ideally the axial length of gauge thread for GO gauges is equal to the length of engagement of the assembled product and thread, and in any case should be not less than 80% of the length of engagement.
- (b) *NOT GO gauges* The axial length of gauge threads for NOT GO gauges shall be in accordance with AS B129, except that, for NOT GO screw calliper gauges, the length of thread should not exceed three pitches for satisfactory functioning.

\* The number of turns of thread is determined when the plug is unscrewed.

**3.6.5 Breaking of sharp edges** All undesirable sharp edges on all types of screw gauges and plain gauges shall be removed.

To avoid feather edges on screw plug gauges, screw ring gauges, and setting plugs, the partial thread at the ends of the gauges shall normally be removed to a blunt start. Not more than one complete turn of thread shall be removed to the point where the full form thread is obtained (see Figure 3.1).

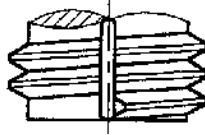


FIGURE 3.1 BLUNT START AT END OF THREAD ON GAUGE

For screw ring gauges G1/16 and G1/8 a 60° chamfer is permitted in lieu of the removal of a partial thread. It is not necessary to remove the feather edge of screw plug gauges and setting plugs with external centres.

**3.6.6 Dirt grooves** GO screw plug gauges should be provided with a dirt groove cut axially to the thread to a depth slightly below the thread root. The groove shall be positioned at the point where the first thread attains full form and run the full length of the threaded portion.

GO screw ring gauges G1/4 and larger should be provided with a dirt groove cut axially to the thread to a depth slightly below the thread root.

### 3.6.7 Threaded gauges for external threads

**3.6.7.1 GO gauges** The limits of size for solid threaded GO screw ring gauges and GO screw calliper gauges for Class A and Class B external threads shall be as given in Table A.1, Appendix A. These limits are derived from the values given in Tables 2.1, 3.1 and 3.2. The tolerance zones are shown in Figure 3.3.

The values specified in Tables 3.1 and 3.2 for pitch ( $P$ ) and tolerance on basic pitch diameter ( $T_{d,2}$ ) are identical with those given in Table 2.1.

The length of the thread on the gauge shall be at least 80% of the thread length of the engaging part or component (i.e. the thread length of, for example, a nut).

#### 3.6.7.2 Check plugs and setting plugs for GO screw ring and calliper gauges

(a) *Check plugs for GO ring gauges* The GO and NOT GO check plugs for the solid threaded GO ring gauge are used to check the limits of the pitch diameter of a new gauge. The wear check plug is used to ascertain that the pitch diameter of the solid threaded GO ring gauge has not exceeded the wear limit. It embodies the pitch diameter of the solid threaded GO ring gauge at the prescribed limit of wear.

(b) *Setting plugs for GO screw calliper gauges* Setting plugs shall be in accordance with Clause 3.4.9.

The tolerance zones are shown in Figure 3.4. The values of  $d$ ,  $d_1$ , and  $d_2$  are as given in Table 2.1.

The solid threaded NOT GO ring gauge shall have a length of thread of at least three turns of thread.

**3.6.7.3 NOT GO gauges** The limits of size for solid threaded NOT GO ring gauges and NOT GO screw calliper gauges for Class A external threads shall be as given in Table A2, Appendix A. These limits are derived from the values given in Tables 2.1, 3.1 and 3.2. The limits of size for solid screw ring gauges and screw calliper gauges for Class B external threads shall be as given in Table A3, Appendix A. These limits are derived from values given in Tables 2.1, 2.3 and 3.3. Thread profiles shall be as shown in Figure 3.5.

**3.6.7.4 Check plugs and setting plugs for NOT GO screw ring and calliper gauges** Check plugs for NOT GO screw ring gauges and setting plugs for NOT GO screw calliper gauges are described below.

(a) *Check plugs for NOT GO ring gauges* The GO and NOT GO check plugs for the solid threaded NOT GO ring gauge are used to check the pitch diameter limits of a new gauge. The threaded GO check plug makes sure that the clearance diameter of the gauge is not too small. The wear check plug is used to check whether the pitch diameter of the gauge has exceeded the wear limit. It embodies the pitch diameter of the threaded NOT GO ring gauge at the prescribed limit of wear.

(b) *Setting plugs for NOT GO screw calliper gauges* Setting plugs shall be in accordance with Clause 3.4.10. Each setting plug shall have at least three complete threads.

**TABLE 3.1**  
**DIMENSIONS FOR GO AND NOT GO GAUGES AND THEIR CHECK PLUGS FOR CLASS A**  
**EXTERNAL THREADS AND FOR GO GAUGES AND THEIR CHECK PLUGS FOR CLASS B**  
**EXTERNAL THREADS**

Thread size designation	$T_{d,2}$ μm	$T_R$ μm	$T_{PL}$ μm	$T_{CP}$ μm	$m$ μm	$Z_R$ μm	$W_{NG}$ μm	$W_G$ μm
G1/16*	107	15	10	9	17	2	13	18
G1/8*	107	15	10	9	17	2	13	18
G1/4	125	15	10	9	17	2	13	18
G3/8	125	15	10	9	17	2	13	18
G1/2	142	20	12	10	20	9	17	23
G5/8	142	20	12	10	20	9	17	23
G3/4	142	20	12	10	20	9	17	23
G7/8	142	20	12	10	20	9	17	23
G1.0	180	20	12	10	20	9	17	23
G1 1/8	180	20	12	10	20	9	17	23
G1 1/4	180	20	12	10	20	9	17	23
G1 1/2	180	20	12	10	20	9	17	23
G1 3/4	180	20	12	10	20	9	17	23
G2.0	180	20	12	10	20	9	17	23
G2 1/4	217	25	15	13	24	13	21	28
G2 1/2	217	25	15	13	24	13	21	28
G2 3/4	217	25	15	13	24	13	21	28
G3.0	217	25	15	13	24	13	21	28
G3 1/2	217	25	15	13	24	13	21	28
G4.0	217	25	15	13	24	13	21	28
G4 1/2	217	25	15	13	24	13	21	28
G5.0	217	25	15	13	24	13	21	28
G5 1/2	217	25	15	13	24	13	21	28
G6.0	217	25	15	13	24	13	21	28

\* For G1/16 and G1/8 GO ring gauges, for a pitch of 0.907 mm, a profile is permitted without a radius, with an internal diameter, in millimetres, increased by the following (see also Figure 3.2(a)):

$$(d_1 + 0.134 + T_R/2) \pm T_R/2 = d_1 + 0.142 \pm 0.0075.$$

**TABLE 3.2**  
**OTHER VALUES FOR GO AND NOT GO GAUGES AND THEIR CHECK PLUGS FOR**  
**CLASS A AND CLASS B EXTERNAL THREADS AS A FUNCTION OF PITCH**

Thread size designation	Pitch (P) mm	Number of threads in 25.4 mm	Width of clearance groove at the major and minor diameter of the thread profile with shortened flanks ( $b_s$ ) mm		Tolerance on the half angle (27° 30') of check plugs and ring gauges (minutes)
			Nominal	Tolerance (S) or as in Note	
G1/16	0.907 ±0.005*	28	0	—	± 15
G1/8	0.907 ±0.005*	28	0	—	± 15
G1/4	1.337 ± 0.005*	19	0.4	± 0.04	± 13
G3/8	1.337 ± 0.005*	19	0.4	± 0.04	± 13
G1/2	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G5/8	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G3/4	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G7/8	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G1.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G1 1/8	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G1 1/4	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G1 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10

TABLE 3.2 (continued)

