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Plain limit gauges

ICS 17.040.30

Descriptors : dimensional tolerances, gauges, perforating tests, shafts (rotating)

Reference number : JIS B 7420 : 1997 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

This Standard contains Annex stated as follows:

Annex (informative) Shapes and sizes of plain limit gauges

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Plain limit gauges

Introduction This Japanese Industrial Standard is prepared based on ISO/DIS 1938-1, *Inspection of plain workpieces—Part 1 : Plain limit gauges*, without any modification in technical contents except the measuring methods which have been specified in Japanese Industrial Standards. Further, the items not specified in the corresponding International Standard (acceptance or rejection by limit gauges, treatment of disagreement in decision of acceptance or rejection by limit gauges in a trade and designation of limit gauges) are added to this Japanese Industrial Standard.

1 Scope This Japanese Industrial Standard specifies plain limit gauges (hereafter referred to as “limit gauges”) and reference disks for gap gauges (hereafter referred to as “reference disks”) used for dimensional inspection of holes and shafts which are not exceeding 500 mm, and satisfy the conditions of envelope, and to which grades of tolerances IT6 to IT16 specified in **JIS B 0401** are applied.

Remarks 1 The standards cited in this Standard are given in Attached Table 1.

2 The International Standard corresponding to this Standard is given below
ISO/DIS 1938—1 *Inspection of plain workpieces—Part 1 : Plain limit gauges*

2 Definitions and symbols

2.1 Definitions For the purpose of this Standard, in addition to the definitions specified in **JIS B 0023**, **JIS B 0401**, **JIS B 0621** and **JIS Z 8103**, the following principal definitions apply:

- (1) **plain limit gauge** A gauge which has gauging surfaces based on maximum material limit and least material limit of hole or shaft.
- (2) **GO gauge** A limit gauge which has gauging surfaces based on maximum material limit (MML) of hole or shaft.

Remarks: The maximum material limit is equal to the minimum permissible size for a hole and to the maximum permissible size for a shaft.

- (3) **NOT GO gauge** A limit gauge which has gauging surfaces based on least material limit (LML) of hole or shaft.

Remarks: The minimum material limit is equal to the maximum permissible size for a hole and to the minimum permissible size for a shaft.

- (4) **nominal size** The basic size of a hole or shaft to which the limit gauge is applied.
- (5) **limit of maximum permissible gauge wear** The limit of size under wear at which the gauge is permitted to serve as a limit gauge.
- (6) **permissible wear** The difference between the size to be shifted into the tolerance of a hole or shaft from the maximum material limit of the hole or shaft by taking wear of the limit gauge into account and the limit of maximum permissible gauge wear.
- (7) **permissible wear within hole tolerance** The portion of permissible wear that lies within the tolerance of the hole.

- (8) **permissible wear within shaft tolerance** The portion of permissible wear that lies within the tolerance of the shaft.
- (9) **working size of gap gauge** The size of the reference disk or combination of reference disk and gauge block located horizontally over which the gap gauge just passes in a vertical direction under the working load of gap gauge i.e. the load marked on the gap gauge (its own weight if not marked).

2.2 Symbols The symbols used in this Standard are shown in Table 1.

Table 1 Symbols

Symbol	Description
T	Tolerance on hole or shaft
MML	Maximum material limit. Namely maximum permissible size for a shaft and minimum permissible size for a hole
LML	Minimum material limit. Namely minimum permissible size for a shaft and maximum permissible size for a hole
H	Tolerance of plug gauge
H_s	Tolerance of rod gauge
H_1	Tolerance of ring gauge and gap gauge
H_P	Tolerance of reference disk
y	Absolute value of difference between MML of hole and the limit of maximum permissible gauge wear of GO limit gauge
y_1	Absolute value of difference between MML of shaft and the limit of maximum permissible gauge wear of GO limit gauge
y'	Absolute value of difference between MML of hole and the limit of maximum permissible gauge wear, in which measuring uncertainties are taken into account, of GO limit gauge $y' = y - \alpha $
y'_1	Absolute value of difference between MML of shaft and the limit of maximum permissible gauge wear, in which measuring uncertainties are taken into account, of GO limit gauge $y'_1 = y_1 - \alpha_1 $
z	Permissible wears within hole tolerance of limit gauge for hole
z_1	Permissible wears within shaft tolerance of limit gauge for shaft
α	Safety zone provided for compensating measuring uncertainties of limit gauges for holes of nominal size over 180 mm
α_1	Safety zone provided for compensating measuring uncertainties of limit gauges for shafts of nominal size over 180 mm

3 Types of limit gauges and selection thereof The representative types of limit gauges and selection thereof for nominal sizes are shown in Tables 2 and 3.

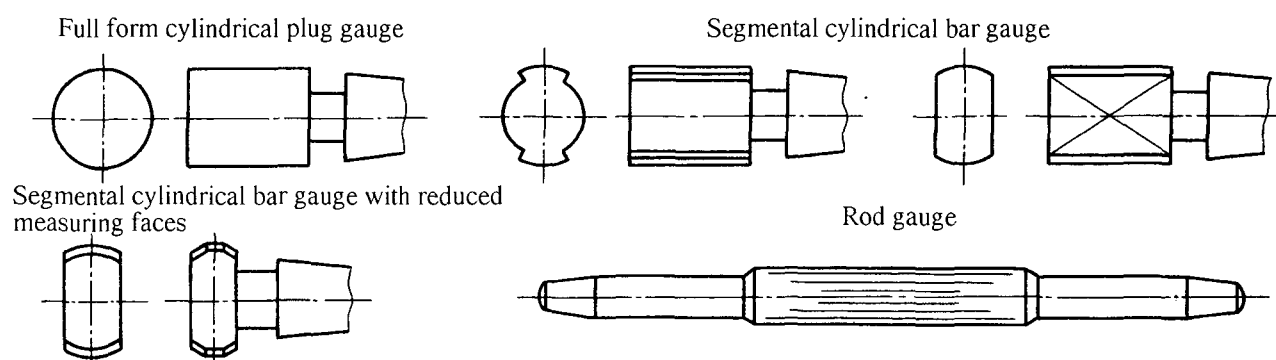
The length of GO gauge portion of full form cylindrical plug gauges, segmental cylindrical bar gauges and ring gauges shall be equal to the length of hole, shaft or fit to be inspected. NOT GO gauge shall be shorter than the GO gauge or the area of gauge portion shall be made smaller.

If it is ensured that the form deviation of the hole and shaft does not affect the fit, such a case is an exception.

The GO gauge and NOT GO gauge shall be identified by the length or shape of gauge portion, and NOT GO gauge may be marked with a red mark or may have a groove representing NOT GO gauge.

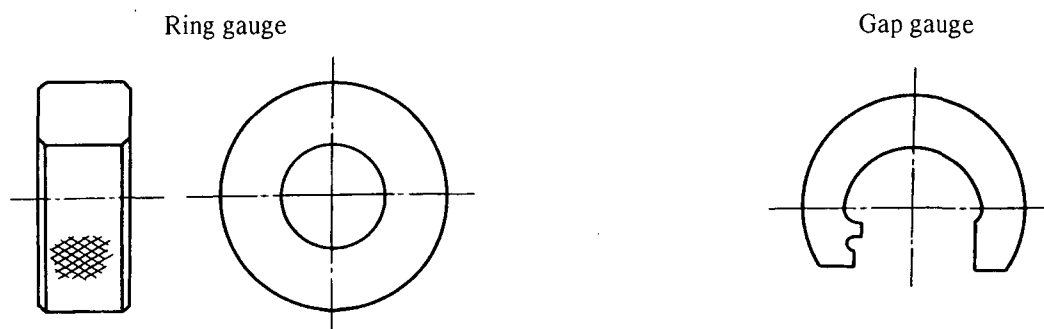
The spherical radius of gauge portion in a rod gauge shall not exceed 50 % of the nominal size.

