

# INTERNATIONAL STANDARD

**ISO  
1501**

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## ISO miniature screw threads

*Filetages miniatures ISO*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 1501 was prepared by Technical Committee ISO/TC 1, *Screw threads*.

This first edition of ISO 1501 is a technical revision of ISO/R 1501:1970, which was cancelled in 1998.

# ISO miniature screw threads

## 1 Scope

This International Standard specifies the profiles, diameter-pitch combinations, basic dimensions, tolerances, limits of size and designation for ISO miniature screw threads with nominal diameters from 0,3 mm to 1,4 mm. These threads are applicable to timepieces, optical instruments, electrical meters, measuring instruments, etc.

The profiles and tolerance system for ISO miniature screw threads (S) differ from the profile and tolerance system for ISO general purpose metric screw threads (M).

For threads with nominal diameters from 1 mm to 1,4 mm, designers shall decide to use ISO general purpose metric screw threads (M) or ISO miniature screw threads (S). ISO miniature screw threads are shown in Annex A.

Annex C illustrates the differences in miniature screw threads between the ISO International Standards and those of certain countries.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5408:—<sup>1)</sup>, *Screw threads — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5408 apply.

## 4 Symbols

The following symbols are used:

| Symbol | Term                                                         |
|--------|--------------------------------------------------------------|
| $D$    | basic major diameter of internal thread;<br>nominal diameter |
| $D_2$  | basic pitch diameter of internal thread                      |
| $D_1$  | basic minor diameter of internal thread                      |
| $d$    | basic major diameter of external thread;<br>nominal diameter |

1) To be published. (Revision of ISO 5408:1983)

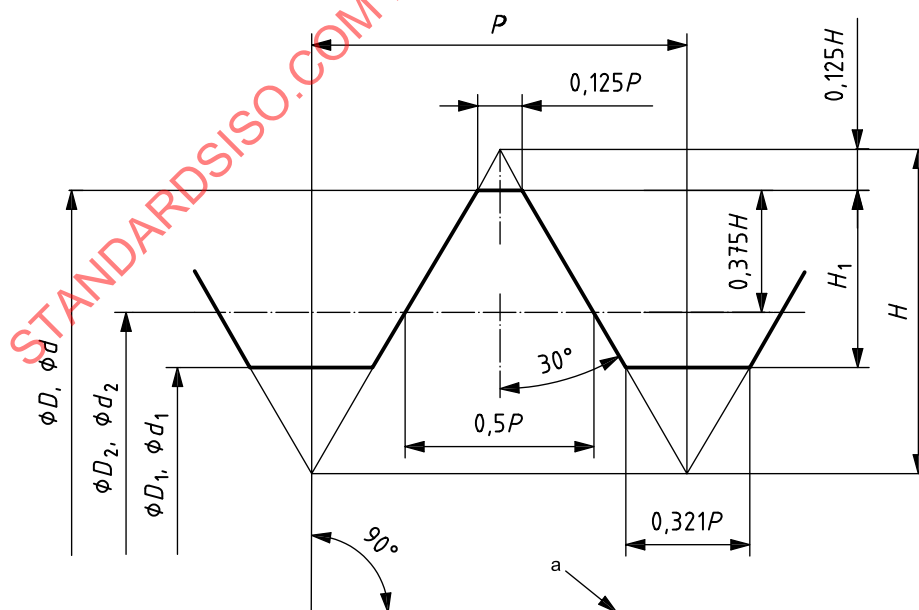
|          |                                                           |
|----------|-----------------------------------------------------------|
| $d_2$    | basic pitch diameter of external thread                   |
| $d_1$    | basic minor diameter of external thread on basic profile  |
| $d_3$    | basic minor diameter of external thread on design profile |
| $P$      | pitch                                                     |
| $H$      | height of fundamental triangle                            |
| $H_1$    | height of thread on basic profile;<br>flank overlap       |
| $h_3$    | height of external thread on design profile               |
| $a_c$    | clearance between minor diameters on design profile       |
| $EI$     | lower deviations of internal thread on design profile     |
| $es$     | upper deviations of external thread on design profile     |
| $T$      | tolerances                                                |
| $T_{D2}$ | tolerances for $D_2$                                      |
| $T_{D1}$ | tolerances for $D_1$                                      |
| $T_d$    | tolerances for $d$                                        |
| $T_{d2}$ | tolerances for $d_2$                                      |
| $T_{d3}$ | tolerances for $d_3$                                      |

## 5 Profiles

### 5.1 Basic profile

The basic profile is shown as a thick line in Figure 1.

The dimensions of the basic profile are given in Table 1.



