
British Standard

Engineering drawing practice

Part 3. Recommendations for geometrical tolerancing

Pratique du dessin industriel

Partie 3. Recommandations pour le tolérancement géométrique

Technische Zeichnungen

Teil 3. Form- und Lagetoleranzen

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Engineering drawing practice
Part 3. Recommendations for geometrical tolerancing

Additional text

Foreword

Insert the following text at the end of the Foreword.

This Part of BS 308 is being superseded by the adoption of European implementations of international standards.

The following standard has been published as a British Standard.

European standard	Subject	Deleting action on BS 308 : Part 3
BS EN ISO 7083	G.T symbols	Appendix B

Further ISO standards expected to be adopted include the following.

ISO standard	Subject	Deleting action on BS 308 : Part 3
ISO 1101	G.T - general principles	Clauses 3 to 8, 10, 11
ISO 2692	G.T - maximum material principle	Clauses 17 to 21
ISO 5458	G.T - position	Clauses 22, 23
ISO 5459	G.T - datums	Clauses 12 to 16
ISO 10578	G.T -projected tolerance zone	Clause 9

Because BS 308 does not conflict in its technical recommendations the withdrawal of this Part of the standard is delayed until all the relevant ISO standards have been adopted.

AMD 8743/October 1995

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Foreword

This revision of BS 308 : Part 3 has been prepared under the direction of the General Mechanical Engineering Standards Policy Committee; it reflects the established conventions and also takes account of both national and international developments since the 1972 revision, which is now withdrawn.

The proven record of standards applied to engineering drawing now enables its recognition as the graphical language of communication in engineering both nationally and internationally. Drawings made to the accepted standards in one country, when based on ISO standards, are understood and can be used around the world in virtually all countries. With this in mind it was recognized and accepted to be important as a policy for this revision that particular attention and care should be paid to the quality of content of both text and figures to ensure their clarity and ease of understanding.

The UK continues to participate actively in ISO committees on technical drawing for the establishment of international published standards and much of the contents of this standard reflects those agreements reached internationally with which the UK has concurred. Some notes appear in this standard to draw attention to occasional divergence of practice. Appendix A provides information on aspects of engineering drawing practice covered by British and international standards.

The recommendations of this standard have been established having regard to the requirements of microfilming. Drawings prepared in accordance with this standard should be suitable for microfilming and reduced size reproduction techniques.

During the course of this revision particular attention has been paid to developments in computer aided machine draughting and it has been established that computerized draughting machines are currently capable of complying with the recommendations of this standard. Any minor exceptions due to the limitations of a particular system would not be expected to prejudice the understanding of a drawing otherwise claimed to meet this standard.

The 1972 revision was coincidentally undertaken during the main period of transition of UK industry to the metric system and a limited recognition of the imperial system of units was included but this has not been retained in the present revision.

In the ISO committee for technical drawing it is the intention to unify, in one set of standards, the practices and conventions of all disciplines using technical drawings and their standards currently attempt to reflect that policy. In the UK the traditional separations are maintained and it should be carefully noted that BS 308 continues to provide recommendations for engineering drawings in the manufacturing industries associated with mechanical, electrical, electronics, hydraulics, pneumatics and nuclear engineering disciplines, as previously.

The requirements of the building, architectural, civil and structural engineering and construction services industries continue to be covered by BS 1192. BS 308 does not cover special disciplines such as in naval architecture and aeronautical lofting. There are standards published for some industries using BS 308 as a basis but requiring additional recommendations and conventions particular to the discipline. BS 4301, which gives recommendations for the preparation of drawings for optical elements and systems, and BS 2774, which gives drawing conventions for laboratory glassware, are examples.

BS 5070, dealing with engineering diagram drawing practice, is a companion standard to BS 308 and caters for the same industries, providing recommendations on a wide variety of engineering diagrams. Commonly, as a diagram can be called a 'drawing' and a drawing can be called a 'diagram', it is useful to summarize the difference in the scopes of these standards. BS 308 covers what are commonly accepted to be drawings that define shape, size and form. BS 5070 covers the drawing of diagrams that are normally associated with flow of one sort or another and which relate components (usually indicated by symbols) functionally one to another by the use of lines, but do not depict their shape, size or form; neither do they in general indicate actual connections or locations. For convenience of use, this revision of BS 308 follows the precedent established in 1972 of publishing in three Parts. This Part leads on from Part 2 where geometrical tolerancing is referred to in clause 11.

The recommendations are generally in accordance with the following international standards:

ISO 1101
ISO 2692
ISO 5458
ISO 5459

Part 1 of this standard deals with the general principles of engineering drawing practice.

Part 2 of this standard deals with dimensioning, tolerancing and interpretations and the application of surface roughness symbols.

Particular attention is drawn to clause 11 on interpretation of limits of size for the control of form in BS 308 : Part 2 : 1985, in which, together with a clarification of the traditional interpretation, a new tolerancing concept has been introduced, in which specified dimensional and geometrical requirements are met independently. This principle of independency, as it is known, has been developed internationally and is the subject of ISO 8015, in the drafting of which the UK has collaborated. It is to be noted however that, whereas ISO 8015 essentially specifies the new concept with only concessionary reference to the commonly accepted relationship between tolerances of size and form, the BSI drafting committee has deemed it necessary that BS 308 presents both concepts with equal status.

Compliance with a British Standard does not of itself confer immunity from legal obligations

Notes on the presentation of this standard

NOTE 1. The figures in this standard are independent and each is selected solely for its simplicity and clarity to illustrate only the text to which it relates. They are not the only possible examples and they are not intended as design examples or to be fully dimensioned working drawings but otherwise are drawn according to the basic recommendations of this standard.

NOTE 2. Linear dimensions shown in the figures are in millimetres.

NOTE 3. Numerical values of dimensions and tolerances given in the figures throughout are arbitrarily chosen to assist in illustrating the point under consideration; they are typical and are not given as recommendations.

NOTE 4. In the illustrations to this standard, a convention is adopted of using capital letters for notes that would appear as part of the drawing and lower case letters are used for notes explaining the point under consideration in relation to the text.

NOTE 5. This standard recognizes both the first and third angle projection methods as having equal status, see clause 7 of BS 308 : Part 1 : 1984, as does ISO 128. The first angle projection method is that normally used for British Standards and is thus used in this publication in the interests of uniformity of presentation.

NOTE 6. Due to the limitations of size of the figures in this standard, the sizes of arrowheads may not conform to the recommendations of 5.4 in BS 308 : Part 1 : 1984.

Section one. General principles and methods of indication

1 Scope

This Part of BS 308 gives recommendations for the general principles, definitions and the methods of indication of geometrical tolerances on engineering drawings*.

The concept of datum targets is included.

The size and proportions of symbols for geometrical tolerancing are given in appendix B.

NOTE 1. The titles of the publications referred to in this standard are listed on the inside back cover.

NOTE 2. A recommendation on marking is given in 2.3.

2 Definitions, general and marking

2.1 Definitions

For the purposes of this Part of BS 308, the definitions in BS 308 : Part 2 apply, together with those given in 12.2 and 17.2, and the following.

2.1.1 geometrical tolerancing. The system used to control deviations in geometry†.

2.1.2 geometrical reference frame. An interpretive diagram constructed from dimensions which define the theoretically exact positional relationships between the features in any one group (see figure 1).

NOTE. Whilst a geometrical reference frame is not intended to appear on a drawing it may aid the interpretation of complex positional tolerancing requirements.

2.2 General

2.2.1 *Geometrical tolerancing can be interpreted in one of two ways, depending on which of the two interpretations of limits of size for control of form is used (see clause 11 of BS 308 : Part 2 : 1985). Therefore it is essential to know which alternative is to be applied before using geometrical tolerances.*

2.2.2 A geometrical tolerance defines the form and size of a tolerance zone within which a feature (see 2.1 of BS 308 : Part 2 : 1985) is to be contained.

2.2.3 Depending on the characteristic which is to be geometrically toleranced and the manner in which the feature is dimensioned, the tolerance zone may be one of the following:

- (a) the area within a circle;
- (b) the area between two concentric circles;
- (c) the area between two parallel lines;
- (d) the space within a cylinder;
- (e) the space between two coaxial cylinders;
- (f) the space between two parallel surfaces or two parallel planes;
- (g) the space within a parallelepiped.

2.2.4 The toleranced feature may be of any form or orientation within the tolerance zone, unless a more restrictive indication is given, e.g. by an appended note (see figure 2(e)).

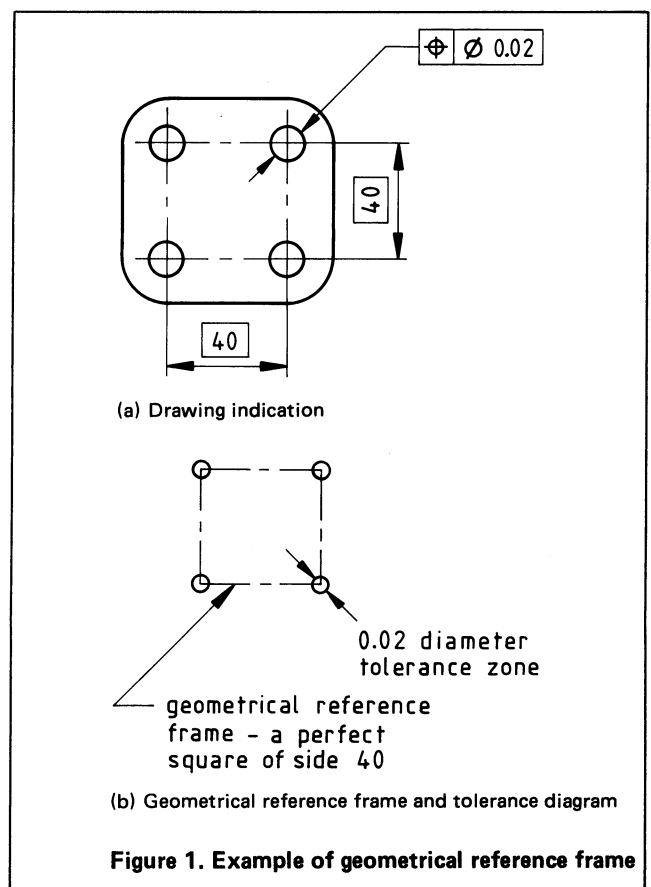
2.2.5 The tolerance should apply for the whole length or surface of the feature, unless otherwise specified.