Table 2 Type of limit gauges for hole and selection thereof



Workpiece to be inspected	Classification of limit gauge	Order of preference	Range of applicable nominal size (mm)					
			0	6	10	120	315	500
Rigid parts	GO gauge	1	Full form cylindrical plug gauge			Segmental cylindrical bar gauge		Rod gauge
		2	Segmental cylindrical bar gauge					
	NOT GO gauge	1	Full form cylindrical plug gauge	Segmental cylindrical bar gauge with reduced measuring faces				Rod gauge
		2	Rod gauge					
		3	Full form cylindrical plug gauge					
Non-rigid parts	GO gauge	1	Full form cylindrical plug gauge			Segmental cylindrical bar gauge with reduced measuring faces		Rod gauge
		2	Full form cylindrical plug gauge					
	NOT GO gauge	1	Full form cylindrical plug gauge	Segmental cylindrical bar gauge with reduced measuring faces				Rod gauge
		2	Full form cylindrical plug gauge					

Remarks: The figures show the shapes of functional parts, and do not show the standard of shapes of other parts.

Table 3 Types of limit gauges for shaft and selection thereof

Workpiece to be inspected	Classification of limit gauge	Order of preference	Range of applicable nominal size (mm)				
			0	6	10	120	315
Rigid parts	GO gauge	1	Ring gauge				
		2	Gap gauge				
	NOT GO gauge	1	Gap gauge				
		2	Ring gauge				
Non-rigid parts	GO gauge	1	Ring gauge				
	NOT GO gauge	1	Ring gauge				

Remarks: The figures show the shapes of functional parts, and do not show the standard of shapes of other parts.

4 Correlation between gauge tolerance and form tolerance of limit gauges and reference disks and grades of hole and shaft tolerances The gauge tolerance and form tolerance of limit gauges and reference disks are as shown in Table 4 corresponding to the grades of hole and shaft tolerances applied.

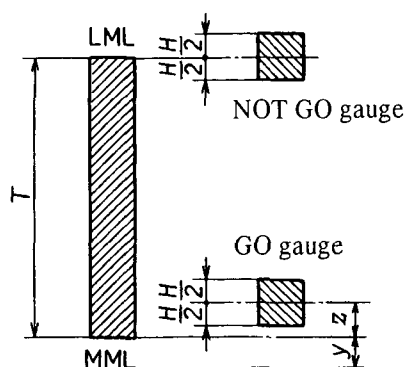
Table 4 Correlation between gauge tolerance and form tolerance of limit gauges and reference disks and grades of hole and shaft tolerances

Type	Classification	Grade of hole and shaft tolerances				
		IT6	IT7	IT8 to IT10	IT11 • IT12	IT13 to IT16
Full form cylindrical plug gauge	Gauge tolerance H	IT2	IT3	IT3	IT5	IT7
Segmental cylindrical bar gauge	Circularity • Cylindricity	IT1	IT2	IT2	IT4	IT5
Segmental cylindrical bar gauge with reduced measuring faces						
Rod gauge	Gauge tolerance H_s	IT2	IT2	IT2	IT4	IT6
Ring gauge	Gauge tolerance H_1	IT3	IT3	IT4	IT5	IT7
	Circularity • Cylindricity	IT2	IT2	IT3	IT4	IT5
Gap gauge	Gauge tolerance H_1	IT3	IT3	IT4	IT5	IT7
	Parallelism • Flatness	IT2	IT2	IT3	IT4	IT5
Reference disk	Gauge tolerance H_p	IT1	IT1	IT2	IT2	IT3
	Circularity • Cylindricity	IT1	IT1	IT1	IT1	IT2

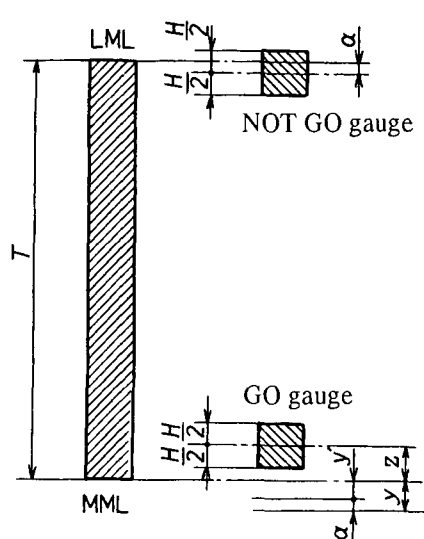
5 Correlation between tolerance zone of limit gauge and reference disk and hole and shaft tolerances The correlation between tolerance zone of limit gauge and reference disk and hole and shaft tolerances differs for gauges and disks used for holes and shafts of IT6 to IT8 from those used for holes and shafts of IT9 to IT16. Even if they are used for the same grade the correlation is different for nominal size not exceeding 180 mm and for nominal size exceeding 180 mm. The correlation is given in Figs. 1 and 2.

IT6 to IT8

Workpiece not exceeding 180 mm

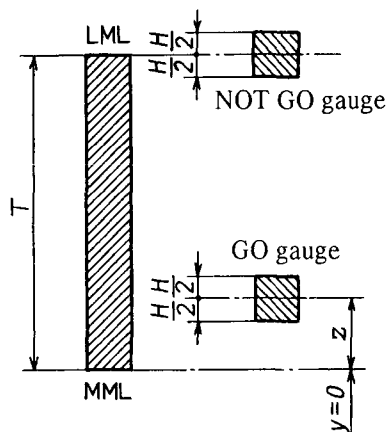


Workpiece exceeding 180 mm

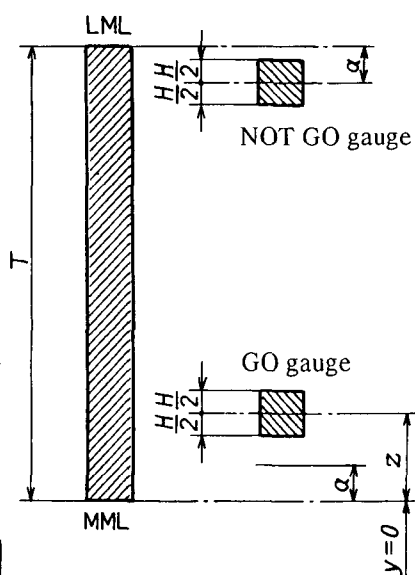


IT9 to IT16

Workpiece not exceeding 180 mm



Workpiece exceeding 180 mm



Tolerance
of hole


Tolerance
of gauge

Remarks: For rod gauge, H in the figure is replaced by H_s .

