Designation system for fasteners

DIN 962

Schrauben und Muttern; Bezeichnungsangaben; Formen und Ausführungen

Supersedes December 1983 edition.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Dimensions in mm

1 Field of application

This standard specifies a system of designation for bolts, screws, studs and nuts ('fasteners', for short), and also gives supplementary order designations for special features and finishes of such fasteners (e.g type of thread, thread end, slotting of bolt head or nut, hardness). Where no specifications have been given for the dimensions of such features (e.g. for thread ends), the relevant standards (e.g. DIN 76 Part 1 and DIN 78) shall apply.

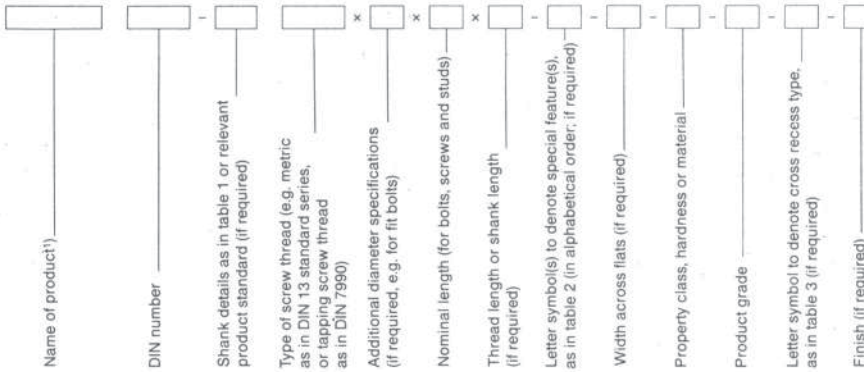
Fasteners are not expected to conform to the designs illustrated here.

The designations specified here may also be appended as supplementary information to ISO designations (cf. clause 4).

2 Principle of standard designation

Designations of fasteners are to be based on the principles set out in DIN 820 Part 27 unless otherwise specified in existing standards, modifications to which might lead to misinterpretation.

A standard designation shall be made up of the following elements.



3 Features

3.1 General features

General features of fasteners are covered by the specifications of the relevant product standards.

3.2 Special features

Where the fasteners ordered are to have special features, these may be designated by the symbols specified in this standard provided that the applicability of DIN 962 has been specified in the relevant product standard and is referred to in the order documents.

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[1]) For the sake of simplicity, the generic terms 'bolt' or 'screw' and 'nut' may be used in the standard designation instead of the full name of the product (i.e. 'bolt' instead of 'hexagon head bolt' or 'nut' instead of 'castle nut' (cf. DIN 918).

Continued on pages 2 to 10

3.2.1 Bolts, screws and studs

Tables 1 to 3 deal with those features of bolts, screws and studs for which the standard designation is to be supplemented. Table 1 covers shank details the symbol for which is to precede the thread size. Table 2 indicates the type of thread end (with the symbol to be placed after the thread size (and nominal length) (in alphabetical order where more than one such symbol is to be given), and table 3 covers features the symbol for which is to be placed after the property class, hardness, material or product grade.

Table 1. **Shank details**

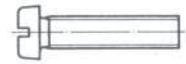
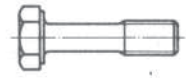
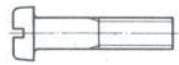
No.	Feature (with symbol)	Illustration (example)	Example of designation
1.1	Threaded up to the head: **A**.		Slotted cheese head screw DIN 84 — A M6 × 50 — 5.8
1.2	With shank diameter ≈ pitch diameter: **B**.		Hexagon head bolt DIN 931 — B M10 × 50 — 8.8
			Stud DIN 835 — B M10 × 80 — 8.8
1.3	With shank diameter = thread diameter: **C** [1]).		Slotted cheese head screw DIN 84 — C M6 × 50 — 5.8
[1]) Type C applies only for slotted head screws.			