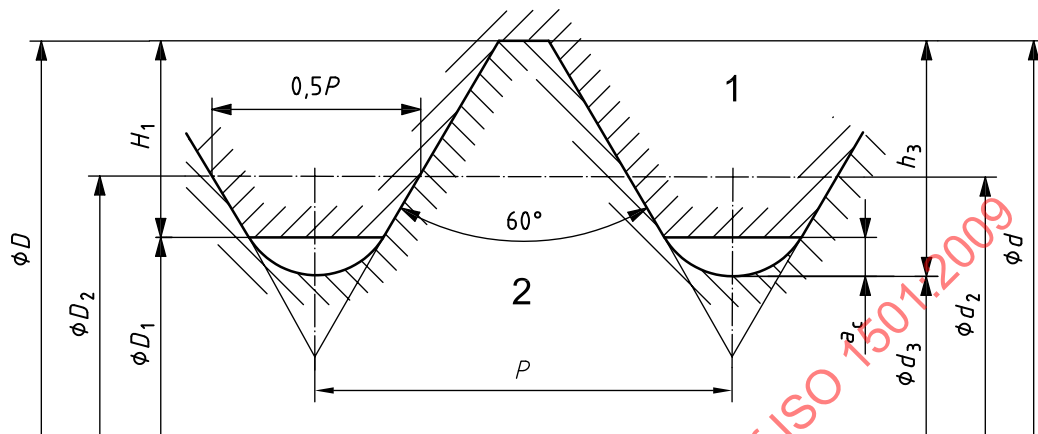
a Axis of screw thread.

Figure 1 — Basic profile

## 5.2 Design profile

The design profile is shown as a thick line in Figure 2.

The dimensions of the design profile are given in Table 1.



### Key

- 1 internal thread
- 2 external thread

Figure 2 — Design profile

Table 1 — Dimensions of profiles

Dimensions in millimetres

| Pitch<br>$P$ | $H$<br>$0,866\ 025P$ | $H_1$<br>$0,48P$ | $0,375H$<br>$0,324\ 760P$ | $h_3$<br>$0,56P$ | $a_c$<br>$0,08P$ |
|--------------|----------------------|------------------|---------------------------|------------------|------------------|
| 0,08         | 0,069 282            | 0,038 400        | 0,025 981                 | 0,044 800        | 0,006            |
| 0,09         | 0,077 942            | 0,043 200        | 0,029 228                 | 0,050 400        | 0,007            |
| 0,1          | 0,086 603            | 0,048 000        | 0,032 476                 | 0,056 000        | 0,008            |
| 0,125        | 0,108 253            | 0,060 000        | 0,040 595                 | 0,070 000        | 0,010            |
| 0,15         | 0,129 904            | 0,072 000        | 0,048 714                 | 0,084 000        | 0,012            |
| 0,175        | 0,151 554            | 0,084 000        | 0,056 833                 | 0,098 000        | 0,014            |
| 0,2          | 0,173 205            | 0,096 000        | 0,064 952                 | 0,112 000        | 0,016            |
| 0,225        | 0,194 856            | 0,108 000        | 0,073 071                 | 0,126 000        | 0,018            |
| 0,25         | 0,216 506            | 0,120 000        | 0,081 190                 | 0,140 000        | 0,020            |
| 0,3          | 0,259 808            | 0,144 000        | 0,097 428                 | 0,168 000        | 0,024            |

## 6 Diameter-pitch combinations and basic dimensions

The diameter-pitch combinations and basic dimensions are given in Table 2.

For threads with nominal diameters from 1 mm to 1,4 mm, diameter-pitch combinations and basic dimensions are given in Annex A.

Choose, preferably, diameters in column 1 of Table 2.

**Table 2 — Diameter-pitch combinations and basic dimensions**

Dimensions in millimetres

| Nominal diameter<br>$D, d$                                               |               | Pitch<br>$P$ | Pitch diameter<br>$D_2, d_2$ | Minor diameter           |                          |
|--------------------------------------------------------------------------|---------------|--------------|------------------------------|--------------------------|--------------------------|
| First choice                                                             | Second choice |              |                              | Internal thread<br>$D_1$ | External thread<br>$d_3$ |
| 0,3                                                                      |               | 0,08         | 0,248                        | 0,223                    | 0,210                    |
|                                                                          | 0,35          | 0,09         | 0,292                        | 0,264                    | 0,249                    |
| 0,4                                                                      |               | 0,1          | 0,335                        | 0,304                    | 0,288                    |
|                                                                          | 0,45          | 0,1          | 0,385                        | 0,354                    | 0,338                    |
| 0,5                                                                      |               | 0,125        | 0,419                        | 0,380                    | 0,360                    |
|                                                                          | 0,55          | 0,125        | 0,469                        | 0,430                    | 0,410                    |
| 0,6                                                                      |               | 0,15         | 0,503                        | 0,456                    | 0,432                    |
|                                                                          | 0,7           | 0,175        | 0,586                        | 0,532                    | 0,504                    |
| 0,8                                                                      |               | 0,2          | 0,670                        | 0,608                    | 0,576                    |
|                                                                          | 0,9           | 0,225        | 0,754                        | 0,684                    | 0,648                    |
| NOTE See Annex A for threads with nominal diameters from 1 mm to 1,4 mm. |               |              |                              |                          |                          |