Fig. 1 Correlation between tolerance zone of limit gauge for hole and tolerance of hole

IT6 to IT8

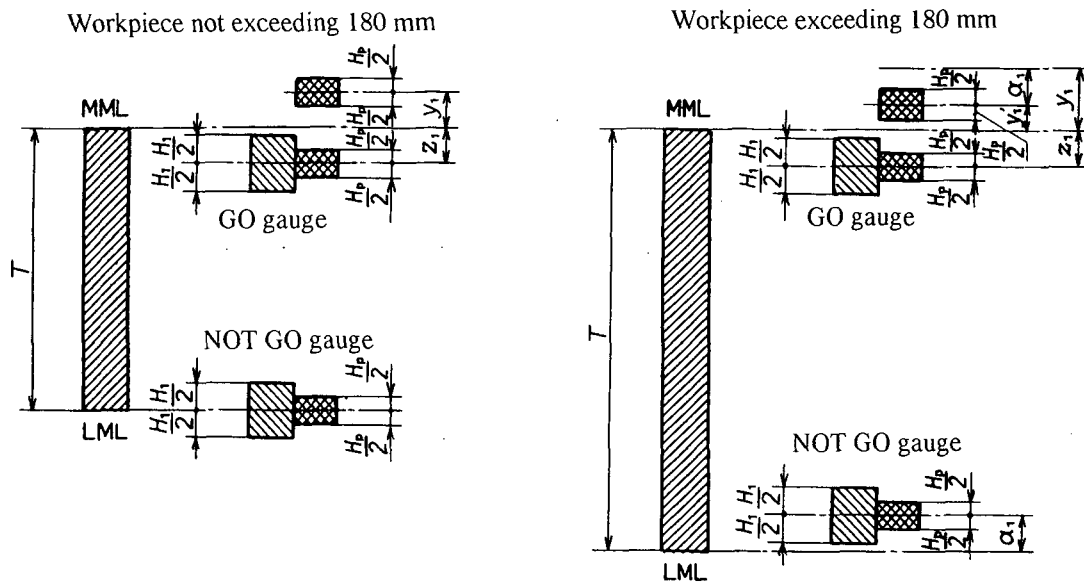


Table 5 Calculation formulae for obtaining dimensions of limit gauge and reference disk

Classification			Classification by nominal size	
			Not more than 180 mm	Over 180 mm
Limit gauge for hole	GO gauge	Maximum permissible size	$MML + \frac{H}{2} + z^{(1)}$	
		Minimum permissible size	$MML - \frac{H}{2} + z^{(1)}$	
	NOT GO gauge	Maximum permissible size	$LML + \frac{H}{2}^{(1)}$	$LML + \frac{H}{2} - \alpha^{(1)}$
		Minimum permissible size	$LML - \frac{H}{2}^{(1)}$	$LML - \frac{H}{2} - \alpha^{(1)}$
Limit gauge for shaft	GO gauge	Maximum permissible size	$MML + \frac{H_1}{2} - z_1$	
		Minimum permissible size	$MML - \frac{H_1}{2} - z_1$	
	NOT GO gauge	Maximum permissible size	$LML + \frac{H_1}{2}$	$LML + \frac{H_1}{2} + \alpha_1$
		Minimum permissible size	$LML - \frac{H_1}{2}$	$LML - \frac{H_1}{2} + \alpha_1$
Reference disk	For GO gauge Inspection at new manufacture	Maximum permissible size	$MML + \frac{H_p}{2} - z_1$	
		Minimum permissible size	$MML - \frac{H_p}{2} - z_1$	
	For GO gauge Wear inspection	Maximum permissible size	$MML + \frac{H_p}{2} + y_1$	$MML + \frac{H_p}{2} + y_1 - \alpha_1$
		Minimum permissible size	$MML - \frac{H_p}{2} + y_1$	$MML - \frac{H_p}{2} + y_1 - \alpha_1$
	For NOT GO gauge	Maximum permissible size	$LML + \frac{H_p}{2}$	$LML + \frac{H_p}{2} + \alpha_1$
		Minimum permissible size	$LML - \frac{H_p}{2}$	$LML - \frac{H_p}{2} + \alpha_1$

Note ⁽¹⁾ For rod gauges, calculation shall be made with H being replaced by H_s .

7 Surface roughness of gauging surface The surface roughness of gauging surface shall not exceed 10 % of the tolerance of the gauge and shall be $0.2 \mu m R_a$ at the maximum.

8 Materials and hardness The material for gauge portion shall be alloy tool steel SKS3 specified in **JIS G 4404** or that at least equivalent in mechanical properties. However, material for gap gauges shall be carbon tool steel SK4 specified in **JIS G 4401** or that at least equivalent in mechanical properties.

The hardness of gauging surface shall be at least 700 HV (at least 60 HRC), and the surface shall be subjected to adequate dimensional stabilizing treatment.

9 Inspection The inspection of limit gauges shall be carried out for the size, shape, surface roughness, material and hardness, and the results shall comply with the provisions of 3 to 8.

The measuring method of dimensions of gauge portion is shown in Attached Table 24. If the measurement can be done with an accuracy at least equivalent thereto, such a case is an exception.

10 Standard temperature The numerical values of various sizes stated in this Standard are those at 20 °C.

11 Purpose and procedures for use of limit gauges

11.1 Limit gauges for holes

11.1.1 GO plug gauge This is a gauge to inspect whether the diameter of hole is larger than the specified MML or not, and this shall pass through the overall length of hole without any difficulty.

11.1.2 NOT GO plug gauge This is a gauge to inspect whether the diameter of hole is smaller than the specified LML or not, and this shall not enter into the hole.

11.1.3 GO rod gauge This is a gauge to inspect whether the diameter of hole is larger than the specified MML or not, and this shall pass through the diameter of hole without any difficulty.

11.1.4 NOT GO rod gauge This is a gauge to inspect whether the diameter of hole is smaller than the specified LML or not, and this shall not enter into the diameter of hole without under force being applied.

11.2 Limit gauges for shafts

11.2.1 GO ring gauge This is a gauge to inspect whether the diameter of shaft is smaller than the specified MML or not, and this shall pass through overall length of the shaft.

11.2.2 NOT GO ring gauge This is a gauge to inspect whether the diameter of shaft is larger than the specified LML or not, and this shall not enter into the shaft.

11.2.3 GO gap gauge This is a gauge to inspect whether the diameter of shaft is smaller than the specified MML or not, and operated in such a manner that one opening end of gauging surface is applied to the shaft as the fulcrum and the gauge is turned slowly so that another gauging surface bites the point opposite of the fulcrum (measuring point). The inspection shall be carried out at least in two directions perpendicular each other and in the axial direction at positions adequate to the length not less than three, and the gauge shall pass at all the measuring points at the working load without any difficulty.

11.2.4 NOT GO gap gauge This is a gauge to inspect whether the diameter of shaft is larger than the specified LML or not, and the inspection shall be carried out at least in two directions perpendicular each other and in the axial direction at positions adequate to the length not less than three. The gauge shall not pass at all the positions when the working load is applied to the gauge.

12 Decision of acceptance or rejection by means of limit gauges The hole or shaft which has been accepted by the inspection by means of the limit gauges specified in this Standard, shall be considered within the limits of upper dimensional tolerance and lower dimensional tolerances specified in **JIS B 0401**.

13 Treatment of disagreement in decision of acceptance or rejection by limit gauges in trade When disagreement arises between the manufacturer and the user in the decision of acceptance or rejection by means of limit gauges due to difference of gauges used, the hole or shaft shall be treated as accepted ones if the limit gauges by which acceptance is decided satisfy the provisions of this Standard (permissible wear is taken into account).