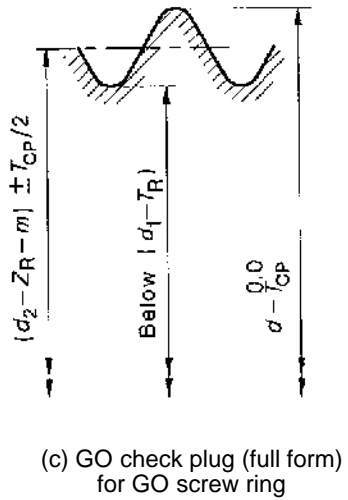
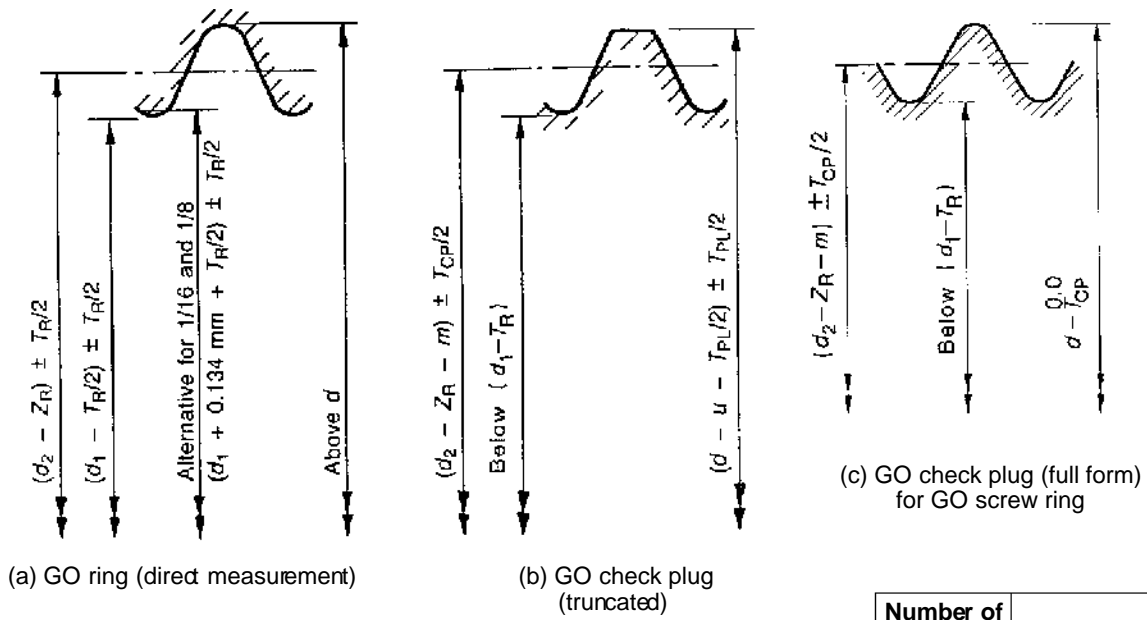
Thread size designation	Pitch (P) mm	Number of threads in 25.4 mm	Width of clearance groove at the major and minor diameter of the thread profile with shortened flanks ( $b_3$ ) mm		Tolerance on the half angle (27° 30') of check plugs and ring gauges (minutes)
			Nominal	Tolerance (S) or as in Note	
G1 3/4	2.309 ±0.005*	11	0.8	± 0.05	± 10
G2.0	2.309 ±0.005*	11	0.8	±0.05	± 10
G2 1/4	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G2 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G2 3/4	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G3.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G3 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G4.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G4 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G5.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G5 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G6.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10

\* When measured between any two threads over the length of the gauge or check plug.

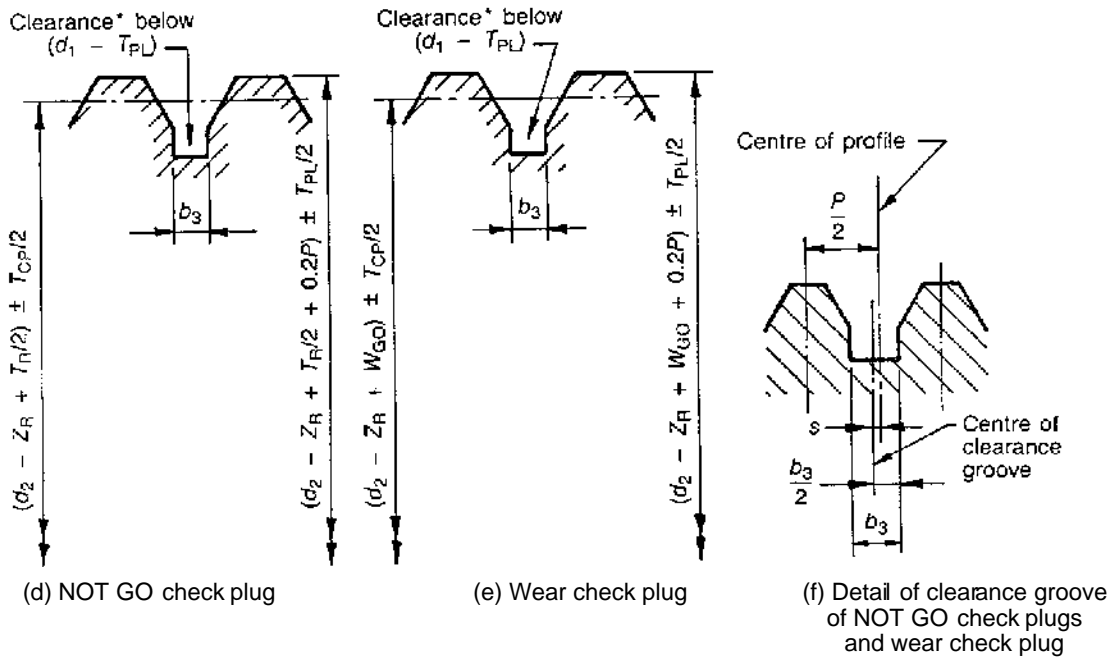
NOTE: The maximum displacement permitted between the middle of the groove of width  $b_3$  and that of the profile is equal to  $S$ . If the effective displacement ( $s$ ) is less than  $S$ , it is permissible for the upper limit of  $b_3$  (nominal  $b_3 + S$ ) to be exceeded by twice the difference ( $S - s$ ); this is the equivalent of accepting for the distance between each lateral face of the groove and the middle of the profile the value [(nominal  $b_3 + S$ )/2] ±  $S$ .

TABLE 3.3  
DIMENSIONS FOR NOT GO GAUGES AND THEIR CHECK PLUGS FOR  
CLASS B EXTERNAL THREADS

Thread size designation	$T_{d,2}$ μm	$T_R$ μm	$T_{PL}$ μm	$T_{CP}$ μm	$m$ μm	$W_{NG}$ μm
G1/16	214	25	15	13	24	21
G1/8	214	25	15	13	24	21
G1/4	250	25	15	13	24	21
G3/8	250	25	15	13	24	21
G1/2	284	25	15	13	24	21
G5/8	284	25	15	13	24	21
G3/4	284	25	15	13	24	21
G7/8	284	25	15	13	24	21
G1.0	360	33	20	17	30	28
G1 1/8	360	33	20	17	30	28
G1 1/4	360	33	20	17	30	28
G1 1/2	360	33	20	17	30	28
G1 3/4	360	33	20	17	30	28
G2.0	360	33	20	17	30	28
G2 1/4	434	33	20	17	30	28
G2 1/2	434	33	20	17	30	28
G2 3/4	434	33	20	17	30	28
G3.0	434	33	20	17	30	28
G3 1/2	434	33	20	17	30	28
G4.0	434	33	20	17	30	28
G4 1/2	434	33	20	17	30	28
G5.0	434	33	20	17	30	28
G5 1/2	434	33	20	17	30	28
G6.0	434	33	20	17	30	28



Number of threads in 25.4 mm	<i>u</i>
28	mm
19	0.134
14	0.198
11	0.268
$u = 0.14784P$	



\* The form of the relief is left to the discretion of the manufacturer.

NOTE: Care should be taken to ensure that units are consistent when dimensions for thread profiles are being calculated. The quantities *d*, *d*<sub>1</sub>, and *d*<sub>2</sub> are in millimetres; other quantities may have been specified in millimetres or micrometres.