The basic dimensions given in Table 2 are calculated using Equations (1), (2) and (3):

$$D_2 = d_2 = d - 0,649\,52P \quad (1)$$

$$D_1 = d - 0,96P \quad (2)$$

$$d_3 = d - 1,12P \quad (3)$$

NOTE The formula for  $d_3$  given in Equation (3) is based upon a root radius equal to  $0,2P$  approximately.

## 7 Tolerances

### 7.1 Tolerance position

The tolerance positions for diameters  $D$ ,  $D_2$ ,  $D_1$ ,  $d$ ,  $d_2$  and  $d_3$  are given in Table 3.

The fundamental deviations of diameters are given in Table 4.

### 7.2 Tolerance grades

The tolerance grades for diameters  $D_2$ ,  $D_1$ ,  $d$ ,  $d_2$  and  $d_3$  are given in Table 5.

The tolerances of diameters are given in Table 6.

There is no tolerance requirement for diameters  $D$ .

### 7.3 Grade-position combinations and tolerance zones

For internal threads, tolerance Grade 3 of pitch diameter shall be used for the tolerance position G and thread tolerance Grade 4 of pitch diameter shall be used for the tolerance position H.

For internal threads, there are four tolerance classes, 3G5, 3G6, 4H5 and 4H6. See Figure 3.

For external threads, there is only one tolerance class, 5h3. See Figure 4.

NOTE For the symbol designating tolerance class, see Clause 8.

**Table 3 — Tolerance positions**

| Thread          | Diameter             | Position |
|-----------------|----------------------|----------|
| Internal thread | Major diameter $D$   | G, H     |
|                 | Pitch diameter $D_2$ |          |
|                 | Minor diameter $D_1$ | H        |
| External thread | Major diameter $d$   | h        |
|                 | Pitch diameter $d_2$ |          |
|                 | Minor diameter $d_3$ |          |

NOTE The tolerance positions of major diameter  $D$  and pitch diameter  $D_2$  for internal thread are always the same.

**Table 4 — Fundamental deviations**

Deviations in micrometres

| Pitch<br>$P$<br>mm                                                       | Internal thread |               | External thread |
|--------------------------------------------------------------------------|-----------------|---------------|-----------------|
|                                                                          | $D, D_2$        | $D, D_2, D_1$ | $d, d_2, d_3$   |
|                                                                          | G               | H             | h               |
|                                                                          | $El$            | $El$          | $es$            |
| 0,08                                                                     | +6              | 0             | 0               |
| 0,09                                                                     | +6              | 0             | 0               |
| 0,1                                                                      | +6              | 0             | 0               |
| 0,125                                                                    | +8              | 0             | 0               |
| 0,15                                                                     | +8              | 0             | 0               |
| 0,175                                                                    | +10             | 0             | 0               |
| 0,2                                                                      | +10             | 0             | 0               |
| 0,225                                                                    | +10             | 0             | 0               |
| NOTE See Annex A for threads with nominal diameters from 1 mm to 1,4 mm. |                 |               |                 |