14 Designation of limit gauge The limit gauge shall be designated by the number or title of Standard, kind of limit gauge, nominal size, numerical values indicating position of tolerance zone and grade, and identification of GO or NOT GO.

Example 1 **JIS B 7420** full form cylindrical plug gauge 20H7 GO

Example 2 Plain limit gauge ring gauge 30h7 NOT GO

15 Marking The following items shall be marked on a suitable position of each limit gauge:

- (1) Nominal size
- (2) Numerical values indicating position of tolerance zone and grade
- (3) Letters of "GO" or "NOT GO", if necessary

Remarks: Symbols indicating these letters may be used.

Example: "→" (symbol denoting GO), "↗" (symbol denoting NOT GO), etc.

- (4) For gap gauge, working load, if necessary
- (5) Year and month of manufacture, their abbreviation, or production number
- (6) Manufacturer's name or abbreviation

Attached Table 1 Normative references

Standard number	Title of standard	Standard number	Title of standard
JIS B 0023	<i>Technical drawings-Geometrical tolerancing-Maximum material requirement and least material requirement</i>	JIS B 7535	<i>Flow type air gauges</i>
JIS B 0401	<i>System of limits and fits</i>	JIS B 7536	<i>Electrical comparators</i>
JIS B 0621	<i>Definitions and designations of geometrical deviations</i>	JIS G 4401	<i>Carbon tool steels</i>
JIS B 7451	<i>Roundness measuring machines</i>	JIS G 4404	<i>Alloy tool steels</i>
JIS B 7506	<i>Gauge blocks</i>	JIS Z 8103	<i>Glossary of terms used in instrumentation</i>
JIS B 7519	<i>Microindicators</i>	JIS Z 8401	<i>Rules for rounding off of numerical values</i>

Attached Table 2 Parameters for obtaining tolerances and sizes of limit gauges and reference disks for IT 6Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft						
Over	Up to and incl.		Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
			z	y	y'	α	H IT 2	z	y	y'	α	H_s IT 2	z ₁	y ₁	y' ₁	α_1	H_1 IT 3	H_P IT 1	
1 and over	3	6	1	1	—	—	1.2	—	—	—	—	—	1.5	1.5	—	—	2	0.8	
3	6	8	1.5	1	—	—	1.5	—	—	—	—	—	2	1.5	—	—	2.5	1	
6	10	9	1.5	1	—	—	1.5	1.5	1	—	—	1.5	2	1.5	—	—	2.5	1	
10	18	11	2	1.5	—	—	2	2	1.5	—	—	2	2.5	2	—	—	3	1.2	
18	30	13	2	1.5	—	—	2.5	2	1.5	—	—	2.5	3	3	—	—	4	1.5	
30	50	16	2.5	2	—	—	2.5	2.5	2	—	—	2.5	3.5	3	—	—	4	1.5	
50	80	19	2.5	2	—	—	3	2.5	2	—	—	3	4	3	—	—	5	2	
80	120	22	3	3	—	—	4	3	3	—	—	4	5	4	—	—	6	2.5	
120	180	25	4	3	—	—	5	4	3	—	—	5	6	4	—	—	8	3.5	
180	250	29	5	4	2	2	7	5	4	2	2	7	7	5	3	2	10	4.5	
250	315	32	6	5	2	3	8	6	5	2	3	8	8	6	3	3	12	6	
315	400	36	7	6	2	4	9	7	6	2	4	9	—	—	—	—	—	7	
400	500	40	8	7	2	5	10	8	7	2	5	10	—	—	—	—	—	8	

Attached Table 3 Parameters for obtaining tolerances and sizes of limit gauges and reference disks for IT 7Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft						
			Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
Over	Up to and incl.		IT 7	z	y	y'	α	H IT 3	z	y	y'	α	H_s IT 2	z ₁	y ₁	y' ₁	α_1	H_1 IT 3	H_1 IT 1
1 and over	3	10	1.5	1.5	—	—	2	—	—	—	—	—	1.5	1.5	—	—	2	0.8	
3	6	12	2	1.5	—	—	2.5	—	—	—	—	—	2	1.5	—	—	2.5	1	
6	10	15	2	1.5	—	—	2.5	2	1.5	—	—	1.5	2	1.5	—	—	2.5	1	
10	18	18	2.5	2	—	—	3	2.5	2	—	—	2	2.5	2	—	—	3	1.2	
18	30	21	3	3	—	—	4	3	3	—	—	2.5	3	3	—	—	4	1.5	
30	50	25	3.5	3	—	—	4	3.5	3	—	—	2.5	3.5	3	—	—	4	1.5	
50	80	30	4	3	—	—	5	4	3	—	—	3	4	3	—	—	5	2	
80	120	35	5	4	—	—	6	5	4	—	—	4	5	4	—	—	6	2.5	
120	180	40	6	4	—	—	8	6	4	—	—	5	6	4	—	—	8	3.5	
180	250	46	7	6	3	3	10	7	6	3	3	7	7	6	3	3	10	4.5	
250	315	52	8	7	3	4	12	8	7	3	4	8	8	7	3	4	12	6	
315	400	57	10	8	2	6	13	10	8	2	6	9	—	—	—	—	—	7	
400	500	63	11	9	2	7	15	11	9	2	7	10	—	—	—	—	—	8	

Attached Table 4 Parameters for obtaining tolerances and sizes of limit gauges and reference disks for IT 8

Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft							
Over	Up to and incl.		IT 8	Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
				z	y	y'	α	$\frac{H}{IT\ 3}$	z	y	y'	α	$\frac{H_s}{IT\ 2}$	z ₁	y ₁	y' ₁	α_1	$\frac{H_1}{IT\ 4}$	$\frac{H_p}{IT\ 2}$	
1 and over	3	14	2	3	—	—	2	—	—	—	—	—	2	3	—	—	3	1.2		
3	6	18	3	3	—	—	2.5	—	—	—	—	—	3	3	—	—	4	1.5		
6	10	22	3	3	—	—	2.5	3	3	—	—	1.5	3	3	—	—	4	1.5		
10	18	27	4	4	—	—	3	4	4	—	—	2	4	4	—	—	5	2		
18	30	33	5	4	—	—	4	5	4	—	—	2.5	5	4	—	—	6	2.5		
30	50	39	6	5	—	—	4	6	5	—	—	2.5	6	5	—	—	7	2.5		
50	80	46	7	5	—	—	5	7	5	—	—	3	7	5	—	—	8	3		
80	120	54	8	6	—	—	6	8	6	—	—	4	8	6	—	—	10	4		
120	180	63	9	6	—	—	8	9	6	—	—	5	9	6	—	—	12	5		
180	250	72	12	7	3	4	10	12	7	3	4	7	12	7	3	4	14	7		
250	315	81	14	9	3	6	12	14	9	3	6	8	14	9	3	6	16	8		
315	400	89	16	9	2	7	13	16	9	2	7	9	—	—	—	—	—	—		
400	500	97	18	11	2	9	15	18	11	2	9	10	—	—	—	—	—	—		

Attached Table 5 Parameters for obtaining tolerances and sizes of limit gauges and reference disks for IT 9

Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft						
Over	Up to and incl.		Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
			z	y	y'	α	$\frac{H}{IT\ 3}$	z	y	y'	α	$\frac{H_s}{IT\ 2}$	z ₁	y ₁	y' ₁	α_1	$\frac{H_1}{IT\ 4}$	$\frac{H_1}{IT\ 2}$	
1 and over	3	25	5	0	—	—	2	—	—	—	—	—	5	0	—	—	3	1.2	
3	6	30	6	0	—	—	2.5	—	—	—	—	—	6	0	—	—	4	1.5	
6	10	36	7	0	—	—	2.5	7	0	—	—	1.5	7	0	—	—	4	1.5	
10	18	43	8	0	—	—	3	8	0	—	—	2	8	0	—	—	5	2	
18	30	52	9	0	—	—	4	9	0	—	—	2.5	9	0	—	—	6	2.5	
30	50	62	11	0	—	—	4	11	0	—	—	2.5	11	0	—	—	7	2.5	
50	80	74	13	0	—	—	5	13	0	—	—	3	13	0	—	—	8	3	
80	120	87	15	0	—	—	6	15	0	—	—	4	15	0	—	—	10	4	
120	180	100	18	0	—	—	8	18	0	—	—	5	18	0	—	—	12	5	
180	250	115	21	0	4	4	10	21	0	4	4	7	21	0	4	4	14	7	
250	315	130	24	0	6	6	12	24	0	6	6	8	24	0	6	6	16	8	
315	400	140	28	0	7	7	13	28	0	7	7	9	—	—	—	—	—	—	
400	500	155	32	0	9	9	15	32	0	9	9	10	—	—	—	—	—	—	

Attached Table 6 Parameters for obtaining tolerances and sizes of
limit gauges and reference disks for IT 10Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft							
Over	Up to and incl.		IT 10	Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
				z	y	y'	α	$\frac{H}{IT\ 3}$	z	y	y'	α	$\frac{H_s}{IT\ 2}$	z ₁	y ₁	y' ₁	α_1	$\frac{H_1}{IT\ 4}$	$\frac{H_p}{IT\ 2}$	
1 and over	3	40	5	0	—	—	2	—	—	—	—	—	5	0	—	—	3	1.2		
3	6	48	6	0	—	—	2.5	—	—	—	—	—	6	0	—	—	4	1.5		
6	10	58	7	0	—	—	2.5	7	0	—	—	1.5	7	0	—	—	4	1.5		
10	18	70	8	0	—	—	3	8	0	—	—	2	8	0	—	—	5	2		
18	30	84	9	0	—	—	4	9	0	—	—	2.5	9	0	—	—	6	2.5		
30	50	100	11	0	—	—	4	11	0	—	—	2.5	11	0	—	—	7	2.5		
50	80	120	13	0	—	—	5	13	0	—	—	3	13	0	—	—	8	3		
80	120	140	15	0	—	—	6	15	0	—	—	4	15	0	—	—	10	4		
120	180	160	18	0	—	—	8	18	0	—	—	5	18	0	—	—	12	5		
180	250	185	24	0	7	7	10	24	0	7	7	7	24	0	7	7	14	7		
250	315	210	27	0	9	9	12	27	0	9	9	8	27	0	9	9	16	8		
315	400	230	32	0	11	11	13	32	0	11	11	9	—	—	—	—	—	—		
400	500	250	37	0	14	14	15	37	0	14	14	10	—	—	—	—	—	—		

Attached Table 7 Parameters for obtaining tolerances and sizes of
limit gauges and reference disks for IT 11Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft					
Over	Up to and incl.		Plug gauge						Rod gauge				Ring gauge, gap gauge, reference disk					
			z	y	y'	α	$\frac{H}{IT\ 5}$	z	y	y'	α	$\frac{H_s}{IT\ 4}$	z ₁	y ₁	y' ₁	α_1	$\frac{H_1}{IT\ 5}$	$\frac{H_p}{IT\ 2}$
1 and over	3	60	10	0	—	—	4	—	—	—	—	—	10	0	—	—	4	1.2
3	6	75	12	0	—	—	5	—	—	—	—	—	12	0	—	—	5	1.5
6	10	90	14	0	—	—	6	14	0	—	—	4	14	0	—	—	6	1.5
10	18	110	16	0	—	—	8	16	0	—	—	5	16	0	—	—	8	2
18	30	130	19	0	—	—	9	19	0	—	—	6	19	0	—	—	9	2.5
30	50	160	22	0	—	—	11	22	0	—	—	7	22	0	—	—	11	2.5
50	80	190	25	0	—	—	13	25	0	—	—	8	25	0	—	—	13	3
80	120	220	28	0	—	—	15	28	0	—	—	10	28	0	—	—	15	4
120	180	250	32	0	—	—	18	32	0	—	—	12	32	0	—	—	18	5
180	250	290	40	0	10	10	20	40	0	10	10	14	40	0	10	10	20	7
250	315	320	45	0	15	15	23	45	0	15	15	16	45	0	15	15	23	8
315	400	360	50	0	15	15	25	50	0	15	15	18	—	—	—	—	—	—
400	500	400	55	0	20	20	27	55	0	20	20	20	—	—	—	—	—	—

Attached Table 8 Parameters for obtaining tolerances and sizes of limit gauges and reference disks for IT 12

Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft						
Over	Up to and incl.		Plug gauge						Rod gauge				Ring gauge, gap gauge, reference disk						
			z	y	y'	α	H IT 5	z	y	y'	α	H _s IT 4	z ₁	y ₁	y' ₁	α ₁	H ₁ IT 5	H _P IT 2	
1 and over	3	100	10	0	—	—	4	—	—	—	—	—	10	0	—	—	4	1.2	
3	6	120	12	0	—	—	5	—	—	—	—	—	12	0	—	—	5	1.5	
6	10	150	14	0	—	—	6	14	0	—	—	4	14	0	—	—	6	1.5	
10	18	180	16	0	—	—	8	16	0	—	—	5	16	0	—	—	8	2	
18	30	210	19	0	—	—	9	19	0	—	—	6	19	0	—	—	9	2.5	
30	50	250	22	0	—	—	11	22	0	—	—	7	22	0	—	—	11	2.5	
50	80	300	25	0	—	—	13	25	0	—	—	8	25	0	—	—	13	3	
80	120	350	28	0	—	—	15	28	0	—	—	10	28	0	—	—	15	4	
120	180	400	32	0	—	—	18	32	0	—	—	12	32	0	—	—	18	5	
180	250	460	45	0	15	15	20	45	0	15	15	14	45	0	15	15	20	7	
250	315	520	50	0	20	20	23	50	0	20	20	16	50	0	20	20	23	8	
315	400	570	65	0	30	30	25	65	0	30	30	18	—	—	—	—	—	—	
400	500	630	70	0	35	35	27	70	0	35	35	20	—	—	—	—	—	—	

Attached Table 9 Parameters for obtaining tolerances and sizes of limit gauges and reference disks for IT 13