Table 2. **Thread ends, pinholes and head style**

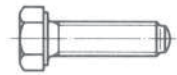
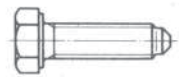
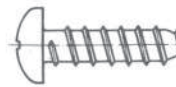
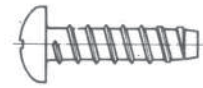
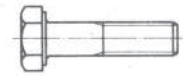
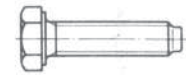
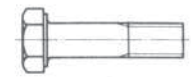
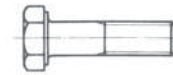
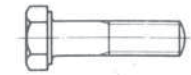
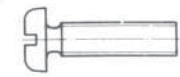
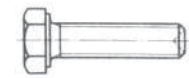
No.	Feature (with symbol)	Illustration (example)	Example of designation
2.1	With rounded short dog point (as in DIN 78): **Ak**.		Hexagon head bolt DIN 933 — M12 × 50 — Ak — 8.8
2.2	With chamfered short dog point (as in DIN 78): **Asp**.		Hexagon head bolt DIN 933 — M12 × 50 — Asp — 8.8
2.3	With cone point (as in DIN 7970): **C**.		Tapping screw DIN 7981 — ST3,5 × 13 — C

Table 2 (continued).

No.	Feature (with symbol)	Illustration (example)	Example of designation
2.4	With blunt end (as in DIN 7970): **F.**		Tapping screw DIN 7981 — ST3,5 × 13 — F
2.5	With chamfered end (as in DIN 78): **K.**		Hexagon head bolt DIN 931 — M12 × 50 — K — 8.8
2.6	With short dog point (as in DIN 78): **Ka.**		Hexagon head bolt DIN 933 — M12 × 50 — Ka — 8.8
2.7	With as-rolled end (as in DIN 78): **Ko.**		Hexagon head bolt DIN 931 — M12 × 50 — Ko — 8.8
2.8	With truncated cone point (as in DIN 78): **Ks.**		Hexagon head bolt DIN 931 — M12 × 50 — Ks — 8.8
2.9	With rounded end (as in DIN 78): **L.**		Hexagon head bolt DIN 931 — M12 × 50 — L — 8.8
2.10	With thread undercut (as in DIN 76 Part 1): **Ri**[1]). Type A = normal Type B = short		Pan head screw DIN 85 - M5 × 20 - Ri - 5.8 or Pan head screw DIN 85 - M5 × 20 - Ri B - 5.8
			Stud DIN 835 — M12 × 80 — Ri — 8.8
2.11	With cup point (as in DIN 78): **Rs.**		Hexagon head bolt DIN 933 — M12 × 50 — Rs — 8.8

[1]) For order purposes, the symbol Ri indicates a normal type undercut (A), whereas symbol Ri B is to be used for short undercuts.

Table 2 (continued).

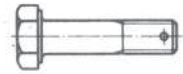
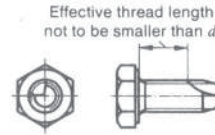
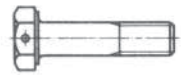
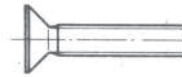
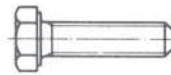
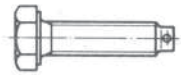
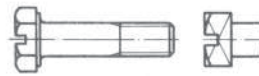
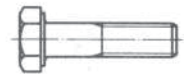
No.	Feature (with symbol)	Illustration (example)	Example of designation
2.12	With split pin hole (cf. subclause 3.2.3.1): **S.**		Hexagon head bolt DIN 931 — M12 × 50 — S — 8.8
			Stud DIN 835 — M12 × 80 — S — 8.8
2.13	With scrape point (as in DIN 78): **Sb.**		Hexagon head bolt DIN 933 — M5 × 20 — Sb — 8.8
2.14	With wire hole in head (cf. subclause 3.2.3.2): **Sk.**		Hexagon head bolt DIN 931 — M12 × 50 — Sk — 8.8
2.15	Unslotted: **So.**		Countersunk head screw DIN 963 — M6 × 20 — So — 5.8
2.16	With cone point (as in DIN 78): **Sp.**		Hexagon head bolt DIN 933 — M12 × 50 — Sp — 8.8
2.17	With split pin hole (as in DIN 78): **Spz.**		Hexagon head bolt DIN 933 — M12 × 50 — Spz — 8.8
2.18	Slotted (cf. subclause 3.2.3.3): **Sz.**		Hexagon head bolt DIN 931 — M12 × 50 — Sz — 8.8
2.19	With washer face: **Tm.**		Hexagon head bolt DIN 931 — M56 × 200 — Tm — St

Table 2 (concluded).