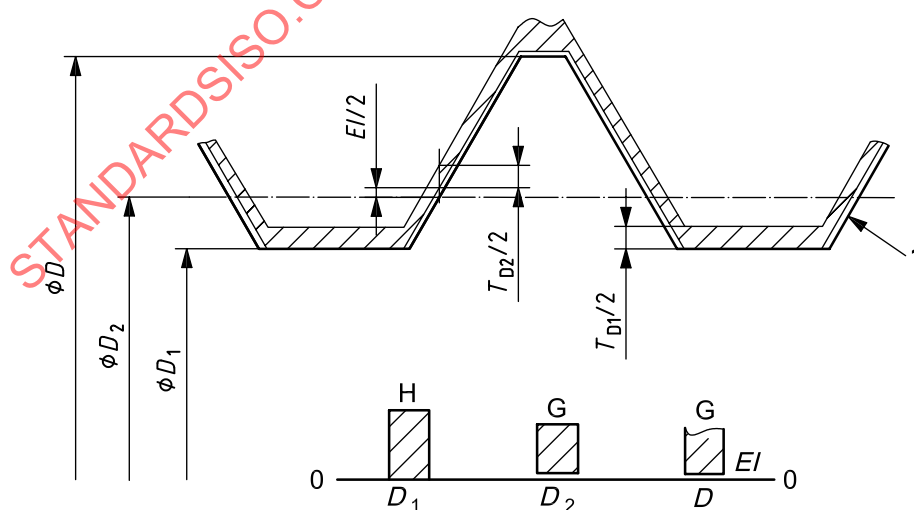
Table 5 — Tolerance grades

| Thread                                                               | Diameter             | Grade |
|----------------------------------------------------------------------|----------------------|-------|
| Internal thread                                                      | Pitch diameter $D_2$ | 3, 4  |
|                                                                      | Minor diameter $D_1$ | 5, 6  |
| External thread                                                      | Major diameter $d$   | 3     |
|                                                                      | Pitch diameter $d_2$ | 5     |
|                                                                      | Minor diameter $d_3$ | 4     |
| NOTE Usually there is no requirement to check $d_3$ for conformance. |                      |       |

Table 6 — Tolerances

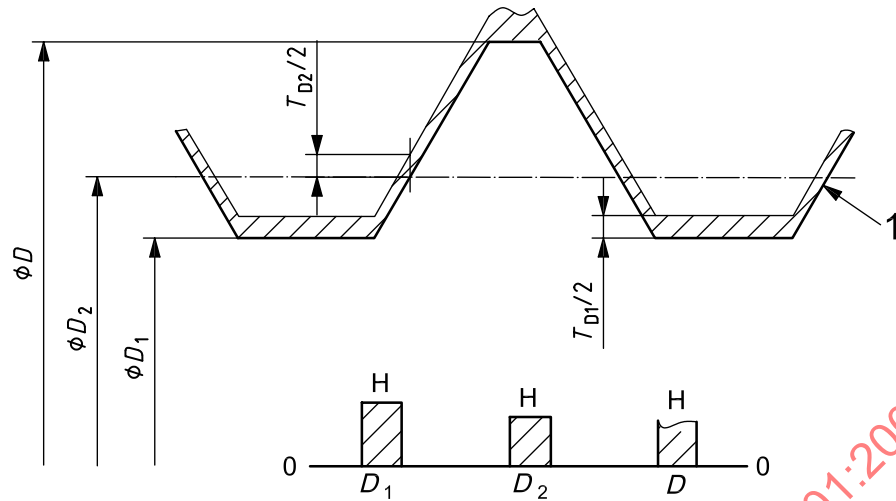
Tolerances in micrometres

| Pitch<br>$P$<br>mm                                                         | Internal thread |         |          |         | External thread |          |          |
|----------------------------------------------------------------------------|-----------------|---------|----------|---------|-----------------|----------|----------|
|                                                                            | $T_{D2}$        |         | $T_{D1}$ |         | $T_d$           | $T_{d2}$ | $T_{d3}$ |
|                                                                            | Grade 3         | Grade 4 | Grade 5  | Grade 6 | Grade 3         | Grade 5  | Grade 4  |
| 0,08                                                                       | 14              | 20      | 17       | —       | 16              | 20       | 20       |
| 0,09                                                                       | 16              | 22      | 22       | —       | 18              | 22       | 22       |
| 0,1                                                                        | 18              | 24      | 26       | 38      | 20              | 24       | 24       |
| 0,125                                                                      | 18              | 26      | 35       | 55      | 20              | 26       | 28       |
| 0,15                                                                       | 20              | 28      | 46       | 66      | 25              | 28       | 32       |
| 0,175                                                                      | 22              | 32      | 53       | 73      | 25              | 32       | 36       |
| 0,2                                                                        | 26              | 36      | 57       | 77      | 30              | 36       | 40       |
| 0,225                                                                      | 30              | 40      | 61       | 81      | 30              | 40       | 44       |
| NOTE 1 See Annex A for threads with nominal diameters from 1 mm to 1,4 mm. |                 |         |          |         |                 |          |          |
| NOTE 2 Usually there is no requirement to check $d_3$ for conformance.     |                 |         |          |         |                 |          |          |