Unit: μm

Nominal size (mm)		T	Limit gauge for hole										Limit gauge for shaft							
Over	Up to and incl.		IT 13	Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
				z	y	y'	α	$\frac{H}{IT\ 7}$	z	y	y'	α	$\frac{H_s}{IT\ 6}$	z ₁	y ₁	y' ₁	α_1	$\frac{H_1}{IT\ 7}$	$\frac{H_p}{IT\ 3}$	
1 and over	3	140	20	0	—	—	10	—	—	—	—	—	20	0	—	—	10	2		
3	6	180	24	0	—	—	12	—	—	—	—	—	24	0	—	—	12	2.5		
6	10	220	28	0	—	—	15	28	0	—	—	9	28	0	—	—	15	2.5		
10	18	270	32	0	—	—	18	32	0	—	—	11	32	0	—	—	18	3		
18	30	330	36	0	—	—	21	36	0	—	—	13	36	0	—	—	21	4		
30	50	390	42	0	—	—	25	42	0	—	—	16	42	0	—	—	25	4		
50	80	460	48	0	—	—	30	48	0	—	—	19	48	0	—	—	30	5		
80	120	540	54	0	—	—	35	54	0	—	—	22	54	0	—	—	35	6		
120	180	630	60	0	—	—	40	60	0	—	—	25	60	0	—	—	40	8		
180	250	720	80	0	25	25	46	80	0	25	25	29	80	0	25	25	46	10		
250	315	810	90	0	35	35	52	90	0	35	35	32	90	0	35	35	52	12		
315	400	890	100	0	45	45	57	100	0	45	45	36	—	—	—	—	—	—		
400	500	970	110	0	55	55	63	110	0	55	55	40	—	—	—	—	—	—		

Attached Table 10 Parameters for obtaining tolerances and sizes of
limit gauges and reference disks for IT 14Unit: μm

Nominal size (mm)		T IT 14 (²)	Limit gauge for hole										Limit gauge for shaft						
Over	Up to and incl.		Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
			z	y	y'	α	H IT 7	z	y	y'	α	H_s IT 6	z_1	y_1	y'_1	α_1	H_1 IT 7	H_p IT 3	
1 and over	3	250	20	0	—	—	10	—	—	—	—	—	20	0	—	—	10	2	
3	6	300	24	0	—	—	12	—	—	—	—	—	24	0	—	—	12	2.5	
6	10	360	28	0	—	—	15	28	0	—	—	9	28	0	—	—	15	2.5	
10	18	430	32	0	—	—	18	32	0	—	—	11	32	0	—	—	18	3	
18	30	520	36	0	—	—	21	36	0	—	—	13	36	0	—	—	21	4	
30	50	620	42	0	—	—	25	42	0	—	—	16	42	0	—	—	25	4	
50	80	740	48	0	—	—	30	48	0	—	—	19	48	0	—	—	30	5	
80	120	870	54	0	—	—	35	54	0	—	—	22	54	0	—	—	35	6	
120	180	1 000	60	0	—	—	40	60	0	—	—	25	60	0	—	—	40	8	
180	250	1 150	100	0	45	45	46	100	0	45	45	29	100	0	45	45	46	10	
250	315	1 300	110	0	55	55	52	110	0	55	55	32	110	0	55	55	52	12	
315	400	1 400	125	0	70	70	57	125	0	70	70	36	—	—	—	—	—	—	
400	500	1 550	145	0	90	90	63	145	0	90	90	40	—	—	—	—	—	—	

Note (²) Tolerance grade IT 14 is not applicable to nominal size 1 mm.**Attached Table 11** Parameters for obtaining tolerances and sizes of
limit gauges and reference disks for IT 15Unit: μm

Nominal size (mm)		T IT 15 (³)	Limit gauge for hole										Limit gauge for shaft						
Over	Up to and incl.		Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
			z	y	y'	α	H IT 7	z	y	y'	α	H_s IT 6	z ₁	y ₁	y' ₁	α_1	H_1 IT 7	H_p IT 3	
1 and over	3	400	40	0	—	—	10	—	—	—	—	—	40	0	—	—	10	2	
3	6	480	48	0	—	—	12	—	—	—	—	—	48	0	—	—	12	2.5	
6	10	580	56	0	—	—	15	56	0	—	—	9	56	0	—	—	15	2.5	
10	18	700	64	0	—	—	18	64	0	—	—	11	64	0	—	—	18	3	
18	30	840	72	0	—	—	21	72	0	—	—	13	72	0	—	—	21	4	
30	50	1 000	80	0	—	—	25	80	0	—	—	16	80	0	—	—	25	4	
50	80	1 200	90	0	—	—	30	90	0	—	—	19	90	0	—	—	30	5	
80	120	1 400	100	0	—	—	35	100	0	—	—	22	100	0	—	—	35	6	
120	180	1 600	110	0	—	—	40	110	0	—	—	25	110	0	—	—	40	8	
180	250	1 850	170	0	70	70	46	170	0	70	70	29	170	0	70	70	46	10	
250	315	2 100	190	0	90	90	52	190	0	90	90	32	190	0	90	90	52	12	
315	400	2 300	210	0	110	110	57	210	0	110	110	36	—	—	—	—	—	—	
400	500	2 500	240	0	140	140	63	240	0	140	140	40	—	—	—	—	—	—	

Note (³) Tolerance grade IT 15 is not applicable to nominal size 1 mm.

Attached Table 12 Parameters for obtaining tolerances and sizes of limit gauges and reference disks for IT 16

Unit: μm

Nominal size (mm)		T IT 16 (⁴)	Limit gauge for hole										Limit gauge for shaft						
Over	Up to and incl.		Plug gauge					Rod gauge					Ring gauge, gap gauge, reference disk						
			z	y	y'	α	$\frac{H}{IT\ 7}$	z	y	y'	α	$\frac{H_s}{IT\ 6}$	z ₁	y ₁	y' ₁	α_1	$\frac{H_1}{IT\ 7}$	$\frac{H_p}{IT\ 3}$	
1 and over	3	600	40	0	—	—	10	—	—	—	—	—	40	0	—	—	10	2	
3	6	750	48	0	—	—	12	—	—	—	—	—	48	0	—	—	12	2.5	
6	10	900	56	0	—	—	15	56	0	—	—	9	56	0	—	—	15	2.5	
10	18	1 100	64	0	—	—	18	64	0	—	—	11	64	0	—	—	18	3	
18	30	1 300	72	0	—	—	21	72	0	—	—	13	72	0	—	—	21	4	
30	50	1 600	80	0	—	—	25	80	0	—	—	16	80	0	—	—	25	4	
50	80	1 900	90	0	—	—	30	90	0	—	—	19	90	0	—	—	30	5	
80	120	2 200	100	0	—	—	35	100	0	—	—	22	100	0	—	—	35	6	
120	180	2 500	110	0	—	—	40	110	0	—	—	25	110	0	—	—	40	8	
180	250	2 900	210	0	110	110	46	210	0	110	110	29	210	0	110	110	46	10	
250	315	3 200	240	0	140	140	52	240	0	140	140	32	240	0	140	140	52	12	
315	400	3 600	280	0	180	180	57	280	0	180	180	36	—	—	—	—	—	—	
400	500	4 000	320	0	220	220	63	320	0	220	220	40	—	—	—	—	—	—	

Note (⁴) Tolerance grade IT 16 is not applicable to nominal size 1 mm.