2.2.6 Geometrical tolerances which are specified for related features (see table 1) do not limit the deviations of geometrical form of the datum feature. It may therefore be necessary to specify tolerances of form for a datum feature so as to ensure that it is sufficiently accurate for its purpose.

2.2.7 Some geometrical tolerances control deviations of more than one characteristic. For example, a parallelism or a perpendicularity tolerance applied to a flat surface also controls flatness deviations of that surface; however, a flatness tolerance does not control parallelism or perpendicularity deviations. Similarly, a symmetry tolerance limits flatness and parallelism deviations and a coaxiality tolerance limits deviation from straightness of the feature to which it is applied. Therefore, when two characteristics of a feature need to be controlled, it may be sufficient to apply only one geometrical tolerance which will keep both characteristics within the desired limits.

2.3 Marking

Drawings produced according to the recommendations of this standard should bear a statement to that effect, e.g. 'drawn to BS 308'. See also clause 14 of BS 308 : Part 2 : 1985.



*Civil and structural engineering and construction services drawings are excluded (see BS 1192). The special discipline aspects of naval architecture and aeronautical lofting are not included.

†PD 7304 gives a fuller introduction to geometrical tolerancing.

3 Symbols

Symbols to indicate characteristics to be tolerated are given in table 1. The symbols given in table 2 identify and qualify tolerated features, datums, zones and dimensions. The uses for these symbols are given in the relevant clauses (see also appendix B).

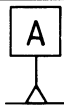
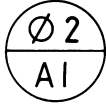
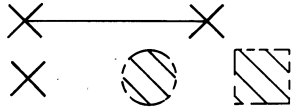
Table 1. Symbols for tolerated characteristics				
Feature and type of tolerance		Toleranced characteristic	Symbol	Clause
Single feature	Form tolerance	Straightness	—	10.2
		Flatness		10.3
		Circularity*		10.4
		Cylindricity		10.5
Single or related feature		Profile of any line†		10.6
		Profile of any surface†		10.7
Related feature	Orientation tolerance	Parallelism		10.8
		Perpendicularity‡		10.9
		Angularity		10.10
	Location tolerance	Position		10.11
		Concentricity and coaxiality §		10.12
		Symmetry		10.13
	Run-out tolerance	Circular run-out		10.14
		Total run-out		10.15

*Known also as roundness.

†A profile may be related to datum when it is necessary to control position in addition to form.

‡Perpendicularity is synonymous with normal and is also known as squareness.

§Concentricity is the state of having the same centre. Coaxiality is the state of having the same axis.

Table 2. Symbols that indicate, identify and qualify		
Description	Symbol	Clause
Tolerance frame		4
Toleranced feature indications	direct 	5
	identification by letter 	6.4
Datum feature indications	direct  or 	13.1
	identification by letter  or 	13.1
Theoretically exact dimension		8
Projected tolerance zone		9.2
Maximum material condition qualification		Section three
Envelope requirement		11.1
Datum target frame		16.2.2
Datum target indications		16.2.3

4 Tolerance frame

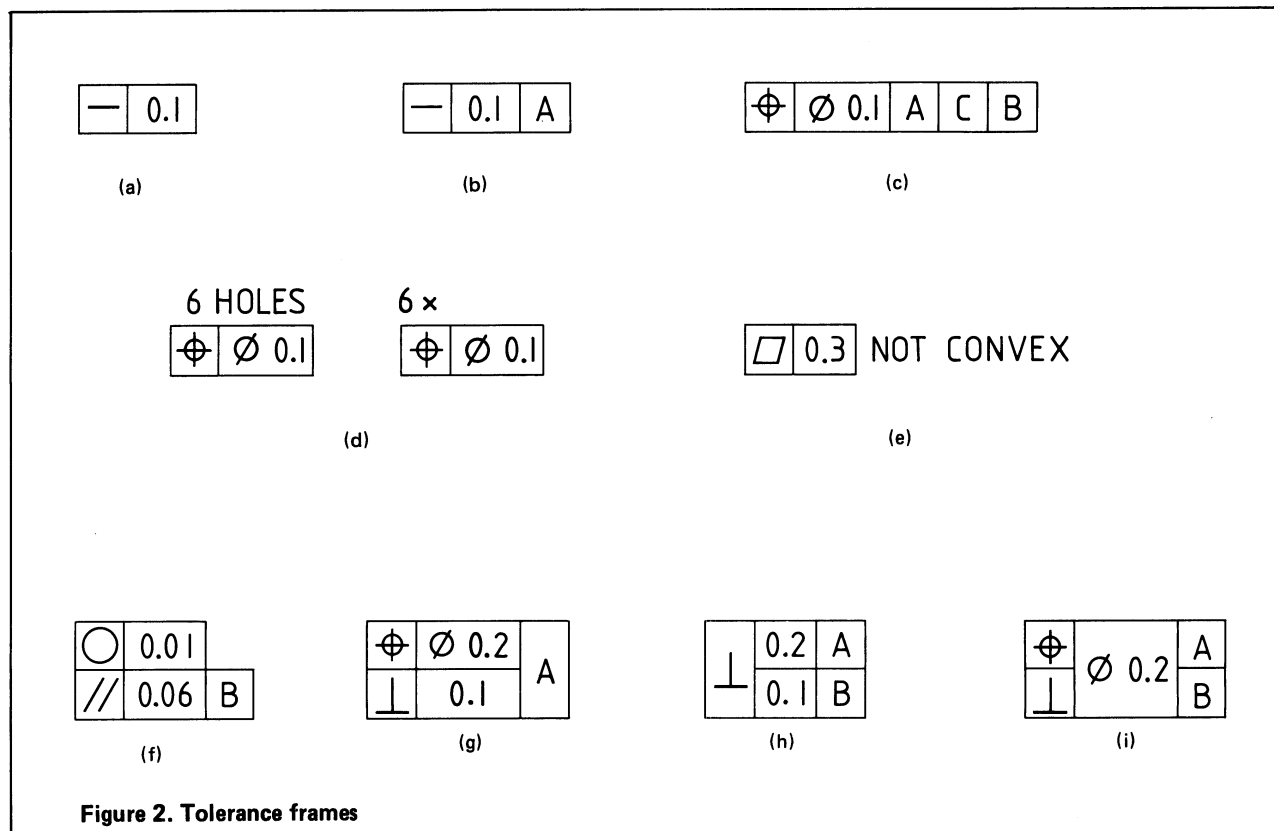
4.1 A tolerance frame is a rectangular symbol which contains indications that define the geometrical tolerance for a feature (see figure 2). The frame should be divided into compartments, containing from left to right:

- (a) the symbol for the characteristic to be toleranced;
- (b) the tolerance value in the unit used for linear dimensions; this value should be preceded by the diameter symbol if the tolerance zone is circular or cylindrical;
- (c) the letter or letters identifying the datum feature or features, where appropriate.

NOTE.  and  may appear in the tolerance frame as appropriate; see 9.2 and section three.

4.2 Other information concerning the toleranced feature should be placed above the tolerance frame as in figure 2(d), but information qualifying the form of the feature within the tolerance zone should be placed after the tolerance frame as in figure 2(e).

4.3 When it is necessary to specify more than one toleranced characteristic for a feature, the tolerance specifications should be positioned as shown in figure 2(f). Datums (figure 2(g)), toleranced characteristics (figure 2(h)) and tolerance values (figure 2(i)) which are common to two or more combined tolerance frames need be stated only once.



5 Toleranced features

The tolerance frame should be connected to the toleranced feature by a leader line which, in general, is aligned perpendicular to the toleranced feature. At the toleranced feature the leader line should be terminated by an arrowhead which is positioned as follows:

- (a) on the outline of the feature or an extension of the outline, *but not at a dimension line*, when the tolerance refers to the outline itself or to the surface represented by that outline as in figure 3(a) and (b);
- (b) as an extension of a dimension line when the tolerance refers to the axis (figure 3(c) and (d)) or median plane (figure 3(e)) of the feature so dimensioned;
- (c) on the axis or median plane when the tolerance refers to the common axis or median plane of all features lying on that axis or median plane (figure 3(f), (g), (h), (i)).

NOTE 1. Whether a tolerance should be applied to the surface of a cylindrical or symmetrical feature or to its axis or median plane depends on the functional requirements.

NOTE 2. Figures 3(c) and (f) are alternative methods of expressing the same requirement on a single-feature part.