FIGURE 3.2 THREAD PROFILES OF GO RING GAUGES AND THEIR CHECK PLUGS



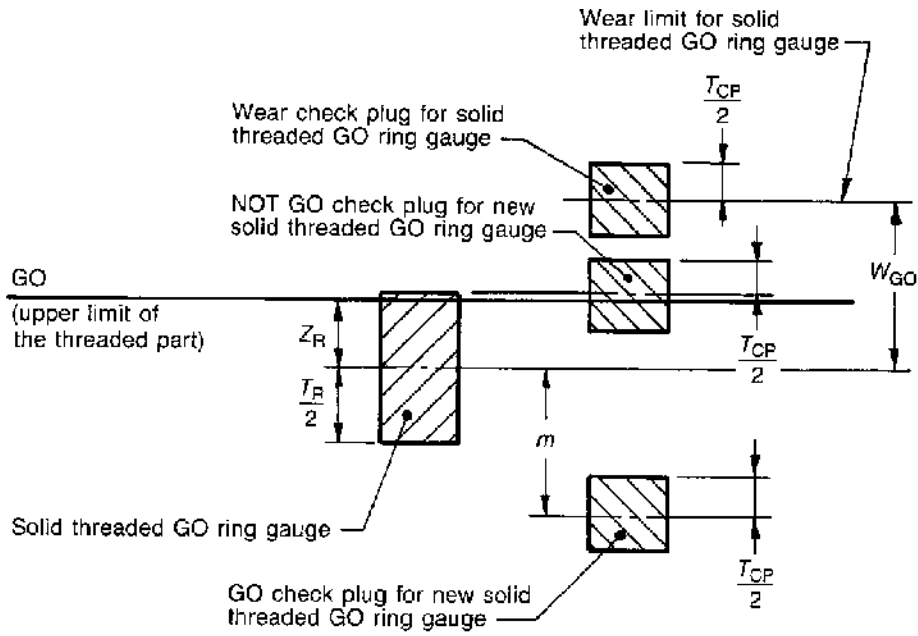


FIGURE 3.3 RELATIVE POSITIONS OF PITCH DIAMETER TOLERANCE ZONES FOR GO RING GAUGES AND THEIR CHECK PLUGS

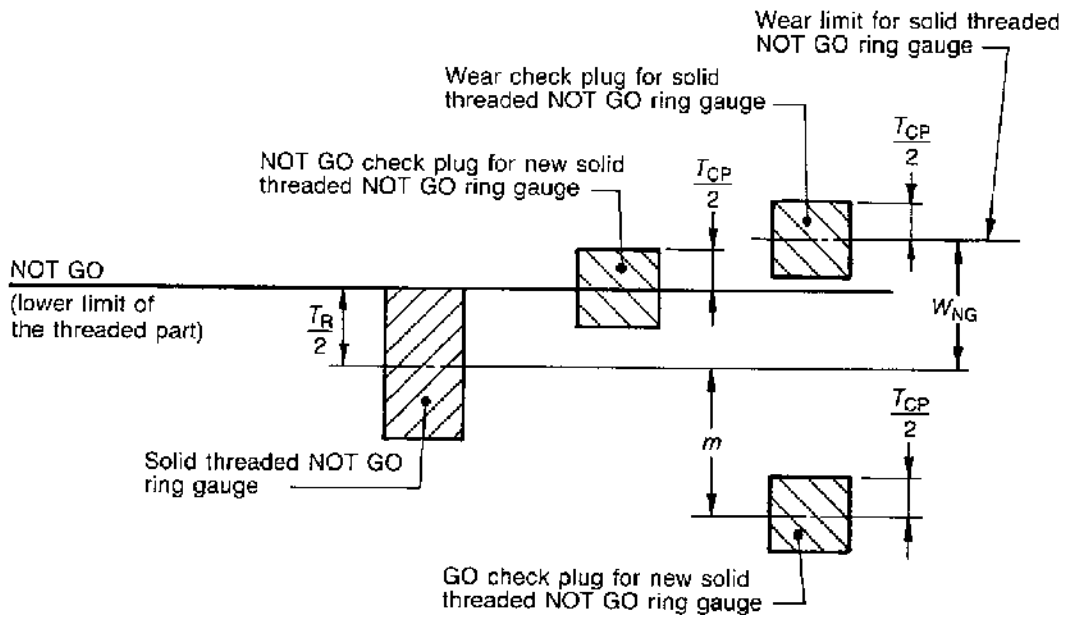
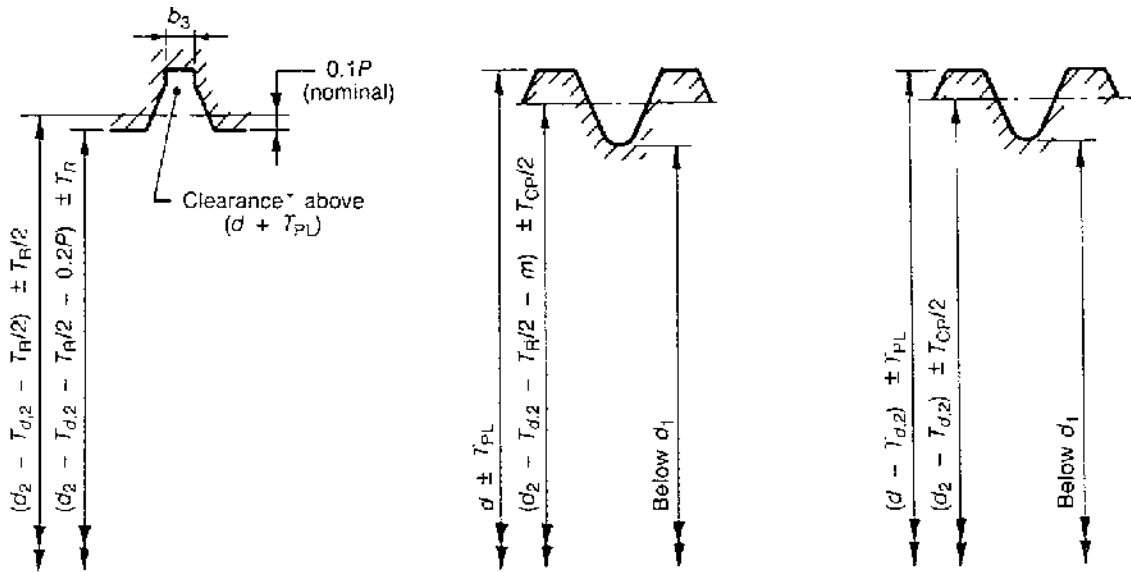


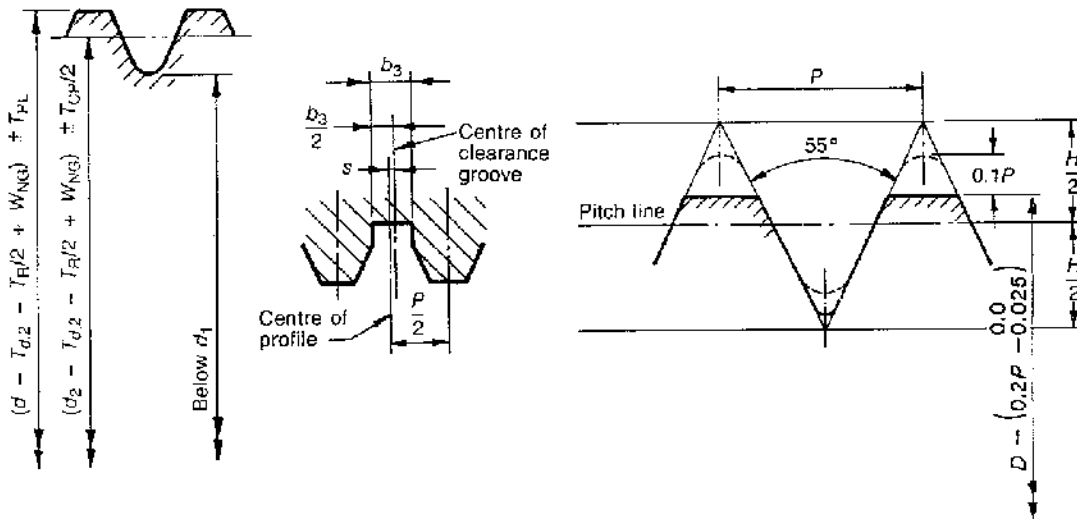
FIGURE 3.4 RELATIVE POSITIONS OF PITCH DIAMETER TOLERANCE ZONES FOR NOT GO RING GAUGES AND THEIR CHECK PLUGS



(a) NOT GO gauge

(b) GO check plug for NOT GO ring gauge

(c) NOT GO check plug for NOT GO ring gauge



(d) Wear check plug for NOT GO ring gauge

(e) Detail of clearance groove of NOT GO ring gauge

(f) Setting gauges

\* The form of the relief is left to the discretion of the manufacturer.