a) Tolerance class 3G5 and 3G6

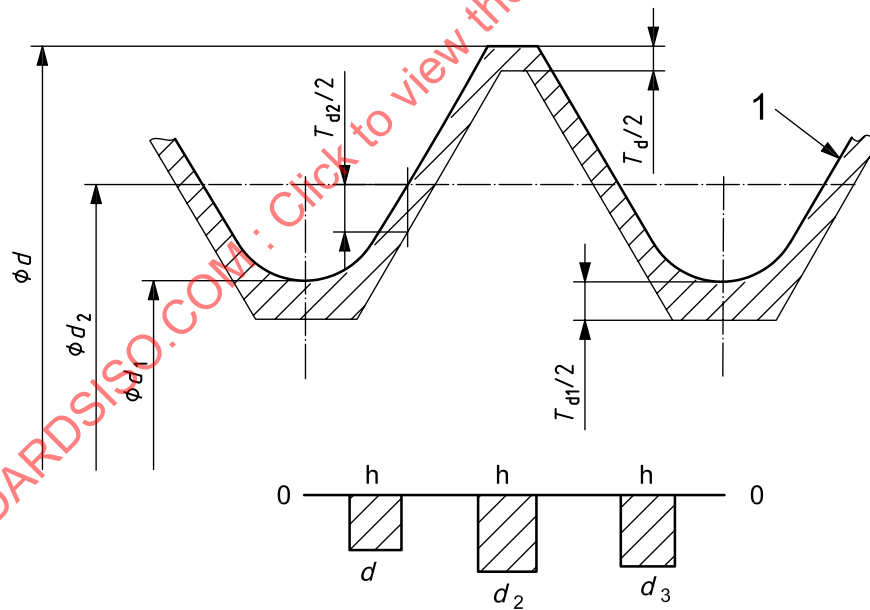
Figure 3 (continued)



b) Tolerance class 4H5 and 4H6

**Key**

1 design profile

**Figure 3 — Tolerance zone of internal thread**

Tolerance class 5h3

**Key**

1 design profile

**Figure 4 — Tolerance zone of external thread**

## 8 Designation

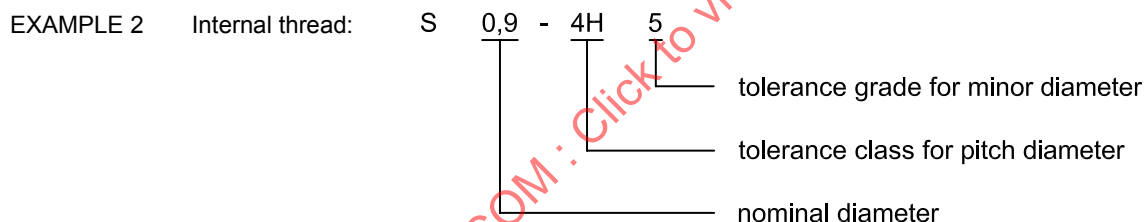
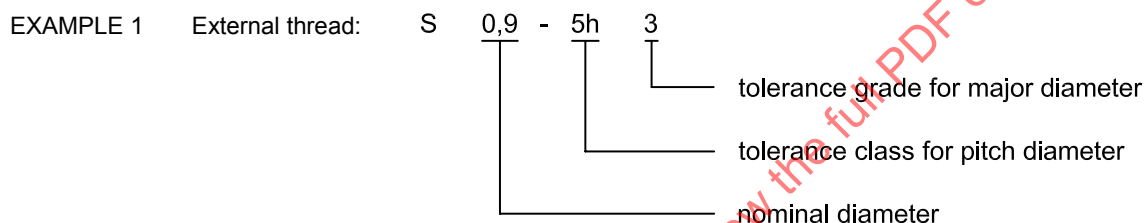
The designation of a screw thread shall comprise the letter S and the value of the nominal diameter expressed in millimetres, followed by a dash and the symbol for the tolerance class.

The symbol for the tolerance class shall comprise:

- a figure indicating the tolerance grade of pitch diameter;
- a letter indicating the tolerance position of pitch diameter; capital letter for internal threads, lowercase letter for external threads;
- a figure indicating the tolerance grade of crest diameter, minor diameter of internal thread or major diameter of external thread.

A fit between threaded parts shall be indicated by the internal thread tolerance class symbol followed by the external thread tolerance class symbol, separated by a stroke.

When left-hand threads are specified, the letters LH shall be added to the thread designation, separated by a dash.



EXAMPLE 3 Fit between threaded parts: S 0,9 - 3G5/5h3

EXAMPLE 4 Left-hand thread: S 0,9 - 4H6 - LH

## 9 Limits of size

The limits of size for tolerance classes 3G5, 3G6, 4H5, 4H6 and 5h3 are given in Tables 7, 8 and 9.