6 Tolerance zones

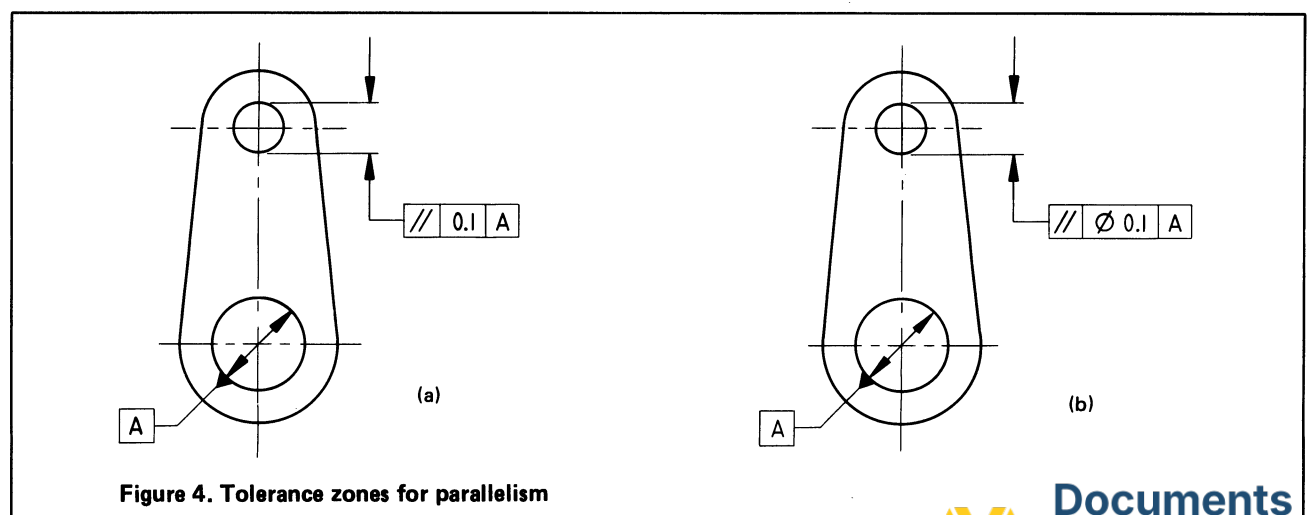
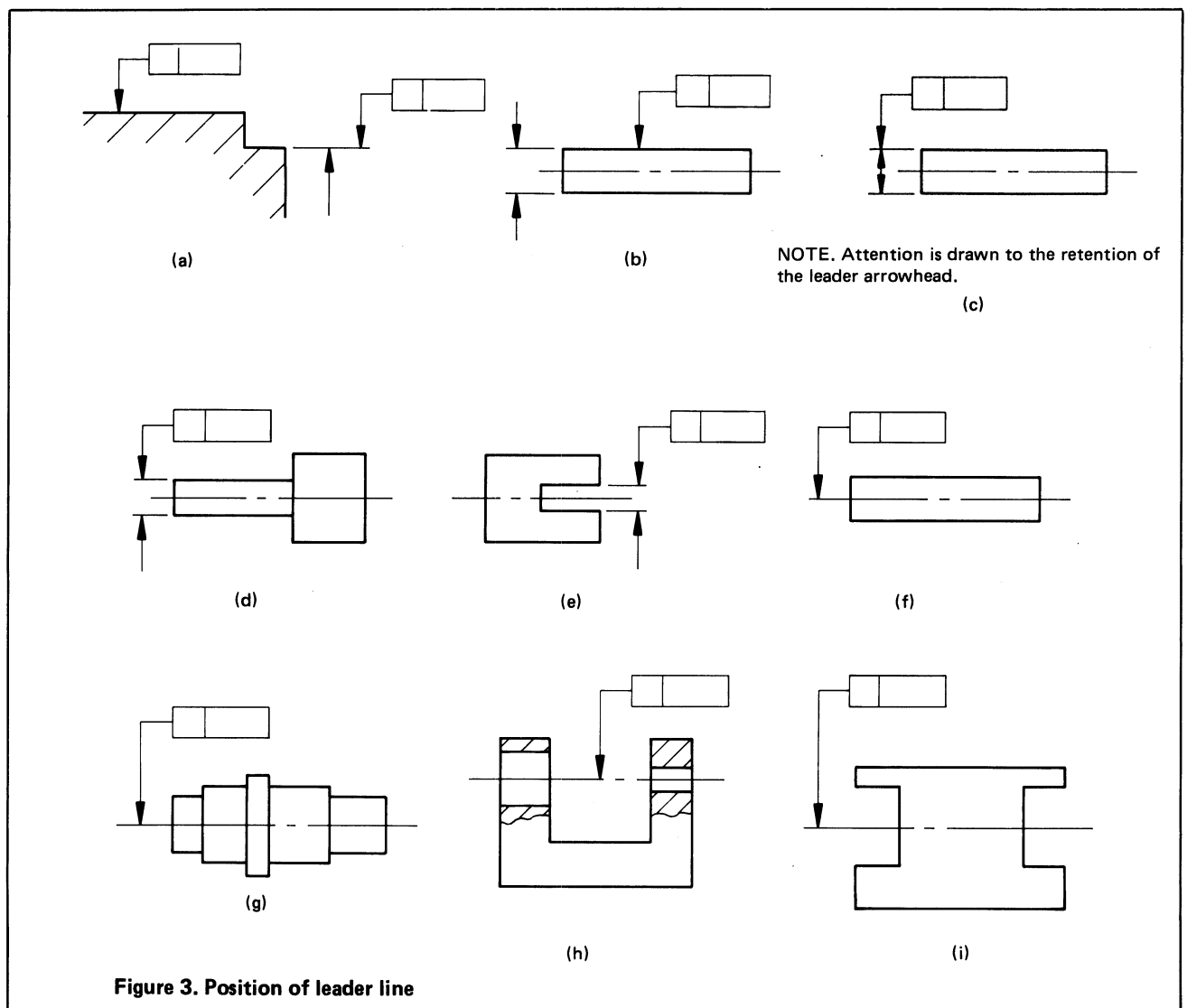
6.1 The width of the tolerance zone is indicated by the direction of the arrow of the leader line joining the tolerance frame to the feature which is toleranced (see figure 4(a)), unless the tolerance value is preceded by the diameter symbol (see figure 4(b), and 10.8.1).

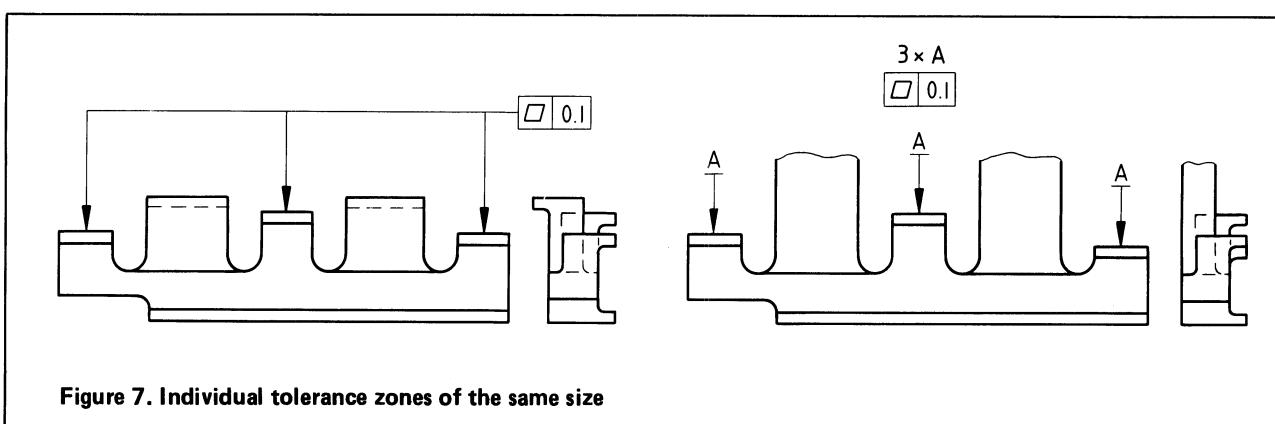
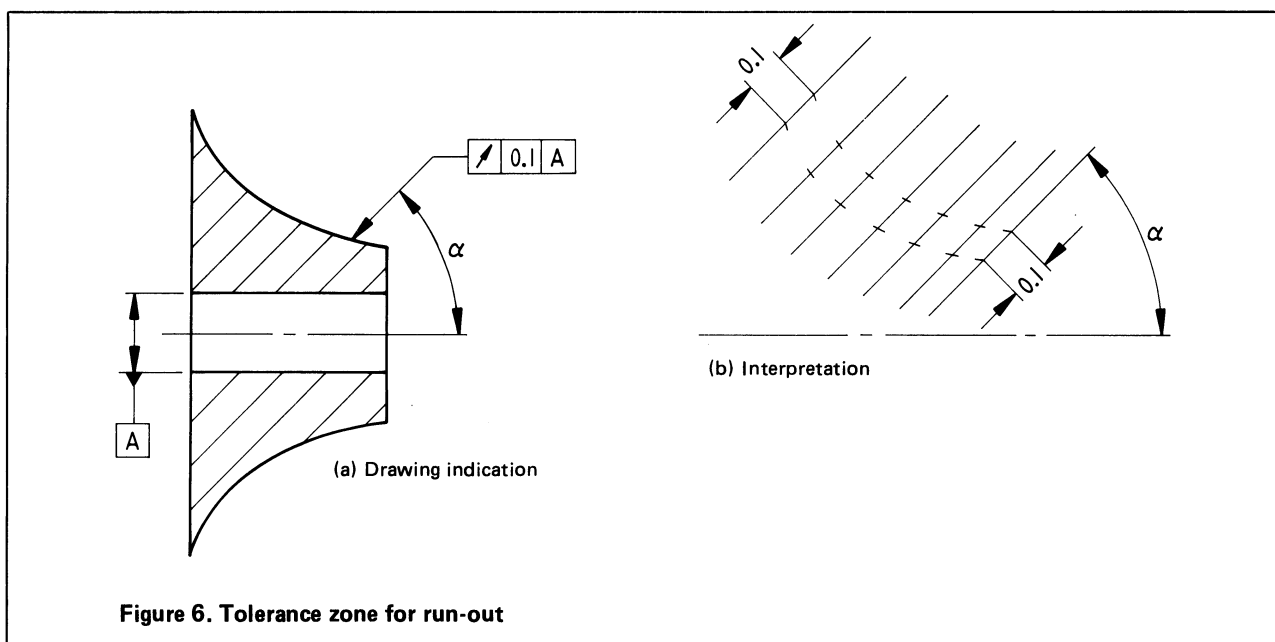
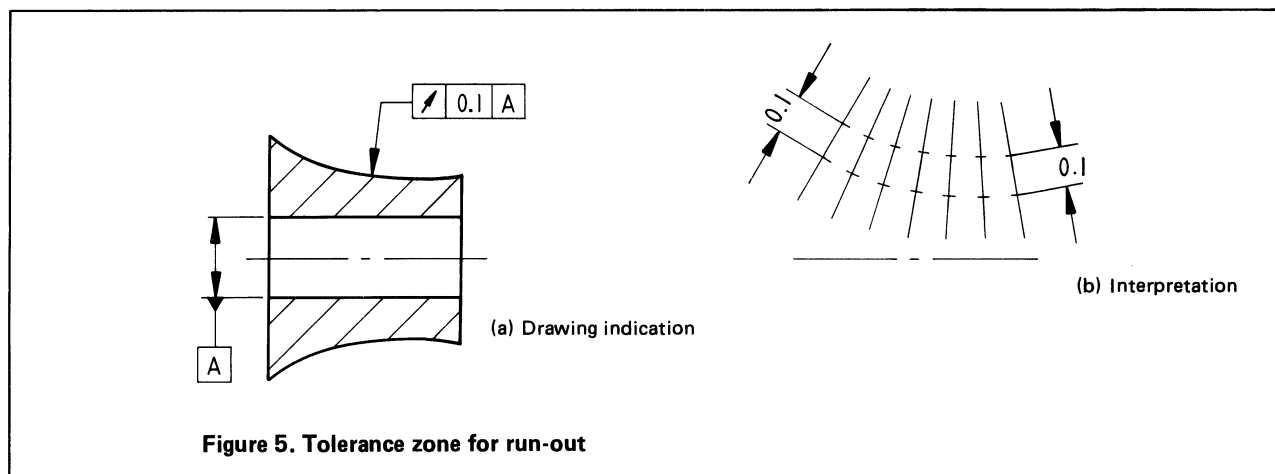
6.2 The direction of the width of the tolerance zone is perpendicular to the specified profile of the toleranced feature (see figure 5), unless otherwise indicated.