† For more detailed description, see AS 3501.

NOTE: Care should be taken to ensure that units are consistent when dimensions for thread profiles are being calculated. The quantities  $d$ ,  $d_2$ , and  $d_3$  are in millimetres; other quantities may have been specified in millimetres or micrometers.

FIGURE 3.5 THREAD PROFILES OF NOT GO RING GAUGES AND THEIR CHECK PLUGS, CALLIPER GAUGES AND SETTING GAUGES

**3.6.8 Threaded gauges for internal threads** The limits of size for plug gauges for internal threads shall be as given in Table A5, Appendix A. These limits are derived from the values given in Tables 2.1, 3.4 and 3.5. Thread profiles shall be as shown in Figure 3.6.

The tolerance zones are shown in Figure 3.7. The values of  $D$ ,  $D_1$  and  $D_2$  are given in Table 2.1.

The length of thread on the GO plug gauge shall be at least 80% of the thread of the engaging part or component (i.e. the thread of, for example, a nut). The NOT GO plug gauge shall have a length of thread of at least three complete threads.

**TABLE 3.4**  
**DIMENSIONS FOR THREADED GO AND NOT GO PLUG GAUGES**

Thread size designation	$T_{D,2}$ $\mu\text{m}$	$Z_{PL}$ $\mu\text{m}$	$T_{PL}$ $\mu\text{m}$	$W_{NG}$ $\mu\text{m}$	$W_G$ $\mu\text{m}$
G1/16*	107	8	10	10	14
G1/8*	107	8	10	10	14
G1/4	125		10	10	14
G3/8	125	8	10	10	14
G1/2	142	13	12	13	19
G5/8	142	13	12	13	19
G3/4	142	13	12	13	19
G7/8	142	13	12	13	19
G1.0	180	13	12	13	19
G1 1/8	180	13	12	13	19
G1 1/4	180	13	12	13	19
G1 1/2	180	13	12	13	19
G1 3/4	180	13	12	13	19
G2.0	180	13	12	13	19
G2 1/4	217	18	15	17	23
G2 1/2	217	18	15	17	23
G2 3/4	217	18	15	17	23
G3.0	217	18	15	17	23
G3 1/2	217	18	15	17	23
G4.0	217	18	15	17	23
G4 1/2	217	18	15	17	23
G5.0	217	18	15	17	23
G5 1/2	217	18	15	17	23
G6.0	217	18	15	17	23

\* For G1/16 and G1/8 GO plug gauges, for a pitch of 0.907 mm, a profile is permitted without a radius, with an internal diameter, in millimetres, increased by the following (see also Figure 3.6):

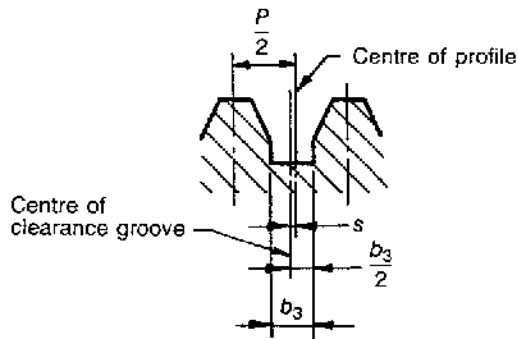
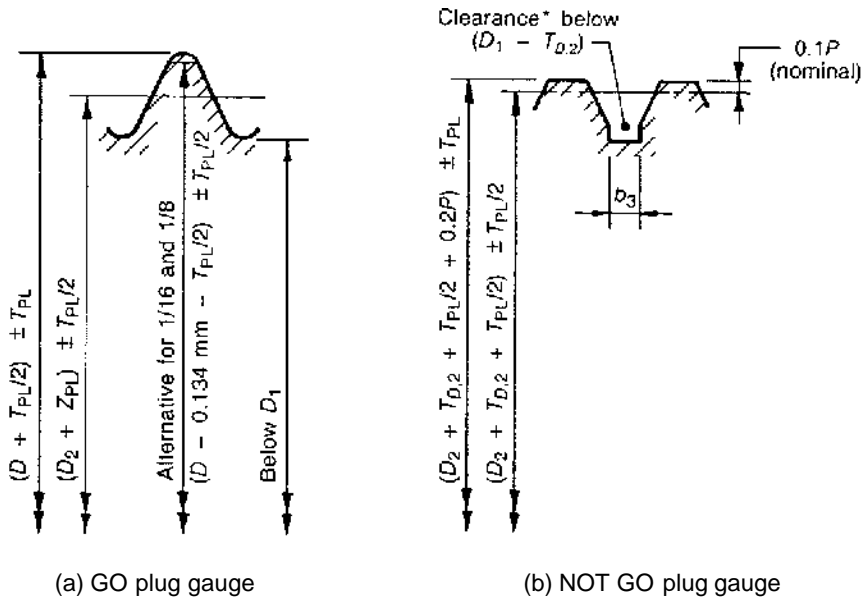
$$(D - 0.134 - T_{PL}/2) \pm T_{PL}/2 = D - 0.139 \pm 0.005.$$

**TABLE 3.5**  
**OTHER VALUES FOR GO AND NOT GO PLUG GAUGES AS A FUNCTION OF PITCH**

Thread size designation	Pitch (P) mm	Number of threads in 25.4 mm	Width of clearance groove at the major and minor diameter of the thread profile with shortened flanks ( $b_3$ ) mm		Tolerance on the half angle (27° 30') (minutes)
			Nominal	Tolerance (S) or as in Note	
G1/16	0.907 ±0.005*	28	0	—	± 15
G1/8	0.907 ±0.005*	28	0	—	± 15
G1/4	1.337 ± 0.005*	19	0.4	± 0.04	± 13
G3/8	1.337 ± 0.005*	19	0.4	± 0.04	± 13
G1/2	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G5/8	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G3/4	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G7/8	1.814 ± 0.005*	14	0.5	± 0.05	± 11
G1.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G1 1/8	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G1 1/4	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G1 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G1 3/4	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G2.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G2 1/4	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G2 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G2 3/4	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G3.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G3 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G4.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G4 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G5.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G5 1/2	2.309 ± 0.005*	11	0.8	± 0.05	± 10
G6.0	2.309 ± 0.005*	11	0.8	± 0.05	± 10

\* When measured between any two threads over the length of the plug gauge.

NOTE: The maximum displacement permitted between the middle of the groove of width  $b_3$  and that of the profile is equal to  $S$ . If the effective displacement ( $s$ ) is less than  $S$ , it is permissible for the upper limit of  $b_3$  (nominal  $b_3 + S$ ) to be exceeded by twice the difference ( $S - s$ ); this is the equivalent of accepting for the distance between each lateral face of the groove and the middle of the profile the value [(nominal  $b_3 + S$ )/2] ±  $S$ .



\* The form of the relief is left to the discretion of the manufacturer.

NOTE: Care should be taken to ensure that units are consistent when dimensions for thread profiles are being calculated. The quantities  $D$ ,  $D_1$ , and  $D_2$  are in millimetres; other quantities may have been specified in millimetres or micrometres.