Table 7 — Limits of size for tolerance classes 3G5 and 3G6

Dimensions in millimetres

| Nominal diameter<br>$D$                                                  | Pitch<br>$P$ | Major diameter<br>$D$ |       | 3G                      |       | Grade 5                 |       | Grade 6 |       |
|--------------------------------------------------------------------------|--------------|-----------------------|-------|-------------------------|-------|-------------------------|-------|---------|-------|
|                                                                          |              |                       |       | Pitch diameter<br>$D_2$ |       | Minor diameter<br>$D_1$ |       |         |       |
|                                                                          |              | max.                  | min.  | max.                    | min.  | max.                    | min.  | max.    | min.  |
| 0,3                                                                      | 0,08         | not specified         | 0,306 | 0,268                   | 0,254 | 0,240                   | 0,223 | —       | —     |
| 0,35                                                                     | 0,09         |                       | 0,356 | 0,314                   | 0,298 | 0,286                   | 0,264 | —       | —     |
| 0,4                                                                      | 0,1          |                       | 0,406 | 0,359                   | 0,341 | 0,330                   | 0,304 | 0,342   | 0,304 |
| 0,45                                                                     | 0,1          |                       | 0,456 | 0,409                   | 0,391 | 0,380                   | 0,354 | 0,392   | 0,354 |
| 0,5                                                                      | 0,125        |                       | 0,508 | 0,445                   | 0,427 | 0,415                   | 0,380 | 0,435   | 0,380 |
| 0,55                                                                     | 0,125        |                       | 0,558 | 0,495                   | 0,477 | 0,465                   | 0,430 | 0,485   | 0,430 |
| 0,6                                                                      | 0,15         |                       | 0,608 | 0,531                   | 0,511 | 0,502                   | 0,456 | 0,522   | 0,456 |
| 0,7                                                                      | 0,175        |                       | 0,710 | 0,618                   | 0,596 | 0,585                   | 0,532 | 0,605   | 0,532 |
| 0,8                                                                      | 0,2          |                       | 0,810 | 0,706                   | 0,680 | 0,665                   | 0,608 | 0,685   | 0,608 |
| 0,9                                                                      | 0,225        |                       | 0,910 | 0,794                   | 0,764 | 0,745                   | 0,684 | 0,765   | 0,684 |
| NOTE See Annex A for threads with nominal diameters from 1 mm to 1,4 mm. |              |                       |       |                         |       |                         |       |         |       |

Table 8 — Limits of size for tolerance classes 4H5 and 4H6

Dimensions in millimetres

| Nominal diameter<br>$D$                                                  | Pitch<br>$P$ | Major diameter<br>$D$ |       | 4H                      |       | Grade 5                 |       | Grade 6 |       |
|--------------------------------------------------------------------------|--------------|-----------------------|-------|-------------------------|-------|-------------------------|-------|---------|-------|
|                                                                          |              |                       |       | Pitch diameter<br>$D_2$ |       | Minor diameter<br>$D_1$ |       |         |       |
|                                                                          |              | max.                  | min.  | max.                    | min.  | max.                    | min.  | max.    | min.  |
| 0,3                                                                      | 0,08         | not specified         | 0,300 | 0,268                   | 0,248 | 0,240                   | 0,223 | —       | —     |
| 0,35                                                                     | 0,09         |                       | 0,350 | 0,314                   | 0,292 | 0,286                   | 0,264 | —       | —     |
| 0,4                                                                      | 0,1          |                       | 0,400 | 0,359                   | 0,335 | 0,330                   | 0,304 | 0,342   | 0,304 |
| 0,45                                                                     | 0,1          |                       | 0,450 | 0,409                   | 0,385 | 0,380                   | 0,354 | 0,392   | 0,354 |
| 0,5                                                                      | 0,125        |                       | 0,500 | 0,445                   | 0,419 | 0,415                   | 0,380 | 0,435   | 0,380 |
| 0,55                                                                     | 0,125        |                       | 0,550 | 0,495                   | 0,469 | 0,465                   | 0,430 | 0,485   | 0,430 |
| 0,6                                                                      | 0,15         |                       | 0,600 | 0,531                   | 0,503 | 0,502                   | 0,456 | 0,522   | 0,456 |
| 0,7                                                                      | 0,175        |                       | 0,700 | 0,618                   | 0,586 | 0,585                   | 0,532 | 0,605   | 0,532 |
| 0,8                                                                      | 0,2          |                       | 0,800 | 0,706                   | 0,670 | 0,665                   | 0,608 | 0,685   | 0,608 |
| 0,9                                                                      | 0,225        |                       | 0,900 | 0,794                   | 0,754 | 0,745                   | 0,684 | 0,765   | 0,684 |
| NOTE See Annex A for threads with nominal diameters from 1 mm to 1,4 mm. |              |                       |       |                         |       |                         |       |         |       |