6.3 It is essential that the direction of the width of the tolerance zone is indicated when it is required to apply in a direction other than perpendicular to the specified geometry of the part (see figure 6).

6.4 When individual tolerance zones of the same size are applied to several separate features they may be indicated as shown in figure 7.

6.5 When a common tolerance zone is applied to several separate features, the requirement should be indicated by the words 'common zone' above the tolerance frame (see figure 8).





7 Tolerance applicable to restricted lengths of features

7.1 When a tolerance is to be applied only to a particular part of a feature, that part should be indicated as in figure 9(a), using a type J line (see table 2 of BS 308 : Part 1 : 1984).

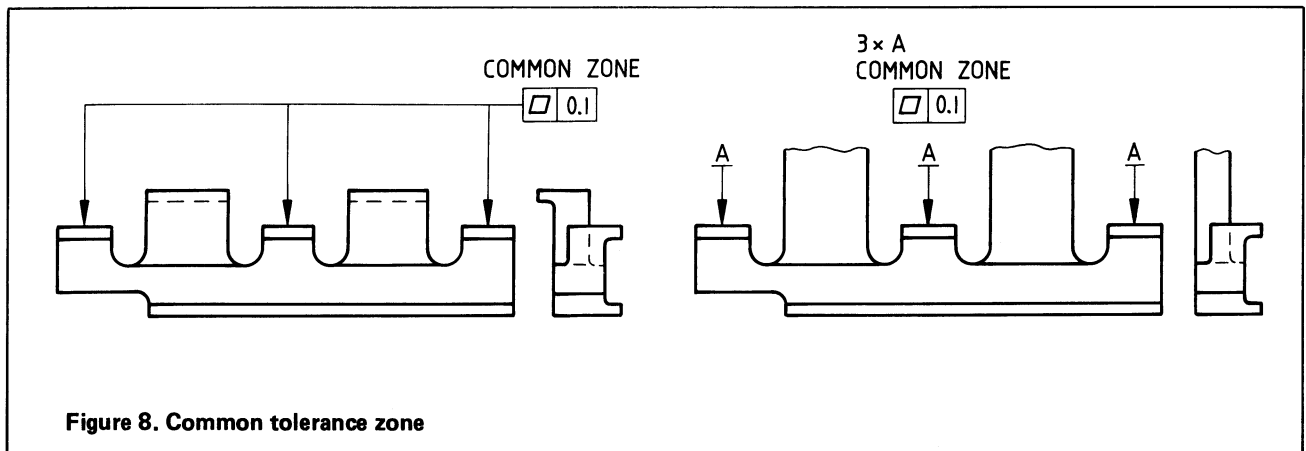


Figure 8. Common tolerance zone

7.2 When the tolerance value over the whole of the considered length or surface is to be qualified by a smaller tolerance on a specified shorter length lying anywhere within it, this should be expressed as in figure 9(b) where the tolerance value 0.05 applies to any length 100. When this convention is used for a feature which is a surface the tolerance value is applicable to all lines of the specified length in any position and in any direction on the surface.

7.3 When the tolerance is only specified in the form of a tolerance value applicable to a specified length as in figure 9(c), an accumulation of tolerance over the whole length or surface is permitted.

8 Theoretically exact dimensions

When tolerances of position, profile or angularity are specified for a feature, the ideal position, profile or angle is defined by theoretically exact dimensions*, these are indicated by being enclosed in a rectangular frame known as a 'box' thus: $\boxed{30} \pm$. The corresponding actual dimensions of the feature are subject only to the positional tolerance, profile tolerance or angularity tolerance specified in the tolerance frame (see two examples in figure 10).

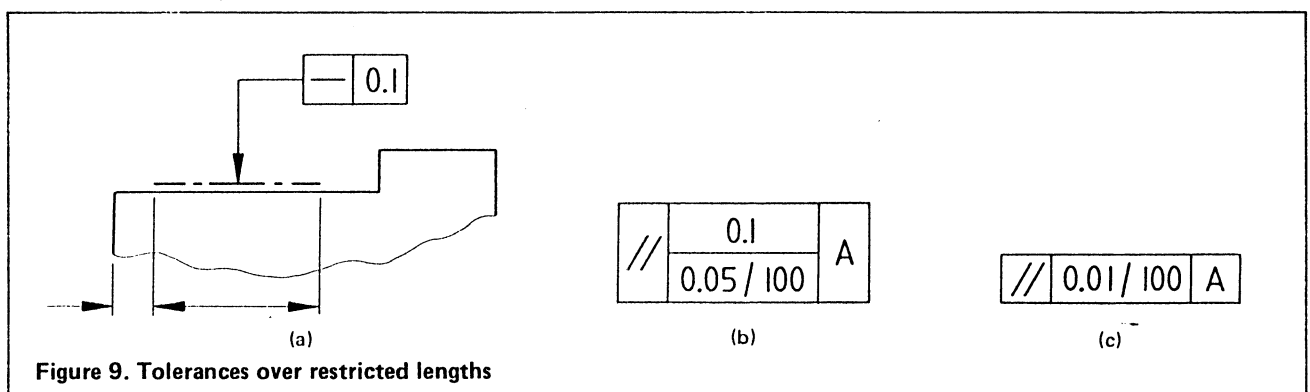


Figure 9. Tolerances over restricted lengths

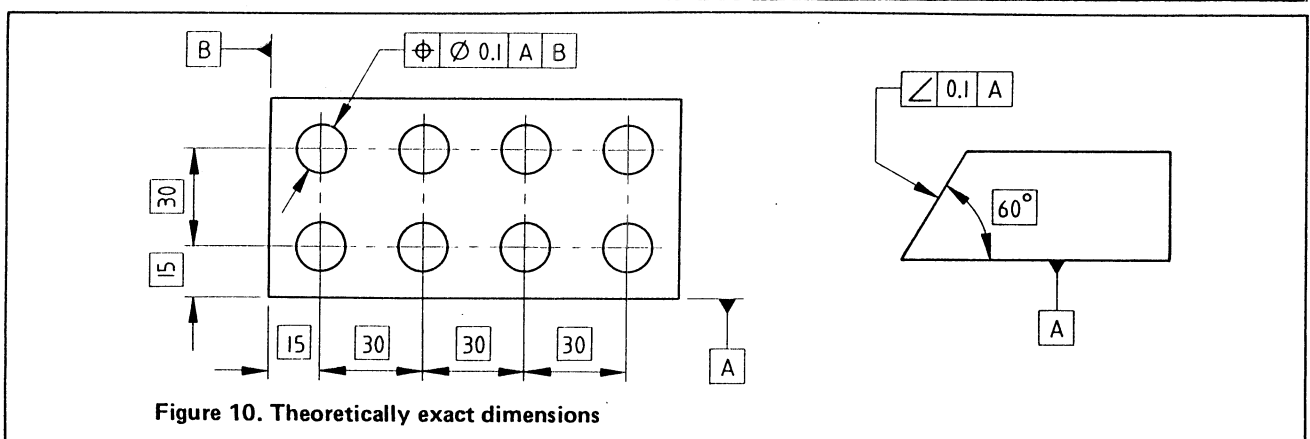


Figure 10. Theoretically exact dimensions

*Previously known as true positions '(TP)'.