FIGURE 3.6 THREAD PROFILES OF GO AND NOT GO PLUG GAUGES

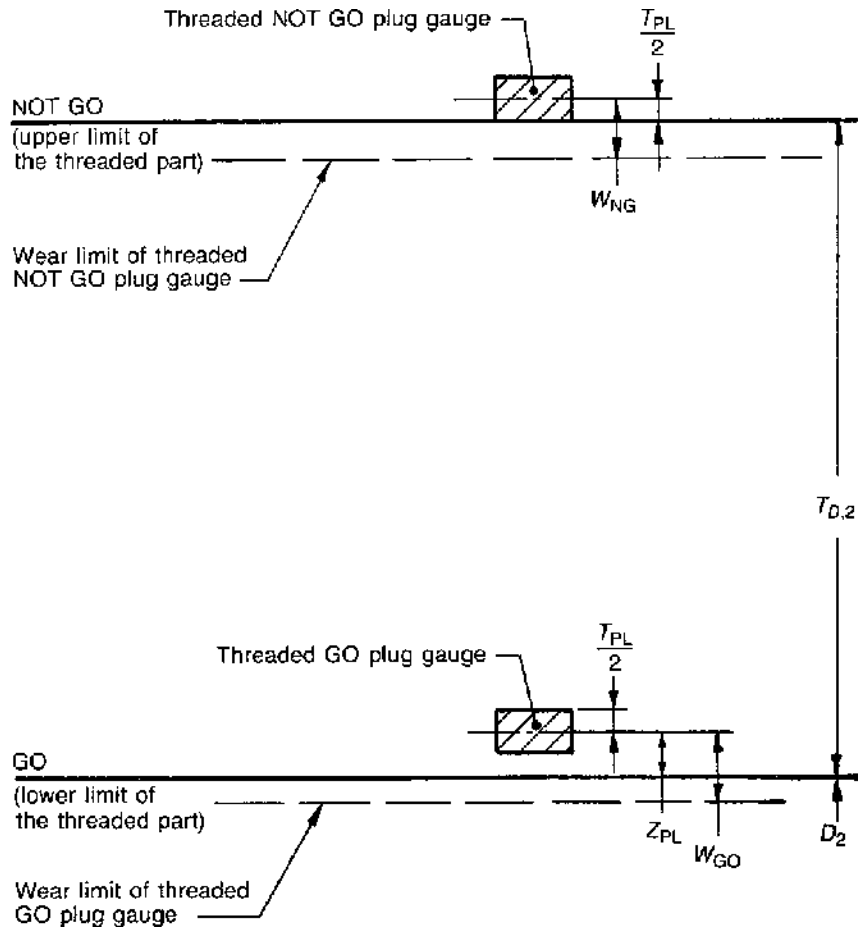


FIGURE 3.7 RELATIVE POSITIONS OF PITCH DIAMETER TOLERANCE ZONES FOR GO AND NOT GO PLUG GAUGES

APPENDIX A  
SCREW GAUGE LIMITS  
(Normative)

**A1 SCOPE** This Appendix gives the limiting dimensions for screw gauges, including associated check and setting gauges for fastening pipe threads of Whitworth form.

Table A1 External thread, Classes A and B: Limits of size for GO screw ring and screw calliper gauges and associated plug check gauges.

Table A2 External thread, Class A: Limits of size for NOT GO screw ring and calliper gauges and associated plug check gauges.

Table A3 External thread, Class B: Limits of size for NOT GO screw ring and calliper gauges and associated plug check gauges.

Table A4 Limits of size for GO and NOT GO plain calliper (gap) gauges for major diameters.

Table A5 Internal thread: Limits of size for GO and NOT GO plug gauges.

Table A6 External thread: Setting plugs for screw calliper gauges.

Table A7 Limits of size for NOT GO plain plug for minor diameter.

TABLE A1

EXTERNAL THREAD, CLASSES A AND B: LIMITS OF SIZE FOR GO SCREW RING AND SCREW CALLIPER GAUGES AND ASSOCIATED PLUG CHECK GAUGES

Designation of thread	Number of threads in 25.4 mm	GO screw ring and GO screw calliper gauges, mm					Truncated GO screw check for GO screw ring, mm					Full form GO screw check for GO screw ring, mm					NOT GO screw check for GO screw ring, mm					Wear screw check for GO screw ring, mm				
		Major diameter Min.	Pitch diameter		Minor diameter		Major diameter		Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter		Minor diameter Max.
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.	
G1/16	28	7.723	7.132	7.148	6.546	6.561	7.579	7.589	7.118	7.128	6.546	7.714	7.723	7.118	7.128	6.546	7.324	7.334	7.143	7.152	6.546	7.334	7.344	7.154	7.162	6.546
G1/8	28	9.728	9.138	9.152	8.551	8.566	9.584	9.594	9.124	9.132	8.551	9.719	9.728	9.124	9.132	8.551	9.329	9.339	9.148	9.157	8.551	9.339	9.349	9.158	9.168	8.551
G1/4	19	13.157	12.292	12.306	11.430	11.445	12.949	12.959	12.278	12.286	11.430	13.148	13.157	12.278	12.286	11.430	12.569	12.579	12.302	12.311	11.430	12.579	12.589	12.312	12.322	11.430
G3/8	19	16.662	15.796	15.812	14.935	14.950	16.454	16.464	15.782	15.792	14.935	16.653	16.662	15.782	15.792	14.935	16.074	16.084	15.807	15.816	14.935	16.084	16.094	15.818	15.826	14.935
G1/2	14	20.955	19.774	19.794	18.612	18.632	20.675	20.687	19.759	19.769	18.612	20.945	20.955	19.759	19.769	18.612	20.151	20.163	19.789	19.799	18.612	20.164	20.176	19.802	19.812	18.612
G5/8	14	22.911	21.730	21.750	20.568	20.588	22.631	22.643	21.715	21.725	20.568	22.901	22.911	21.715	21.725	20.568	22.107	22.119	21.745	21.755	20.568	22.120	22.132	21.758	21.768	20.568
G3/4	14	26.441	25.260	25.280	24.098	24.118	26.161	26.173	25.245	25.255	24.098	26.431	26.441	25.245	25.255	24.098	25.637	25.649	25.275	25.285	24.098	25.650	25.662	25.288	25.298	24.098
G7/8	14	30.201	29.020	29.040	27.858	27.878	29.921	29.933	29.005	29.015	27.858	30.191	30.201	29.005	29.015	27.858	29.397	29.409	29.035	29.045	27.858	29.410	29.422	29.048	29.058	27.858
G1.0	11	33.249	31.751	31.771	30.272	30.292	32.896	32.908	31.736	31.746	30.272	33.239	33.249	31.736	31.746	30.272	32.227	32.239	31.766	31.776	30.272	32.240	32.252	31.779	31.789	30.272
G1 1/8	11	37.897	36.399	36.419	34.920	34.940	37.544	37.556	36.384	36.394	34.920	37.887	37.897	36.384	36.394	34.920	36.875	36.887	36.414	36.424	34.920	36.888	36.900	36.427	36.437	34.920
G1 1/4	11	41.910	40.412	40.432	38.933	38.953	41.557	41.569	40.397	40.407	38.933	41.900	41.910	40.397	40.407	38.933	40.888	40.900	40.427	40.437	38.933	40.901	40.913	40.440	40.450	38.933
G1 1/2	11	47.803	46.305	46.325	44.826	44.846	47.450	47.462	46.290	46.300	44.826	47.793	47.803	46.290	46.300	44.826	46.781	46.793	46.320	46.330	44.826	46.794	46.806	46.333	46.343	44.826
G1 3/4	11	53.746	52.248	52.268	50.769	50.789	53.393	53.405	52.233	52.243	50.769	53.736	53.746	52.233	52.243	50.769	52.724	52.736	52.263	52.273	50.769	52.737	52.749	52.276	52.286	50.769
G2.0	11	59.614	58.116	58.136	56.637	56.657	59.261	59.273	58.101	58.111	56.637	59.604	59.614	58.101	58.111	56.637	58.592	58.604	58.131	58.141	56.637	58.605	58.617	58.144	58.154	56.637
G2 1/4	11	65.710	64.206	64.230	62.728	62.753	65.354	65.369	64.188	64.200	62.728	65.697	65.710	64.188	64.200	62.728	64.685	64.700	64.224	64.237	62.728	64.700	64.715	64.239	64.252	62.728
G2 1/2	11	75.184	73.680	73.704	72.202	72.227	74.828	74.843	73.662	73.674	72.202	75.171	75.184	73.662	73.674	72.202	74.159	74.174	73.698	73.711	72.202	74.174	74.189	73.714	73.726	72.202
G2 3/4	11	81.534	80.030	80.054	78.552	78.577	81.178	81.193	80.012	80.024	78.552	81.521	81.534	80.012	80.024	78.552	80.509	80.524	80.048	80.061	78.552	80.524	80.539	80.064	80.076	78.552
G3.0	11	87.884	86.380	86.404	84.902	84.927	87.528	87.543	86.362	86.374	84.902	87.871	87.884	86.362	86.374	84.902	86.859	86.874	86.398	86.411	84.902	86.874	86.889	86.414	86.426	84.902
G3 1/2	11	100.330	98.826	98.850	97.348	97.373	99.974	99.989	98.808	98.820	97.348	100.317	100.330	98.808	98.820	97.348	99.305	99.320	98.844	98.857	97.348	99.320	99.335	98.860	98.872	97.348
G4.0	11	113.030	111.526	111.550	110.048	110.073	112.674	112.689	111.508	111.520	110.048	113.017	113.030	111.508	111.520	110.048	112.005	112.020	111.544	111.557	110.048	112.020	112.035	111.560	111.572	110.048
G4 1/2	11	125.730	124.226	124.250	122.748	122.773	125.374	125.389	124.208	124.220	122.748	125.717	125.730	124.208	124.220	122.748	124.705	124.720	124.244	124.257	122.748	124.720	124.735	124.260	124.272	122.748
G5.0	11	138.430	136.926	136.950	135.448	135.473	138.074	138.089	136.908	136.920	135.448	138.417	138.430	136.908	136.920	135.448	137.405	137.420	136.944	136.957	135.448	137.420	137.435	136.960	136.972	135.448
G5 1/2	11	151.130	149.626	149.650	148.148	148.173	150.774	150.789	149.608	149.620	148.148	151.117	151.130	149.608	149.620	148.148	150.105	150.120	149.644	149.657	148.148	150.120	150.135	149.660	149.672	148.148
G6.0	11	163.830	162.326	162.350	160.848	160.873	163.474	163.489	162.308	162.320	160.848	163.817	163.830	162.308	162.320	160.848	162.805	162.820	162.344	162.357	160.848	162.820	162.835	162.360	162.372	160.848