Attached Table 13 Dimensional tolerances and form tolerances of limit gauges and reference disks for IT6

Unit: μm

Nominal size (mm)	Limit gauge for hole											
	Plug gauge				Rod gauge				Ring gauge			
	GO (°)				NOT GO (°)				GO (°)			
	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Circularity • Cylindricity	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Circularity • Cylindricity	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Circularity • Cylindricity
Over	Up to and incl.											
1 and over	3	6	10	18	30	50	80	120	180	250	315	400
3	+1.6	+0.4	-1.0	+0.6	-0.6	0.8	-0.8	1	-0.8	1	-0.8	1
6	+2.2	+0.8	-1.0	+0.8	-0.8	1	-1.0	+1.0	+1.2	-1.2	1.5	-1.5
10	+3.0	+1.0	-1.5	+1.0	-1.0	1.2	-1.5	+1.5	+1.5	-1.5	1.5	-1.5
18	+3.2	+0.8	-1.5	+1.2	-1.2	1.5	-2.0	+2.0	+2.0	-2.0	2.5	-2.5
30	+3.8	+1.2	-2.0	+1.5	-1.5	2.0	-3.0	+3.0	+3.0	-3.0	3.0	-3.0
50	+4.0	+1.0	-2.0	+1.5	-1.5	2.5	-4.0	+4.0	+4.0	-4.0	4.0	-4.0
80	+5.0	+1.0	-3.0	+2.0	-2.0	3.0	-5.0	+5.0	+5.0	-5.0	5.0	-5.0
120	+6.5	+1.5	-3.0	+2.5	-2.5	3.5	-6.5	+6.5	+6.5	-6.5	6.5	-6.5
180	+8.5	+1.5	-2.0	+1.5	-1.5	4.5	-8.5	+8.5	+8.5	-8.5	8.5	-8.5
250	+10.0	+2.0	-2.0	+1.0	-1.0	6	-10.0	+10.0	+10.0	-10.0	10.0	-10.0
315	+11.5	+2.5	-2.0	+0.5	-0.5	7	-11.5	+11.5	+11.5	-11.5	11.5	-11.5
400	+13.0	+3.0	-2.0	0	-10.0	8	-13.0	+13.0	+13.0	-13.0	13.0	-13.0
500	+13.0	+3.0	-2.0	0	-10.0	8	-13.0	+13.0	+13.0	-13.0	13.0	-13.0

Notes (°) The dimensional tolerance in column GO shall be used corresponding to maximum material limit (MML) of hole or shaft.

(°) The dimensional tolerance in column NOT GO shall be used corresponding to least material limit (LML) of hole or shaft.



Attached Table 14 Dimensional tolerances and form tolerances of limit gauges and reference disks for IT7

Unit: μm

Nominal size (mm)	Limit gauge for hole											
	Plug gauge				Rod gauge				Ring gauge			
	GO (°)				NOT GO (°)				GO (°)			
Over	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible wear	Upper dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible wear	Upper dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible wear	Upper dimensional tolerance
	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance
1 and over	3	2.5	+0.5	-1.5	+1.0	-1.0	1.2	-0.5	-2.5	+1.5	-0.5	-0.5
3	6	3.2	+0.8	-1.5	+1.2	-1.2	1.5	-0.8	-3.2	+1.5	-0.8	-1.2
6	10	3.2	+0.8	-1.5	+1.2	-1.2	1.5	-0.8	-3.2	+1.5	-0.8	-1.2
10	18	4.0	+1.0	-2.0	+1.5	-1.5	2	-1.0	-4.0	+2.0	-1.0	-1.5
18	30	5.0	+1.0	-3.0	+2.0	-2.0	2.5	-1.0	-5.0	+3.0	-1.0	-2.0
30	50	5.5	+1.5	-3.0	+2.0	-2.0	2.5	-1.5	-5.5	+3.0	-1.5	-2.0
50	80	6.5	+1.5	-3.0	+2.5	-2.5	3	-1.5	-6.5	+3.0	-1.5	-2.5
80	120	8.0	+2.0	-4.0	+3.0	-3.0	4	-2.0	-8.0	+4.0	-2.0	-3.0
120	180	10.0	+2.0	-4.0	+4.0	-4.0	5	-2.0	-10.0	+4.0	-2.0	-4.0
180	250	12.0	+2.0	-3.0	+2.0	-8.0	7	-2.0	-12.0	+3.0	-2.0	-2.0
250	315	14.0	+2.0	-3.0	+2.0	-10.0	8	-2.0	-14.0	+3.0	-2.0	-2.0
315	400	16.5	+3.5	-2.0	+0.5	-12.5	9	-1.5	-10.5	-	-	-
400	500	18.5	+3.5	-2.0	+0.5	-14.5	10	-2.0	-12.0	-	-	-

Notes (°) The dimensional tolerance in column GO shall be used corresponding to maximum material limit (MML) of hole or shaft.

(°) The dimensional tolerance in column NOT GO shall be used corresponding to least material limit (LML) of hole or shaft.

Attached Table 15 Dimensional tolerances and form tolerances of limit gauges and reference disks for IT8 Unit: μm

Nominal size (mm)	Limit gauge for hole										Limit gauge for shaft									
	Plug gauge					Rod gauge					Ring gauge					Gap gauge				
	GO (°)					NOT GO (°)					GO (°)					GO (°)				
Over	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Upper dimensional tolerance	Lower dimensional tolerance
	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness	Circularity • Cylindricity	Parallelism • Flatness
1 and over	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
10	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
18	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
30	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
50	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
80	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
120	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
180	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
250	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
315	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
400	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
500	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

Notes (°) The dimensional tolerance in column GO shall be used corresponding to maximum material limit (MML) of hole or shaft.

(°) The dimensional tolerance in column NOT GO shall be used corresponding to least material limit (LML) of hole or shaft.



Attached Table 16 Dimensional tolerances and form tolerances of limit gauges and reference disks for IT9