†Boxes can also enclose lettering where relevant. See figure 22.

9 Projected tolerance zone

9.1 General

A cylindrical tolerance zone that limits deviations from the theoretically exact position of a hole axis also limits perpendicularity deviations of the axis relative to the face at one end of the hole (the primary datum) (see clause 22).

When the hole is to be used to secure a fixed fastener*, the maximum perpendicularity deviation of the hole axis could cause the fastener to interfere with the clearance hole in the mating part (see figure 11). A projected

tolerance zone should be specified in order to avoid such interference. The projected tolerance zone applies only to the external projection of the axis of the securing hole from the primary datum (see figure 12).

It should be noted that it is the perpendicularity deviation of the portion of the fastener passing through the clearance hole that is significant. Therefore the projected tolerance zone is specified for the axis of the hole into which the fastener is assembled. The location and perpendicularity of this hole is of importance only to the extent that it affects the projecting portion of the engaging fastener.

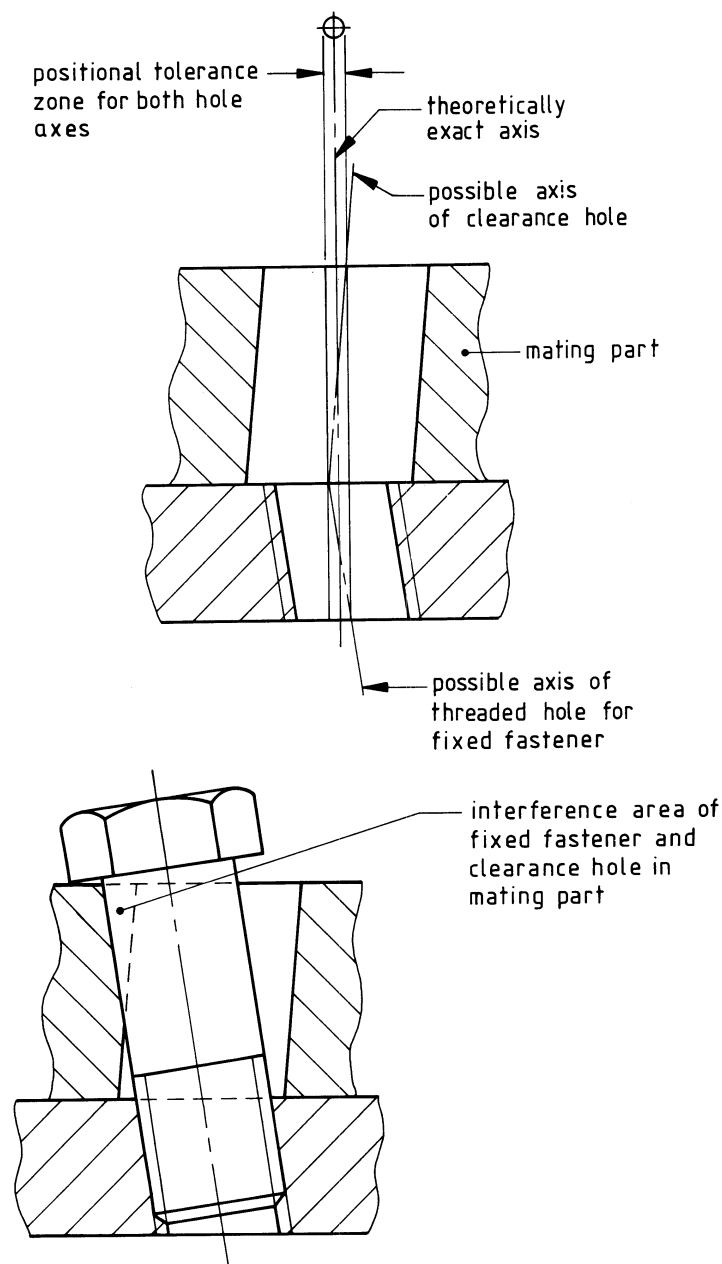
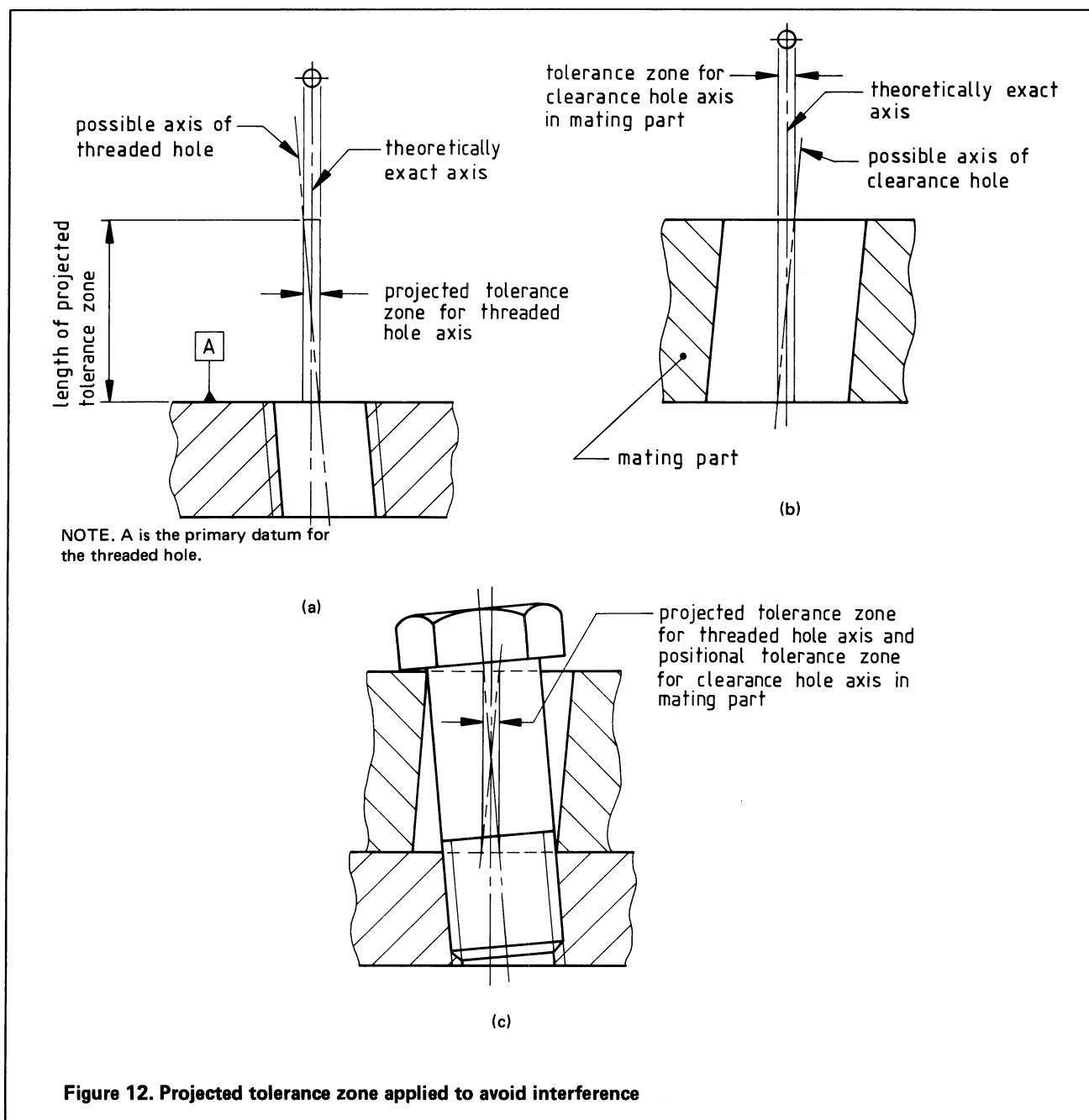


Figure 11. Possible interference between parts if projected tolerance zone is not used

*In this context a stud, screw or press-fit pin would be classified as a fixed fastener and a bolt and nut would be classified as a floating fastener.