NOTE: Setting plus limits for calliper gauges are shown in Table A6.

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TABLE A2

**EXTERNAL THREAD, CLASS A: LIMITS OF SIZE FOR NOT GO SCREW RING AND CALLIPER GAUGES AND  
ASSOCIATED PLUG CHECK GAUGES**

Designation of thread	Number of threads in 25.4 mm	NOT GO screw ring and NOT GO screw calliper gauges, mm					GO screw check for NOT GO screw ring, mm					NOT GO screw check for NOT GO screw ring, mm					Wear screw check for NOT GO screw ring, mm				
		Major diameter Min.	Pitch diameter		Minor diameter		Major diameter Min.	Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter		Minor diameter Max.	
			Min.	Max.	Min.	Max.		Min.	Max.		Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.		
G1/16	28	7.738	7.020	7.035	6.831	6.861	7.708	7.738	7.006	7.015	6.561	7.606	7.626	7.030	7.039	6.561	7.612	7.632	7.036	7.045	6.561
G1/8	28	9.743	9.025	9.040	8.836	8.866	9.713	9.743	9.011	9.020	8.566	9.611	9.631	9.036	9.044	8.566	9.616	9.636	9.041	9.050	8.566
G1/4	19	13.172	12.161	12.176	11.886	11.916	13.142	13.172	12.147	12.156	11.445	13.022	13.042	12.172	12.180	11.445	13.028	13.048	12.177	12.186	11.445
G3/8	19	16.677	15.666	15.681	15.391	15.421	16.647	16.677	15.652	15.661	14.950	16.527	16.547	15.676	15.686	14.950	16.532	16.552	15.682	15.691	14.950
G1/2	14	20.975	19.631	19.651	19.258	19.298	20.935	20.975	19.616	19.626	18.632	20.801	20.825	19.646	19.656	18.632	20.808	20.832	19.653	19.663	18.632
G5/8	14	22.931	21.587	21.607	21.214	21.254	22.891	22.931	21.572	21.582	20.588	22.757	22.781	21.602	21.612	20.588	22.764	22.788	21.609	21.619	20.588
G3/4	14	26.461	25.117	25.137	24.744	24.784	26.421	26.461	25.102	25.112	24.118	26.287	26.311	25.132	25.142	24.118	26.294	26.318	25.139	25.149	24.118
G7/8	14	30.221	28.877	28.897	28.504	28.544	30.181	30.221	28.862	28.872	27.878	30.047	30.071	28.892	28.902	27.878	30.054	30.078	28.899	28.909	27.878
G1.0	11	33.269	31.570	31.590	31.098	31.138	33.229	33.269	31.555	31.565	30.292	33.057	33.081	31.585	31.595	30.292	33.064	33.088	31.592	31.602	30.292
G1 1/8	11	37.917	36.218	36.238	35.746	35.786	37.877	37.917	36.203	36.213	34.940	37.705	37.729	36.233	36.243	34.940	37.712	37.736	36.240	36.250	34.940
G1 1/4	11	41.930	40.231	40.251	39.759	39.799	41.890	41.930	40.216	40.226	38.953	41.718	41.742	40.246	40.256	38.953	41.725	41.749	40.253	40.263	38.953
G1 1/2	11	47.823	46.124	46.144	45.652	45.692	47.783	47.823	45.109	46.119	44.846	47.611	47.635	46.139	46.149	44.846	47.618	47.642	46.146	46.156	44.846
G1 3/4	11	53.766	52.067	52.087	51.595	51.635	53.726	53.766	52.052	52.062	50.789	53.554	53.578	52.082	52.092	50.789	53.561	53.585	52.089	52.099	50.789
G2.0	11	59.634	57.935	57.955	57.463	57.503	59.594	59.634	57.920	57.930	56.657	59.422	59.446	57.950	57.960	56.657	59.429	59.453	57.957	57.967	56.657
G2 1/4	11	65.735	63.989	64.014	63.515	63.565	65.685	65.735	63.971	63.984	62.753	65.478	65.508	64.008	64.020	62.753	65.486	65.516	64.016	64.029	62.753
G2 1/2	11	75.209	73.463	73.488	72.989	73.039	75.159	75.209	73.445	73.458	72.227	74.952	74.982	73.482	73.494	72.227	74.960	74.990	73.490	73.503	72.227
G2 3/4	11	81.559	79.813	79.838	79.339	79.389	81.509	81.559	79.795	79.808	78.577	81.302	81.332	79.832	79.844	78.577	81.310	81.340	79.840	79.853	78.577
G3.0	11	87.909	86.163	86.188	85.689	85.739	87.859	87.909	86.145	86.158	84.927	87.652	87.682	86.182	86.194	84.927	87.660	87.690	86.190	86.203	84.927
G3 1/2	11	100.355	98.609	98.634	98.135	98.185	100.305	100.355	98.591	98.604	97.373	100.098	100.128	98.628	98.640	97.373	100.106	100.136	98.636	98.649	97.373
G4.0	11	113.055	111.309	111.334	110.835	110.885	113.005	113.055	111.291	111.304	110.073	112.798	112.828	111.328	111.340	110.073	112.806	112.836	111.336	111.349	110.073
G4 1/2	11	125.755	124.009	124.034	123.535	123.585	125.705	125.755	123.991	124.004	122.773	125.498	125.528	124.028	124.040	122.773	125.506	125.536	124.036	124.049	122.773
G5.0	11	138.455	136.709	136.734	136.235	136.285	138.405	138.455	136.691	136.704	135.473	138.198	138.228	136.728	136.740	135.473	138.206	138.236	136.736	136.749	135.473
G5 1/2	11	151.155	149.409	149.434	148.935	148.985	151.105	151.155	149.391	149.404	148.173	150.898	150.928	149.428	149.440	148.173	150.906	150.936	149.436	149.449	148.173
G6.0	11	163.855	162.109	162.134	161.635	161.685	163.805	163.855	162.091	162.140	160.873	163.598	163.628	162.128	162.140	160.873	163.606	163.636	162.136	162.149	160.873

NOTE: Setting plug limits for calliper gauges are shown in Table A6.