Table 9 — Limits of size for tolerance class 5h3

Dimensions in millimetres

| Nominal<br>diameter<br>$d$                                                 | Pitch<br>$P$ | Major diameter<br>$d$ |       | Pitch diameter<br>$d_2$ |       | Minor diameter<br>$d_3$ |       |
|----------------------------------------------------------------------------|--------------|-----------------------|-------|-------------------------|-------|-------------------------|-------|
|                                                                            |              | max.                  | min.  | max.                    | min.  | max.                    | min.  |
| 0,3                                                                        | 0,08         | 0,300                 | 0,284 | 0,248                   | 0,228 | 0,210                   | 0,190 |
| 0,35                                                                       | 0,09         | 0,350                 | 0,332 | 0,292                   | 0,270 | 0,249                   | 0,227 |
| 0,4                                                                        | 0,1          | 0,400                 | 0,380 | 0,335                   | 0,311 | 0,288                   | 0,264 |
| 0,45                                                                       | 0,1          | 0,450                 | 0,430 | 0,385                   | 0,361 | 0,338                   | 0,314 |
| 0,5                                                                        | 0,125        | 0,500                 | 0,480 | 0,419                   | 0,393 | 0,360                   | 0,332 |
| 0,55                                                                       | 0,125        | 0,550                 | 0,530 | 0,469                   | 0,443 | 0,410                   | 0,382 |
| 0,6                                                                        | 0,15         | 0,600                 | 0,575 | 0,503                   | 0,475 | 0,432                   | 0,400 |
| 0,7                                                                        | 0,175        | 0,700                 | 0,675 | 0,586                   | 0,554 | 0,504                   | 0,468 |
| 0,8                                                                        | 0,2          | 0,800                 | 0,770 | 0,670                   | 0,634 | 0,576                   | 0,536 |
| 0,9                                                                        | 0,225        | 0,900                 | 0,870 | 0,754                   | 0,714 | 0,648                   | 0,604 |
| NOTE 1 See Annex A for threads with nominal diameters from 1 mm to 1,4 mm. |              |                       |       |                         |       |                         |       |
| NOTE 2 Usually there is no requirement to check $d_3$ for conformance.     |              |                       |       |                         |       |                         |       |

## 10 Inspection

There are different ways to inspect miniature screw threads. Information on inspection is given in Annex B.

## Annex A (normative)

### ISO miniature screw threads with nominal diameters from 1 mm to 1,4 mm

#### A.1 Profiles

For the basic profile and design profile, see Clause 5.

#### A.2 Diameter-pitch combinations and basic dimensions

The diameter-pitch combinations and basic dimensions are given in Table A.1.

**Table A.1 — Diameter-pitch combinations and basic dimensions**

Dimensions in millimetres

| Nominal diameter $D, d$ |               | Pitch<br>$P$ | Pitch diameter<br>$D_2, d_2$ | Minor diameter           |                          |
|-------------------------|---------------|--------------|------------------------------|--------------------------|--------------------------|
| First choice            | Second choice |              |                              | Internal thread<br>$D_1$ | External thread<br>$d_3$ |
| 1                       |               | 0,25         | 0,838                        | 0,760                    | 0,720                    |
|                         | 1,1           | 0,25         | 0,938                        | 0,860                    | 0,820                    |
| 1,2                     |               | 0,25         | 1,038                        | 0,960                    | 0,920                    |
|                         | 1,4           | 0,3          | 1,205                        | 1,112                    | 1,064                    |

#### A.3 Tolerances

For the tolerance positions and grades, see Table 3 and Table 5, respectively.

For the grade-position combinations and tolerance zones, see 7.3.

The fundamental deviations of diameters are given in Table A.2.

The tolerances of diameters are given in Table A.3.