9.2 Indication

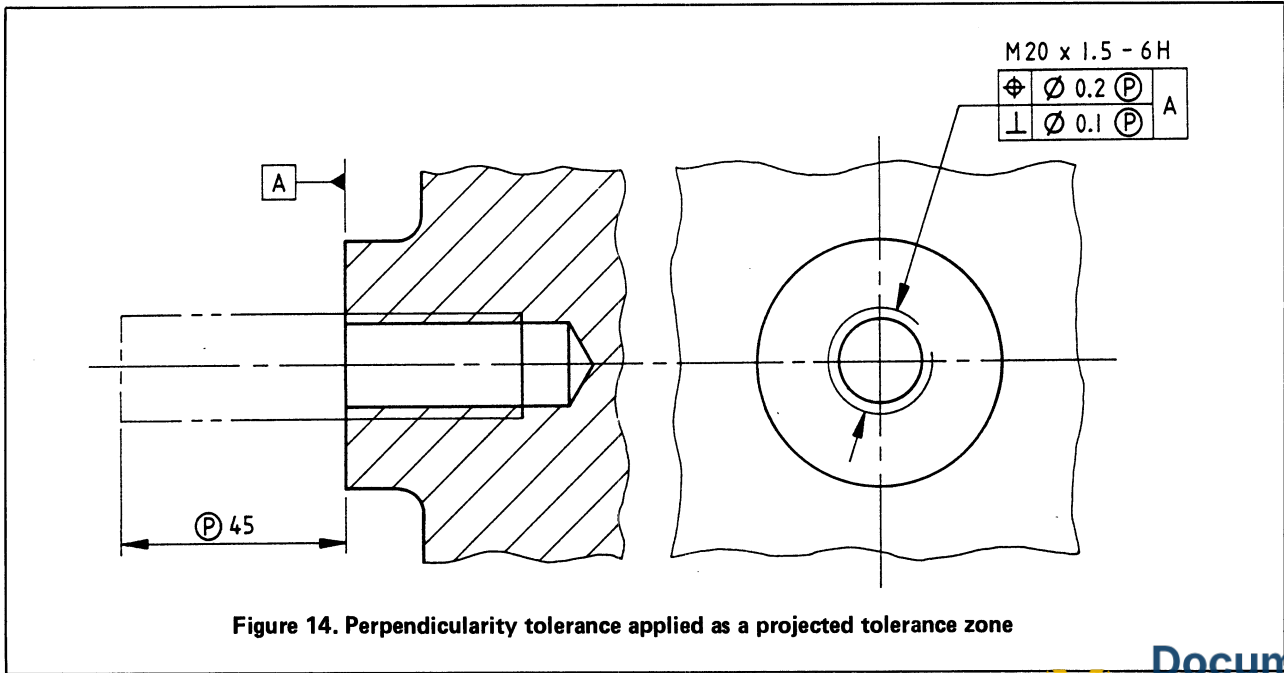
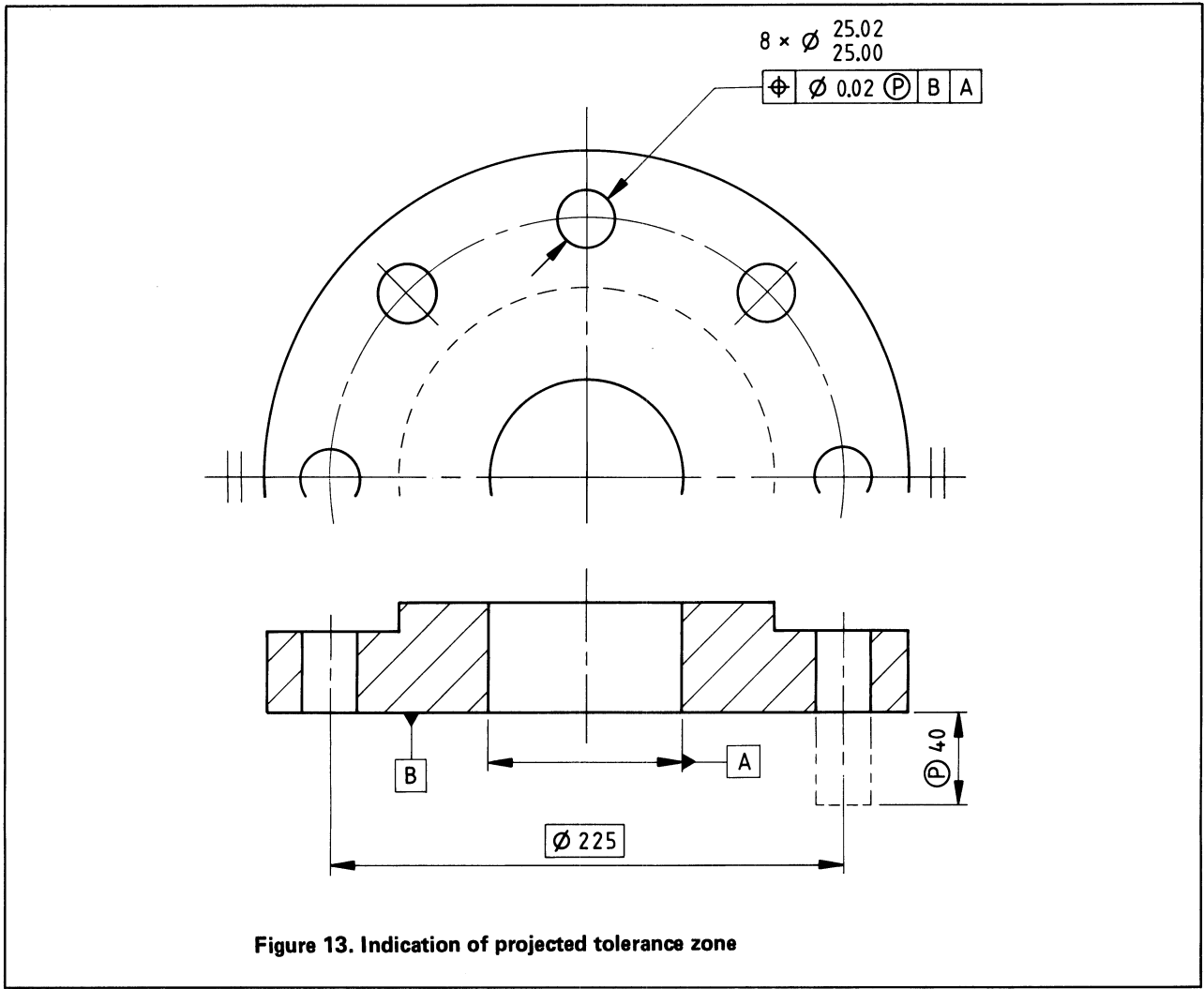
A projected tolerance zone should be indicated by the symbol $\textcircled{P}$ in the two positions as follows (see also figure 13):

- after the value of the tolerance in the tolerance frame that applies to the feature concerned;
- before the dimensioned length of the projected tolerance zone in an appropriate view. In this view the feature concerned should be extended to the specified length of the projected tolerance zone using type K lines (see table 2 of BS 308 : Part 1 : 1984).

9.3 Specified length of projected tolerance zone

The specified length of a projected tolerance zone is a minimum. Where the fixed fastener is a screw the minimum specified length is the maximum permissible thickness of the mating part(s). Where the fixed fastener is a stud or press-fit pin the minimum specified length is the maximum length of the projecting portion of the stud or pin.

Where studs or press-fit pins are toleranced for position on an assembly drawing the specified positional tolerance applies only to the length of the projecting portion of the stud or pin after assembly. Therefore it is unnecessary to specify a projected tolerance zone.



9.4 Perpendicularity tolerance applied as a projected tolerance zone

Where design considerations require a closer control of the perpendicularity of a hole axis than that allowed by the required positional tolerance, a perpendicularity tolerance applied as a projected tolerance zone may be specified.

In figure 14 the axis of the threaded portion of the hole is to lie within a cylindrical tolerance zone 0.1 diameter perpendicular to and projecting from datum plane A for the 45 specified height. Additionally, the axis is to lie within the positional tolerance zone 0.2 diameter over the 45 specified height.

However, as explained in 23.1 (b), the axis of the 0.1 diameter tolerance zone may lie on the circumference of the 0.2 diameter tolerance zone. Therefore, the axis of the threaded portion of the hole may lie outside the 0.2 diameter tolerance zone and still be acceptable.

10 Definition, indication and interpretation of tolerance zones

10.1 General

There are two possible methods of graphical representation for some tolerance zones (for example, straightness of a line or axis controlled in one direction only):

- (a) by two parallel planes a distance t apart as shown in figure 15(a);
- (b) by two parallel straight lines a distance t apart as shown in figure 15(b).

Figure 15(a) shows a three-dimensional representation of a tolerance zone and figure 15(b) its projection on a plane. There is no difference in the meaning of the two representations, for such a tolerance does not restrict the deviation in any direction perpendicular to the tolerance zone.*

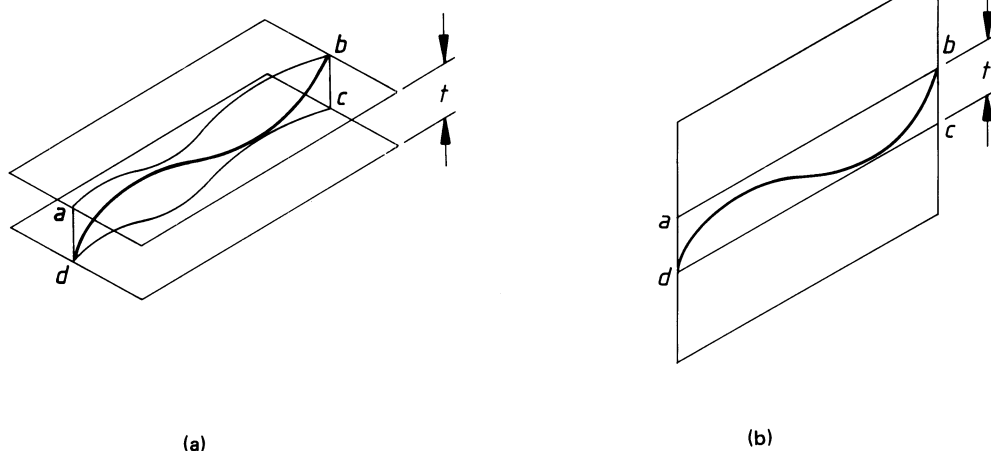
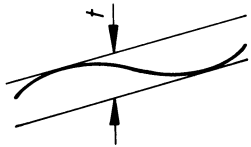
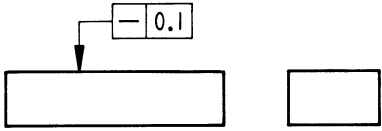
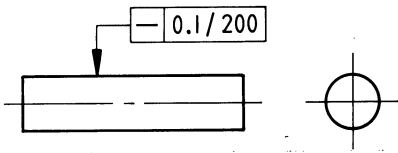
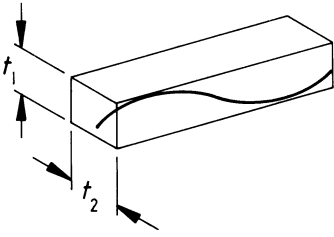
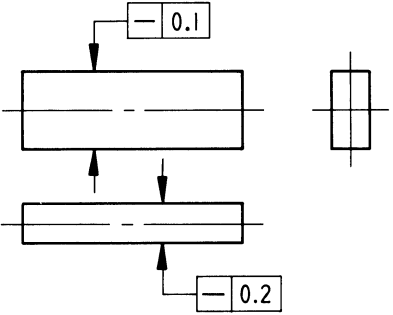
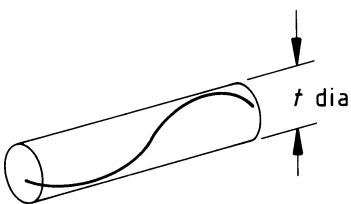
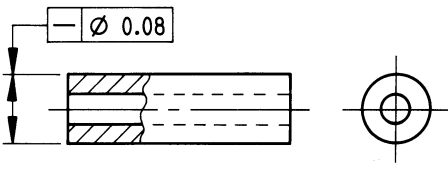