TABLE A3

## EXTERNAL THREAD, CLASS B: LIMITS OF SIZE FOR NOT GO SCREW RING AND CALLIPER GAUGES AND ASSOCIATED PLUG CHECK GAUGES

Designation of thread	Number of threads in 25.4 mm	NOT GO screw ring and NOT GO screw calliper gauges, mm				GO screw check for NOT GO screw ring, mm					NOT GO screw check for NOT GO screw ring, mm					Wear check for NOT GO screw ring, mm					
		Major diameter Min.	Pitch diameter		Minor diameter		Major diameter		Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter		Minor diameter Max.
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.	
G1/16	28	7.748	6.903	6.928	6.709	6.759	7.698	7.748	6.885	6.898	6.561	7.494	7.524	6.922	6.934	6.561	7.502	7.532	6.930	6.943	6.561
G1/8	28	9.753	8.908	8.933	8.714	8.764	9.703	9.753	8.890	8.903	8.566	9.499	9.529	8.926	8.940	8.566	9.508	9.538	8.935	8.948	8.566
G1/4	19	13.182	12.026	12.051	11.746	11.796	13.132	13.182	12.008	12.021	11.445	12.892	12.922	12.044	12.058	11.445	12.900	12.930	12.053	12.066	11.445
G3/8	19	16.687	15.531	15.556	15.251	15.301	16.637	16.687	15.513	15.526	14.950	16.397	16.427	15.550	15.562	14.950	16.406	16.435	15.558	15.571	14.950
G1/2	14	20.980	19.484	19.509	19.109	19.159	20.930	20.980	19.466	19.479	18.632	20.656	20.686	19.502	19.516	18.632	20.664	20.694	19.511	19.524	18.632
G5/8	14	22.936	21.440	21.465	21.065	21.115	22.886	22.936	21.422	21.435	20.588	22.612	22.642	21.458	21.471	20.588	22.620	22.650	21.467	21.480	20.588
G3/4	14	26.466	24.970	24.995	24.595	24.645	26.416	26.466	24.952	24.965	24.118	26.142	26.172	24.988	25.002	24.118	26.150	26.180	24.997	25.010	24.118
G7/8	14	30.226	28.730	28.755	28.355	28.405	30.176	30.226	28.712	28.725	27.878	29.902	29.932	28.748	28.761	27.878	29.910	29.940	28.757	28.770	27.878
G1.0	11	33.282	31.377	31.410	30.899	30.965	33.216	33.282	31.355	31.372	30.292	32.869	32.909	31.401	31.418	30.292	32.880	32.920	31.413	31.430	30.292
G1 1/8	11	37.930	36.025	36.058	35.547	35.613	37.864	37.930	36.003	36.020	34.940	37.517	37.557	36.050	36.066	34.940	37.528	37.568	36.061	36.078	34.940
G1 1/4	11	41.943	40.038	40.071	39.560	39.626	41.877	41.943	40.016	40.033	38.953	41.530	41.570	40.062	40.080	38.953	41.542	41.582	40.074	40.091	38.953
G1 1/2	11	47.836	45.931	45.964	45.453	45.519	47.770	47.836	45.909	45.926	44.846	47.423	47.463	45.956	45.972	44.846	47.434	47.474	45.967	45.984	44.846
G1 3/4	11	53.779	51.874	51.907	51.396	51.462	53.713	53.779	51.852	51.869	50.789	53.366	53.406	51.898	51.916	50.789	53.378	53.418	51.910	51.927	50.789
G2.0	11	59.647	57.742	57.775	57.264	57.330	59.581	59.647	57.720	57.737	56.657	59.234	59.274	57.766	57.784	56.657	59.246	59.286	57.778	57.795	56.657
G2 1/4	11	65.743	63.764	63.797	63.286	63.352	65.677	65.743	63.742	63.759	62.753	65.256	65.296	63.788	63.806	62.753	65.268	65.307	63.800	63.817	62.753
G2 1/2	11	75.217	73.238	73.271	72.760	72.826	75.151	75.217	73.216	73.233	72.227	74.730	74.770	73.262	73.280	72.227	74.742	74.782	73.274	73.291	72.227
G2 3/4	11	81.567	79.588	79.621	79.110	79.176	81.501	81.567	79.566	79.583	78.577	81.030	81.120	79.612	79.630	78.577	81.092	81.132	79.624	79.641	78.577
G3.0	11	87.917	85.938	85.971	85.460	85.526	87.851	87.917	85.916	85.933	84.927	87.430	87.470	85.962	85.980	84.927	87.442	87.482	85.974	85.991	84.927
G3 1/2	11	100.363	98.384	98.417	97.906	97.972	100.297	100.363	98.362	98.379	97.373	99.876	99.916	98.408	98.426	97.373	99.887	99.928	98.420	98.437	97.373
G4.0	11	113.063	111.084	111.117	110.606	110.672	112.997	113.063	111.062	111.079	110.073	112.576	112.616	111.108	111.126	110.073	112.588	112.628	111.120	111.137	110.073
G4 1/2	11	125.763	123.784	123.817	123.306	123.372	125.697	125.763	123.762	123.779	122.773	125.276	125.316	123.808	123.826	122.773	125.288	125.328	123.820	123.837	122.773
G5.0	11	138.463	136.484	136.517	136.006	136.072	138.397	138.463	136.462	136.479	135.473	137.976	138.016	136.508	136.526	135.473	137.988	138.028	136.520	136.537	135.473
G5 1/2	11	151.163	149.184	149.217	148.706	148.772	151.097	151.163	149.162	149.179	148.173	150.676	150.716	149.208	149.226	148.173	150.688	150.728	149.220	149.237	148.173
G6.0	11	163.863	161.884	161.917	161.406	161.472	163.797	163.863	161.862	161.879	160.873	163.376	163.416	161.908	161.926	160.873	163.388	163.428	161.920	161.937	160.873

NOTE: Setting plug limits for calliper gauges are shown in Table A6.

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**TABLE A4**  
**LIMITS OF SIZE FOR GO AND NOT GO PLAIN CALLIPER (GAP)**  
**GAUGES FOR MAJOR DIAMETERS**

Designation of thread	Number of threads in 25.4 mm	GO mm		NOT GO mm	
		Max.	Min.	Max.	Min.
G1/16	28	7.723	7.715	7.509	7.501
G1/8	28	9.728	9.720	9.514	9.506
G1/4	19	13.157	13.149	12.907	12.899
G3/8	19	16.662	16.654	16.412	16.404
G1/2	14	20.955	20.947	20.671	20.663
G5/8	14	22.911	22.903	22.627	22.619
G3/4	14	26.441	26.433	26.157	26.149
G7/8	14	30.201	30.193	29.917	29.909
G1.0	11	33.249	33.241	32.889	32.881
G1 1/8	11	37.897	37.889	37.537	37.529
G1 1/4	11	41.910	41.900	41.550	41.540
G1 1/2	11	47.803	47.793	47.443	47.433
G1 3/4	11	53.746	53.736	53.386	53.376
G2.0	11	59.614	59.604	59.254	59.244
G2 1/4	11	65.710	65.700	65.276	65.266
G2 1/2	11	75.184	75.171	74.750	74.737
G2 3/4	11	81.534	81.521	81.100	81.087
G3.0	11	87.884	87.871	87.450	87.437
G3 1/2	11	100.330	100.317	99.896	99.883
G4.0	11	113.030	113.017	112.596	112.583
G4 1/2	11	125.730	125.717	125.296	125.283
G5.0	11	138.430	138.417	137.996	137.983
G5 1/2	11	151.130	151.117	150.696	150.683
G6.0	11	163.830	163.817	163.396	163.383