Unit: μm

Nominal size (mm)	Limit gauge for hole										Limit gauge for shaft												
	Plug gauge					Rod gauge					Ring gauge					Gap gauge							
	GO (°)					NOT GO (°)					GO (°)					NOT GO (°)							
	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum permissible gauge wear	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	
Over	Up to and incl.																						
1 and over	3	+ 6.0	+ 4.0	0	+ 1.0	- 1.0	1.2	—	—	—	—	- 3.5	- 6.5	0	+ 1.5	- 1.5	2	—	4.4	- 5.6	+ 0.6	- 0.6	0.8
3	6	+ 7.2	+ 4.8	0	+ 1.2	- 1.2	1.5	—	—	—	—	- 4.0	- 8.0	0	+ 2.0	- 2.0	2.5	2.5	- 5.2	- 6.8	+ 0.8	- 0.8	- 0.8
6	10	+ 8.2	+ 5.8	0	+ 1.2	- 1.2	1.5	+ 7.8	+ 6.2	0	+ 0.8	- 0.8	- 9.0	0	+ 2.0	- 2.0	2.5	2.5	- 6.2	- 7.8	+ 0.8	- 0.8	- 0.8
10	18	+ 9.5	+ 6.5	0	+ 1.5	- 1.5	2	+ 9.0	+ 7.0	0	+ 1.0	- 1.0	- 10.5	0	+ 2.5	- 2.5	3	—	- 7.0	- 9.0	+ 1.0	- 1.0	1.2
18	30	+ 11.0	+ 7.0	0	+ 2.0	- 2.0	2.5	+ 10.2	+ 7.8	0	+ 1.2	- 1.2	- 12.0	0	+ 3.0	- 3.0	4	—	- 7.8	- 10.2	+ 1.2	- 1.2	1.5
30	50	+ 13.0	+ 9.0	0	+ 2.0	- 2.0	2.5	+ 12.2	+ 9.8	0	+ 1.2	- 1.2	- 14.5	0	+ 3.5	- 3.5	4	—	- 9.8	- 12.2	+ 1.2	- 1.2	1.5
50	80	+ 15.5	+ 10.5	0	+ 2.5	- 2.5	3	+ 14.5	+ 11.5	0	+ 1.5	- 1.5	- 17.0	0	+ 4.0	- 4.0	5	—	- 11.5	- 14.5	+ 1.5	- 1.5	2
80	120	+ 18.0	+ 12.0	0	+ 3.0	- 3.0	4	+ 17.0	+ 13.0	0	+ 2.0	- 2.0	- 20.0	0	+ 5.0	- 5.0	6	—	- 13.0	- 17.0	+ 2.0	- 2.0	2.5
120	180	+ 22.0	+ 14.0	0	+ 4.0	- 4.0	5	+ 20.5	+ 15.5	0	+ 2.5	- 2.5	- 24.0	0	+ 6.0	- 6.0	8	—	- 15.5	- 20.5	+ 2.5	- 2.5	3.5
180	250	+ 26.0	+ 16.0	+ 4.0	+ 1.0	- 9.0	7	+ 24.5	+ 17.5	+ 4.0	- 0.5	- 7.5	- 28.0	- 4.0	+ 11.0	- 3.0	10	—	- 17.5	- 24.5	- 0.5	- 7.5	+ 0.5
250	315	+ 30.0	+ 18.0	+ 6.0	0	- 12.0	8	+ 28.0	+ 20.0	+ 6.0	- 2.0	- 10.0	- 32.0	- 6.0	+ 14.0	- 2.0	12	—	- 20.0	- 28.0	- 2.0	- 10.0	+ 2.0
315	400	+ 34.5	+ 21.5	+ 7.0	- 0.5	- 13.5	9	+ 32.5	+ 23.5	+ 7.0	- 2.5	- 11.5	—	—	—	—	—	—	—	—	—	—	—
400	500	+ 39.5	+ 24.5	+ 9.0	- 1.5	- 16.5	10	+ 37.0	+ 27.0	+ 9.0	- 4.0	- 14.0	—	—	—	—	—	—	—	—	—	—	—

Notes ($^{\circ}$) The dimensional tolerance in column GO shall be used corresponding to maximum material limit (MML) of hole or shaft.($^{\circ}$) The dimensional tolerance in column NOT GO shall be used corresponding to least material limit (LML) of hole or shaft.

Attached Table 17 Dimensional tolerances and form tolerances of limit gauges and reference disks for IT10 Unit: μm

Nominal size (mm)		Limit gauge for hole										Limit gauge for shaft																		
		Plug gauge					Rod gauge					Ring gauge					Gap gauge													
		GO (°)					NOT GO (°)					GO (°)					NOT GO (°)													
		Circularity • Cylindricity					GO (°)					NOT GO (°)					GO (°)					NOT GO (°)								
Up to and incl.	GO (°)		NOT GO (°)		Circularity • Cylindricity	GO (°)		NOT GO (°)		GO (°)		NOT GO (°)		GO (°)		NOT GO (°)		GO (°)		NOT GO (°)		GO (°)		NOT GO (°)		Circularity • Cylindricity				
	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum per-missible gauge wear	Upper dimensional tolerance		Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Limit of maximum per-missible gauge wear	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance	Upper dimensional tolerance	Lower dimensional tolerance							
Over	3	+ 6.0	+ 4.0	0	+1.0	- 1.0	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
1 and over	3	+ 7.2	+ 4.8	0	+1.2	- 1.2	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	6	+ 8.2	+ 5.8	0	+1.2	- 1.2	1.5	+ 7.8	+ 6.2	0	+0.8	- 0.8	- 5.0	- 9.0	0	+ 2.0	- 2.0	2.5	- 5.0	- 9.0	0	+ 2.0	- 2.0	2.5	- 6.2	- 7.8	+0.8	- 0.8	- 0.8	- 0.8
	10	+ 9.5	+ 6.5	0	+1.5	- 1.5	2	+ 9.0	+ 7.0	0	+1.0	- 1.0	- 5.5	- 10.5	0	+ 2.5	- 2.5	3	- 5.5	- 10.5	0	+ 2.5	- 2.5	3	- 7.0	- 9.0	+1.0	- 1.0	- 1.0	- 1.0
	18	+ 11.0	+ 7.0	0	+2.0	- 2.0	2.5	+10.2	+ 7.8	0	+1.2	- 1.2	- 6.0	- 12.0	0	+ 3.0	- 3.0	4	- 6.0	- 12.0	0	+ 3.0	- 3.0	4	- 7.8	- 10.2	+1.2	- 1.2	- 1.2	- 1.2
	30	+ 13.0	+ 9.0	0	+2.0	- 2.0	2.5	+12.2	+ 9.8	0	+1.2	- 1.2	- 7.5	- 14.5	0	+ 3.5	- 3.5	4	- 7.5	- 14.5	0	+ 3.5	- 3.5	4	- 9.8	- 12.2	+1.2	- 1.2	- 1.2	- 1.2
	50	+ 15.5	+ 10.5	0	+2.5	- 2.5	3	+14.5	+11.5	0	+1.5	- 1.5	- 9.0	- 17.0	0	+ 4.0	- 4.0	5	- 9.0	- 17.0	0	+ 4.0	- 4.0	5	- 11.5	- 14.5	+1.5	- 1.5	- 1.5	- 1.5
	80	+ 18.0	+ 12.0	0	+3.0	- 3.0	4	+17.0	+13.0	0	+2.0	- 2.0	- 10.0	- 20.0	0	+ 5.0	- 5.0	6	- 10.0	- 20.0	0	+ 5.0	- 5.0	6	- 13.0	- 17.0	+2.0	- 2.0	- 2.0	- 2.0
	120	+ 22.0	+ 14.0	0	+4.0	- 4.0	5	+20.5	+15.5	0	+2.5	- 2.5	- 12.0	- 24.0	0	+ 6.0	- 6.0	8	- 12.0	- 24.0	0	+ 6.0	- 6.0	8	- 15.5	- 20.5	+2.5	- 2.5	- 2.5	- 2.5
	180	+ 29.0	+ 19.0	7.0	-2.0	-12.0	7	+27.5	+20.5	+ 7.0	-3.5	-10.5	-17.0	-31.0	-7.0	+14.0	0	10	-17.0	-31.0	-7.0	+14.0	0	10	-20.5	-27.5	-3.5	-10.5	+10.5	+3.5
	250	+ 33.0	+ 21.0	+ 9.0	-3.0	-15.0	8	+31.0	+23.0	+ 9.0	-5.0	-13.0	-19.0	-35.0	-9.0	+17.0	+1.0	12	-19.0	-35.0	-9.0	+17.0	+1.0	12	-23.0	-31.0	-5.0	-13.0	+13.0	+5.0
	315	+ 38.5	+ 25.5	+11.0	-4.5	-17.5	9	+36.5	+27.5	+11.0	-6.5	-15.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	400	+ 44.5	+ 29.5	+14.0	-6.5	-21.5	10	+42.0	+32.0	+14.0	-9.0	-19.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes (°) The dimensional tolerance in column GO shall be used corresponding to maximum material limit (MML) of hole or shaft.

(°) The dimensional tolerance in column NOT GO shall be used corresponding to least material limit (LML) of hole or shaft.