Figure 15. Representation of a tolerance zone

*The simpler method as shown in figure 15(b) has normally been used in this standard.

Symbol	Definition of the tolerance zone	Indication and interpretation
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10.2 Straightness tolerance*

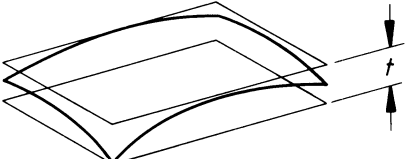
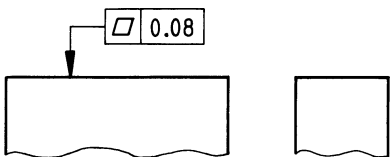
	When projected on a plane the tolerance zone is limited by two parallel straight lines a distance t apart. 	 Any line on the upper surface parallel to the plane of projection in which the indication is shown is to be contained between two parallel straight lines 0.1 apart.  Any portion of length 200 of any generator of the cylindrical surface indicated by the arrow is to be contained between two parallel straight lines 0.1 apart in a plane containing the axis.
—	When the tolerance is specified in two directions perpendicular to each other the tolerance zone is limited by a parallelepiped of section $t_1 \times t_2$. 	 The centre line of the bar is to be contained within a parallelepipedic zone of width 0.1 vertically and 0.2 horizontally.
	When the tolerance value is preceded by the diameter symbol the tolerance zone is limited by a cylinder of diameter t. 	 The axis of the cylinder to which the tolerance frame is connected is to be contained within a cylindrical zone of diameter 0.08.†

*See also appendix C.

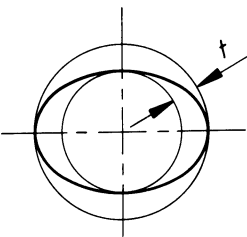
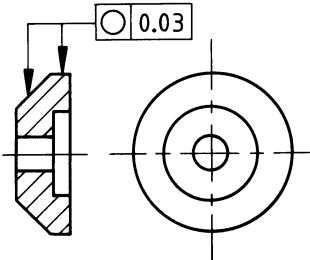
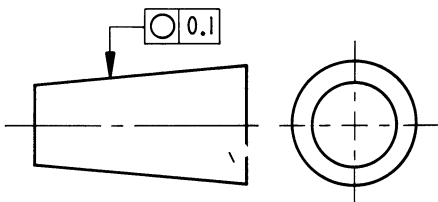
†The straightness tolerance of an axis with dependency of size and form is not a limiting value as defined in clause 11 of BS 308 : Part 2 : 1985. See also 20.2.2.

Symbol	Definition of the tolerance zone	Indication and interpretation
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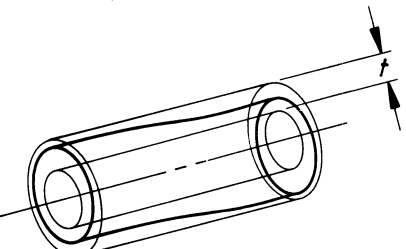
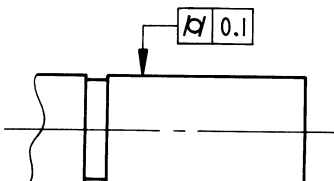
10.3 Flatness tolerance*

	The tolerance zone is limited by two parallel planes a distance t apart. 	 The surface is to be contained between two parallel planes 0.08 apart.
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10.4 Circularity tolerance (roundness)*

	The tolerance zone in the considered plane is limited by two concentric circles a distance t apart. 	 The circumference of each cross-section of the outer profile is to be contained between two co-planar concentric circles 0.03 apart.  The circumference of each cross-section is to be contained between two co-planar concentric circles 0.1 apart.
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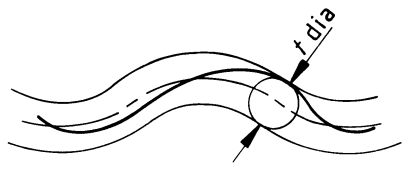
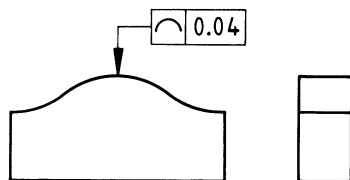
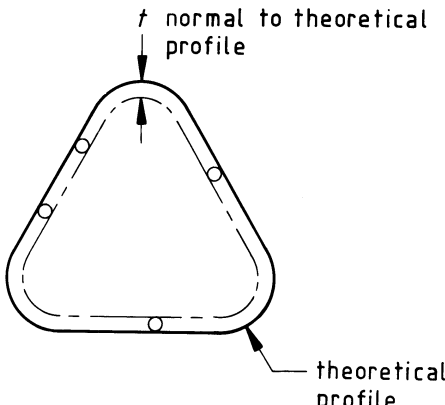
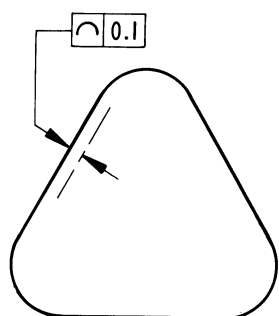
10.5 Cylindricity tolerance*

	The tolerance zone is limited by two coaxial cylinders a distance t apart. 	 The considered surface is to be contained between two coaxial cylinders 0.1 apart.
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*See also appendix C.

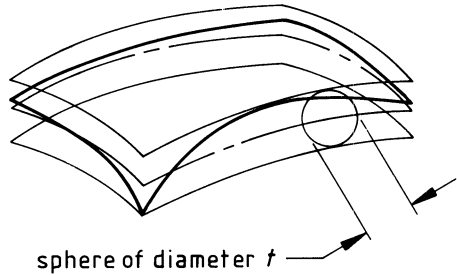
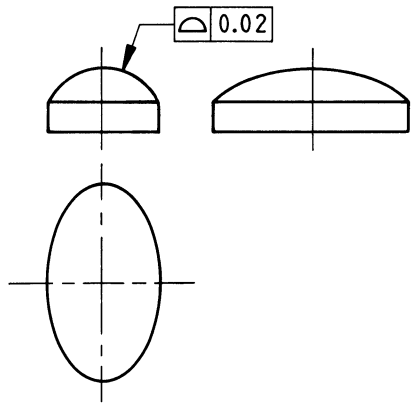
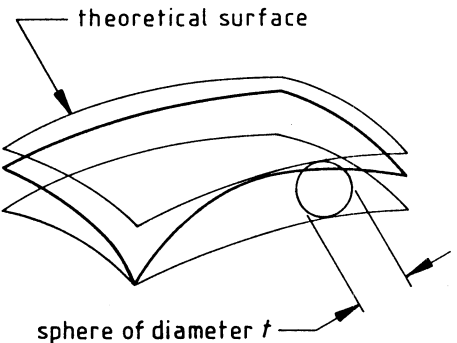
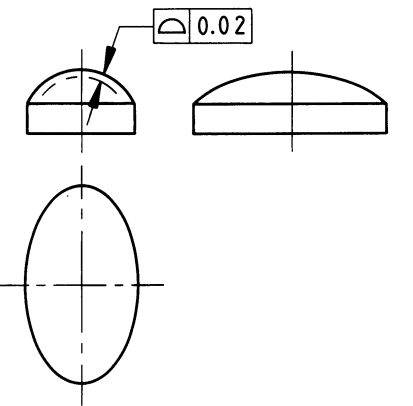
Symbol	Definition of the tolerance zone	Indication and interpretation
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10.6 Profile tolerance of any line

	(a) <i>Bilateral</i> The tolerance zone is limited by two lines enveloping circles of diameter t, the centres of which are situated on a line having the theoretically exact geometrical form. 	 In each section parallel to the plane of projection the considered profile is to be contained between two lines enveloping circles of diameter 0.04, the centres of which are situated on a line of theoretically exact geometrical profile.
	(b) <i>Unilateral</i> The tolerance zone is limited by two lines enveloping circles of diameter t, one line being the theoretically exact profile. 	 In any section parallel to the plane of projection of the drawing, the actual profile is to lie between the theoretical profile and a line which envelops a series of circles 0.1 diameter.