**TABLE A5**  
**INTERNAL THREAD: LIMITS OF SIZE FOR GO AND NOT GO SCREW PLUG GAUGES**

Designation of thread	Number of threads in 25.4 mm	GO screw plug, mm					NOT GO screw plug, mm			
		Major diameter		Pitch diameter		Minor diameter Max.	Major diameter		Pitch diameter	
		Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
G1/16	28	7.718	7.738	7.145	7.155	6.561	7.425	7.445	7.249	7.259
G1/8	28	9.723	9.743	9.150	9.160	8.566	9.430	9.450	9.254	9.264
G1/4	19	13.152	13.172	12.304	12.314	11.445	12.688	12.708	12.426	12.436
G3/8	19	16.657	16.677	15.809	15.819	14.950	16.193	16.213	15.931	15.941
G1/2	14	20.949	20.973	19.800	19.812	18.632	20.292	20.316	19.935	19.947
G5/8	14	22.905	22.929	21.756	21.768	20.588	22.248	22.272	21.891	21.903
G3/4	14	26.435	26.459	25.286	25.298	24.118	25.778	25.802	25.421	25.433
G7/8	14	30.195	30.219	29.046	29.058	27.878	29.538	29.562	29.181	29.193
G1.0	11	33.243	33.267	31.777	31.789	30.292	32.406	32.430	31.950	31.962
G1 1/8	11	37.891	37.915	36.425	36.437	34.940	37.054	37.078	36.598	36.610
G1 1/4	11	41.904	41.928	40.438	40.450	38.953	41.067	41.091	40.611	40.623
G1 1/2	11	47.797	47.821	46.331	46.363	44.846	46.960	46.984	46.504	46.516
G1 3/4	11	53.740	53.764	52.274	52.286	50.789	52.903	52.927	52.447	52.459
G2.0	11	59.608	59.632	58.142	58.154	56.657	58.771	58.795	58.315	58.327
G2 1/4	11	65.702	65.732	64.242	64.256	62.753	64.902	64.932	64.448	64.463
G2 1/2	11	75.176	75.206	73.716	73.730	72.227	74.376	74.406	73.922	73.937
G2 3/4	11	81.526	81.556	80.066	80.080	78.577	80.726	80.756	80.272	80.287
G3.0	11	87.876	87.906	86.416	86.430	84.927	87.076	87.106	86.622	86.637
G3 1/2	11	100.322	100.352	98.862	98.876	97.373	99.522	99.552	99.068	99.083
G4.0	11	113.022	113.052	111.562	111.576	110.073	112.222	112.252	111.768	111.783
G4 1/2	11	125.722	125.752	124.262	124.276	122.773	124.922	124.952	124.468	124.483
G5.0	11	138.422	138.452	136.962	136.976	135.473	137.622	137.652	137.168	137.183
G5 1/2	11	151.122	151.152	149.662	149.676	148.173	150.322	150.352	149.868	149.883
G6.0	11	163.822	163.852	162.362	162.376	160.873	163.022	163.052	162.568	162.583

**TABLE A6**  
**EXTERNAL THREAD: SETTING PLUGS FOR SCREW CALLIPER GAUGES**

Designation of thread	Number of threads in 25.4 mm	Setting plug for GO calliper gauge, Classes A and B, mm			Setting plug for NOT GO calliper gauge, mm					Setting plug for GO/NOT GO calliper gauge, Classes A and B, major diameter, mm	
		Pitch diameter		Pitch diameter equivalent of pitch and angle error	Class A		Class B		Pitch diameter equivalent of pitch and angle error	Min.	Max.
					Pitch diameter		Pitch diameter				
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
G1/16	28	7.132	7.137	0.008	7.020	7.025	6.903	6.908	0.005	7.517	7.542
G1/8	28	9.138	9.143	0.008	9.025	9.030	8.908	8.913	0.005	9.522	9.547
G1/4	19	12.292	12.297	0.008	12.161	12.166	12.026	12.031	0.005	12.865	12.890
G3/8	19	15.796	15.801	0.008	15.666	15.671	15.531	15.536	0.005	16.370	16.395
G1/2	14	19.774	19.779	0.008	19.631	19.636	19.484	19.489	0.005	20.567	20.592
G5/8	14	21.730	21.735	0.008	21.587	21.592	21.440	21.445	0.005	22.523	22.548
G3/4	14	25.260	25.265	0.008	25.117	25.122	24.970	24.975	0.005	26.053	26.078
G7/8	14	29.020	29.025	0.008	28.877	28.882	28.730	28.735	0.005	29.813	29.838
G1.0	11	31.751	31.756	0.008	31.570	31.575	31.377	31.382	0.005	32.762	32.787
G1 1/8	11	36.399	36.404	0.008	36.218	36.223	36.025	36.030	0.005	37.410	37.435
G1 1/4	11	40.412	40.420	0.010	40.231	40.239	40.038	40.046	0.008	41.423	41.448
G1 1/2	11	46.305	46.313	0.010	46.124	46.132	45.931	45.939	0.008	47.316	47.341
G1 3/4	11	52.248	52.256	0.010	52.067	52.075	51.874	51.882	0.008	53.259	53.284
G2.0	11	58.116	58.124	0.010	57.935	57.943	57.742	57.750	0.008	59.127	59.152
G2 1/4	11	64.206	64.214	0.010	63.989	63.997	63.764	63.772	0.008	65.223	65.248
G2 1/2	11	73.680	73.688	0.010	73.463	73.471	73.238	73.246	0.008	74.697	74.722
G2 3/4	11	80.030	80.040	0.013	79.813	79.823	79.588	79.598	0.008	81.047	81.072
G3.0	11	86.380	86.390	0.013	86.163	86.173	85.938	85.948	0.008	87.397	87.422
G3 1/2	11	98.826	98.836	0.013	98.609	98.619	98.384	98.394	0.008	99.843	99.868
G4.0	11	111.526	111.536	0.013	111.309	111.319	111.084	111.094	0.008	112.543	112.568
G4 1/2	11	124.226	124.236	0.013	124.009	124.019	123.784	123.794	0.008	125.243	125.268
G5.0	11	136.926	136.936	0.013	136.709	136.719	136.484	136.494	0.010	137.943	137.968
G5 1/2	11	149.626	149.636	0.013	149.409	149.419	149.184	149.194	0.010	150.643	150.668
G6.0	11	162.326	162.336	0.013	162.109	162.119	161.884	161.894	0.010	163.343	163.368

**TABLE A7**  
**LIMITS OF SIZE FOR NOT GO PLAIN PLUG FOR MINOR DIAMETER**

Designation of thread	1	2	3	4
		Number of threads in 25.4 mm	Max. mm	Min. mm
G1/16		28	6.851	6.843
G1/8		28	8.856	8.848
G1/4		19	11.898	11.890
G3/8		19	15.403	15.395
G1/2		14	19.180	19.172
G5/8		14	21.136	21.128
G3/4		14	24.666	24.658
G7/8		14	28.426	28.418
G1.0		11	30.939	30.931
G1 1/8		11	35.587	35.579
G1 1/4		11	39.602	39.592
G1 1/2		11	45.495	45.485
G1 3/4		11	51.438	51.428
G2.0		11	57.306	57.296
G2 1/4		11	63.402	63.392
G2 1/2		11	72.879	72.866
G2 3/4		11	79.229	79.216
G3.0		11	85.579	85.566
G3 1/2		11	98.025	98.012
G4.0		11	110.725	110.712
G4 1/2		11	123.425	123.412
G5.0		11	136.125	136.112
G5 1/2		11	148.825	148.812
G6.0		11	161.525	161.512

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