**Table A.2 — Fundamental deviations**

Deviations in micrometres

| Pitch<br>$P$<br>mm | Internal thread |               | External thread |
|--------------------|-----------------|---------------|-----------------|
|                    | $D, D_2$        | $D, D_2, D_1$ | $d, d_2, d_3$   |
|                    | G               | H             | h               |
|                    | $El$            | $El$          | $es$            |
| 0,25               | +12             | 0             | 0               |
| 0,3                | +12             | 0             | 0               |

Table A.3 — Tolerances

Tolerances in micrometres

| Pitch<br>$P$<br>mm                                                   | Internal thread |         |          |         | External thread |          |          |
|----------------------------------------------------------------------|-----------------|---------|----------|---------|-----------------|----------|----------|
|                                                                      | $T_{D2}$        |         | $T_{D1}$ |         | $T_d$           | $T_{d2}$ | $T_{d3}$ |
|                                                                      | Grade 3         | Grade 4 | Grade 5  | Grade 6 | Grade 3         | Grade 5  | Grade 4  |
| 0,25                                                                 | 32              | 44      | 65       | 85      | 35              | 44       | 48       |
| 0,3                                                                  | 38              | 50      | 73       | 93      | 40              | 50       | 56       |
| NOTE Usually there is no requirement to check $d_3$ for conformance. |                 |         |          |         |                 |          |          |

## A.4 Designation

For the designation, see Clause 8.

## A.5 Limits of size

The limits of size for tolerance classes 3G5, 3G6, 4H5, 4H6 and 5h3 are given in Tables A.4, A.5 and A.6.

Table A.4 — Limits of size for tolerance classes 3G5 and 3G6

Dimensions in millimetres

| Nominal diameter<br>$D$ | Pitch<br>$P$ | Major diameter<br>$D$ |       | 3G                      |       | Grade 5                 |       | Grade 6 |       |
|-------------------------|--------------|-----------------------|-------|-------------------------|-------|-------------------------|-------|---------|-------|
|                         |              |                       |       | Pitch diameter<br>$D_2$ |       | Minor diameter<br>$D_1$ |       |         |       |
|                         |              | max.                  | min.  | max.                    | min.  | max.                    | min.  | max.    | min.  |
| 1                       | 0,25         | not specified         | 1,012 | 0,882                   | 0,850 | 0,825                   | 0,760 | 0,845   | 0,760 |
| 1,1                     | 0,25         |                       | 1,112 | 0,982                   | 0,950 | 0,925                   | 0,860 | 0,945   | 0,860 |
| 1,2                     | 0,25         |                       | 1,212 | 1,082                   | 1,050 | 1,025                   | 0,960 | 1,045   | 0,960 |
| 1,4                     | 0,3          |                       | 1,412 | 1,255                   | 1,217 | 1,185                   | 1,112 | 1,205   | 1,112 |

Table A.5 — Limits of size for tolerance classes 4H5 and 4H6

Dimensions in millimetres

| Nominal diameter<br>$D$ | Pitch<br>$P$ | Major diameter<br>$D$ |       | 4H                      |       | Grade 5                 |       | Grade 6 |       |
|-------------------------|--------------|-----------------------|-------|-------------------------|-------|-------------------------|-------|---------|-------|
|                         |              |                       |       | Pitch diameter<br>$D_2$ |       | Minor diameter<br>$D_1$ |       |         |       |
|                         |              | max.                  | min.  | max.                    | min.  | max.                    | min.  | max.    | min.  |
| 1                       | 0,25         | not specified         | 1,000 | 0,882                   | 0,838 | 0,825                   | 0,760 | 0,845   | 0,760 |
| 1,1                     | 0,25         |                       | 1,100 | 0,982                   | 0,938 | 0,925                   | 0,860 | 0,945   | 0,860 |
| 1,2                     | 0,25         |                       | 1,200 | 1,082                   | 1,038 | 1,025                   | 0,960 | 1,045   | 0,960 |
| 1,4                     | 0,3          |                       | 1,400 | 1,255                   | 1,205 | 1,185                   | 1,112 | 1,205   | 1,112 |

Table A.6 — Limits of size for tolerance class 5h3

Dimensions in millimetres

| Nominal<br>diameter<br>$d$                                           | Pitch<br>$P$ | Major diameter<br>$d$ |       | Pitch diameter<br>$d_2$ |       | Minor diameter<br>$d_3$ |       |
|----------------------------------------------------------------------|--------------|-----------------------|-------|-------------------------|-------|-------------------------|-------|
|                                                                      |              | max.                  | min.  | max.                    | min.  | max.                    | min.  |
| 1                                                                    | 0,25         | 1,000                 | 0,965 | 0,838                   | 0,794 | 0,720                   | 0,672 |
| 1,1                                                                  | 0,25         | 1,100                 | 1,065 | 0,938                   | 0,894 | 0,820                   | 0,772 |
| 1,2                                                                  | 0,25         | 1,200                 | 1,165 | 1,038                   | 0,994 | 0,920                   | 0,872 |
| 1,4                                                                  | 0,3          | 1,400                 | 1,360 | 1,205                   | 1,155 | 1,064                   | 1,008 |
| NOTE Usually there is no requirement to check $d_3$ for conformance. |              |                       |       |                         |       |                         |       |

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