Symbol	Definition of the tolerance zone	Indication and interpretation
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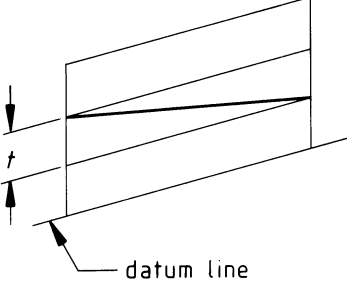
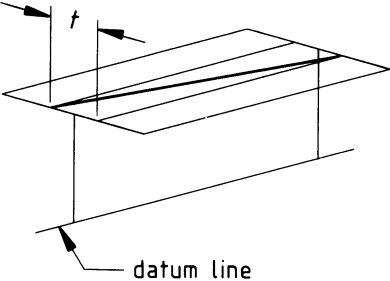
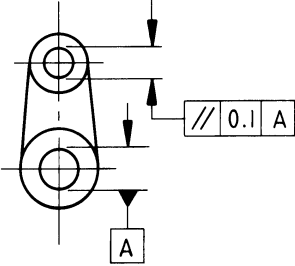
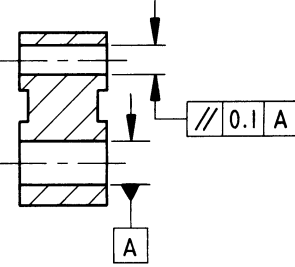
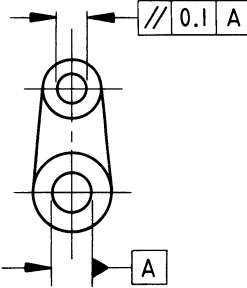
10.7 Profile tolerance of any surface

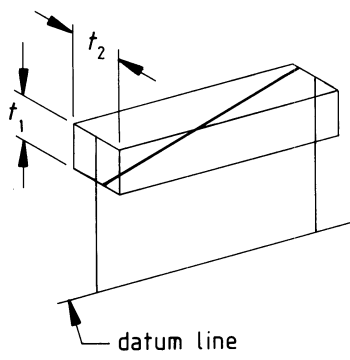
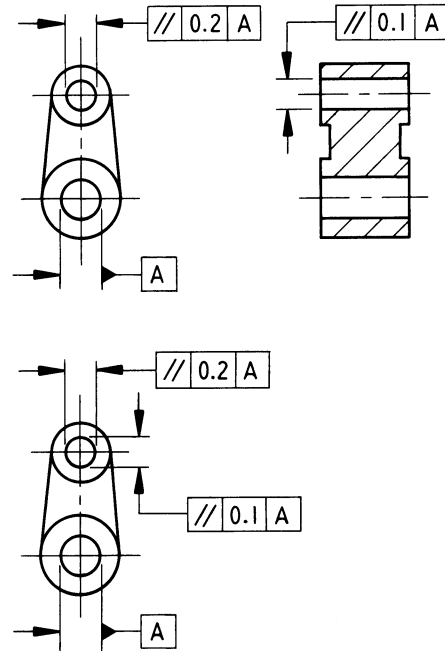
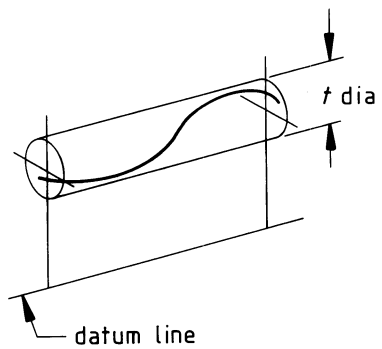
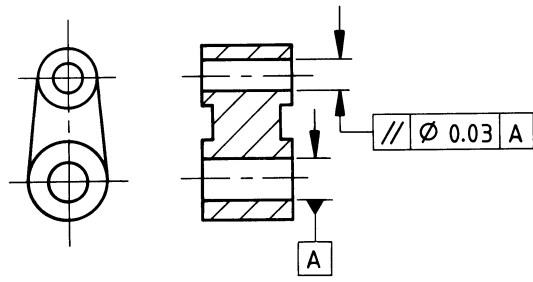
	(a) <i>Bilateral</i> The tolerance zone is limited by two surfaces enveloping spheres of diameter t, the centres of which are situated on a surface having the theoretically exact geometrical form. 	 The considered surface is to be contained between two surfaces enveloping spheres of diameter 0.02, the centres of which are situated on a surface of theoretically exact geometrical form.
	(b) <i>Unilateral</i> The tolerance zone is limited by two surfaces enveloping spheres of diameter t, one being the theoretically exact profile. 	 The considered surface is to lie between two surfaces which envelop a series of spheres, 0.02 diameter, one surface being theoretically exact.

Symbol	Definition of the tolerance zone	Indication and interpretation
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10.8 Parallelism tolerance

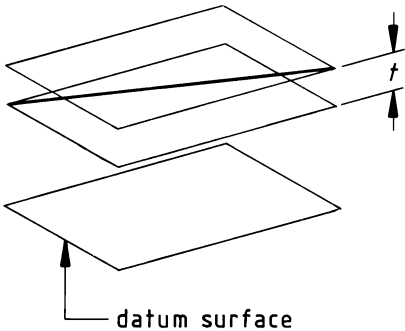
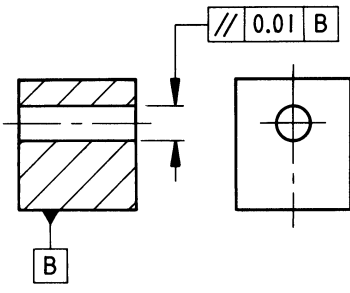
10.8.1 Parallelism tolerance of a line with reference to a datum line

//	When the tolerance is specified in one direction only the tolerance zone, when projected on a plane, is limited by two parallel straight lines a distance t apart and parallel to the datum line.  	  The tolerated axis is to be contained between two straight lines 0.1 apart, which are parallel to the datum axis A and lie in the vertical direction.  The tolerated axis is to be contained between two straight lines 0.1 apart, which are parallel to, and symmetrically disposed about, the datum axis A and lie in the horizontal direction.
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Symbol	Definition of the tolerance zone	Indication and interpretation
//	When the tolerance is specified in two planes perpendicular to each other the tolerance zone is limited by a parallelepiped of section $t_1 \times t_2$ parallel to the datum line. 	 The tolerated axis is to be contained within a parallelepipedic tolerance zone having a width of 0.2 in the horizontal and 0.1 in the vertical direction and which is parallel to the datum axis A.
	When the tolerance value is preceded by the diameter symbol the tolerance zone is limited by a cylinder of diameter t parallel to the datum line. 	 The tolerated axis is to be contained within a cylindrical zone of diameter 0.03 parallel to the datum axis A (datum line).

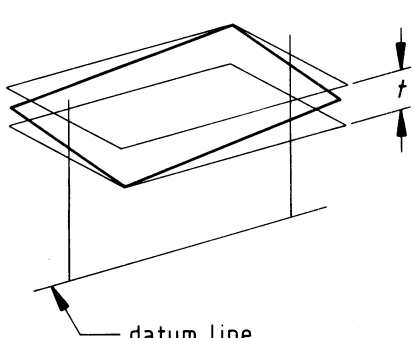
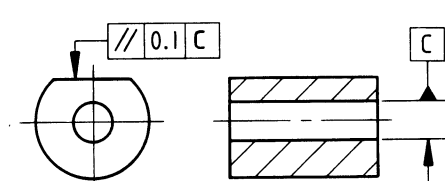
Symbol	Definition of the tolerance zone	Indication and interpretation
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10.8.2 Parallelism tolerance of a line with reference to a datum surface

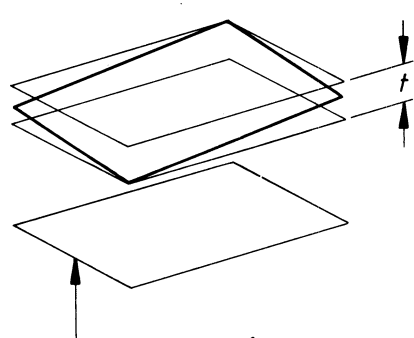
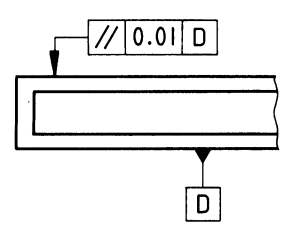
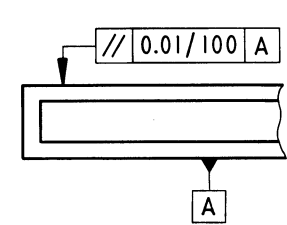
	The tolerance zone is limited by two parallel planes a distance t apart and parallel to the datum surface. 	 The axis of the hole is to be contained between two planes 0.01 apart which are parallel to the datum surface B.
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Symbol	Definition of the tolerance zone	Indication and interpretation
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10.8.3 Parallelism tolerance of a surface with reference to a datum line

//	The tolerance zone is limited by two parallel planes a distance t apart and parallel to the datum line.  datum line	 The tolerated surface is to be contained between two planes 0.1 apart which are parallel to the datum axis C of the hole.
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10.8.4 Parallelism tolerance of a surface with reference to a datum surface

//	The tolerance zone is limited by two parallel planes a distance t apart and parallel to the datum surface.  datum surface	 The tolerated surface is to be contained between two parallel planes 0.01 apart which are parallel to the datum surface D.  All the points on the tolerated surface in a length of 100, placed anywhere on this surface, are to be contained between two parallel planes 0.01 apart which are parallel to the datum surface A.
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