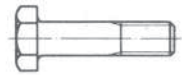
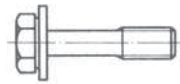
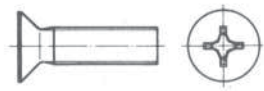
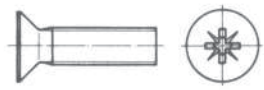
No.	Feature (with symbol)	Illustration (example)	Example of designation
2.20	Without washer face: **To.**		Hexagon head bolt DIN 931 — M6 × 30 — To — 8.8
2.21	With dog point (as in DIN 78): **Za.**		Hexagon head bolt DIN 933 — M12 × 50 — Za — 8.8
2.22	With captive washer (cf. DIN 6900 series): **Z...**		Hexagon head bolt DIN 931 — M6 × 30 — Z1 — 8.8

Table 3. **Cross recess**

No.	Feature (with symbol)	Illustration (example)	Example of designation
3.1	With cross recess type H (as in DIN 7962): **H.**		Countersunk head screw DIN 965 — M6 × 20 — 4.8 — H
3.2	With cross recess type Z (as in DIN 7962): **Z.**		Countersunk head screw DIN 965 — M6 × 20 — 4.8 — Z

3.2 2 Nuts

Special features of nuts are specified in the relevant dimensional standards, except for nuts with left-hand thread (cf. subclause 3.6).

3.2.3 Dimensions

Thread end dimensions shall be as specified in DIN 78 and thread undercut dimensions, as specified in DIN 76 Part 1.

The dimensions of split pin holes, wire holes and slots in hexagon and square head bolts shall comply with the specifications of subclauses 3.2.3.1 to 3.2.3.3.

3.2.3.1 Split pin holes

This subclause includes specifications of International Standard ISO 7378 : 1983, with a number of modifications.[1])

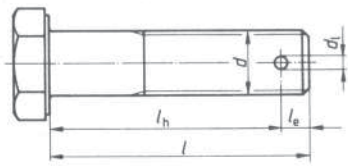


Figure 1.

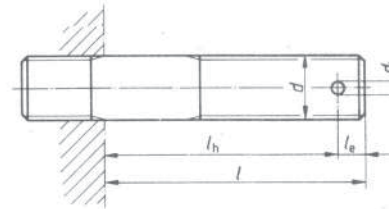


Figure 2.

[1]) See Explanatory notes.

Table 4. **Dimensions of split pin holes**

Nominal thread diameter, d	3	4	5	6	7	8	10	12	14	16	18	20
d_1 H14	0,8	1	1,2	1,6	1,6	2	2,5	3,2	3,2	4	4	4
l_e	2	2,2	2,6	3,3	3,3	4	5	6	6,5	7	7,7	7,7

Nominal thread diameter, d	22	24	27	30	33	36	39	42	45	48	52
d_1 H14	5	5	5	6,3	6,3	6,3	6,3	8	8	8	8
l_e	8,7	10	10	11,3	11,3	12,5	12,5	15	15	16	16

Length l for bolts with split pin hole is the sum of lengths l_h and l_e (which are features of their design) and is to be calculated with allowance being made for the tolerances on l_h (tolerance + IT 14 is recommended) and l. The value obtained shall be rounded to the next largest nominal value, which results in a proportional increase in l_e.

For slotted castle nuts as specified in DIN 935 Parts 1 and 3, DIN 937 and DIN 979, the l_e values specified above take into account the length of bolt projection as specified in DIN 78 plus 0,5 times the slot depth, the aim being to ensure that (with the nut fitted), theoretically, the split pin is located in the middle of the slot depth. They also allow for the tolerance on grip (thickness of components being joined).

3.2.3.2 Wire holes for hexagon and square head bolts

This subclause includes only specifications of International Standard ISO 7378.

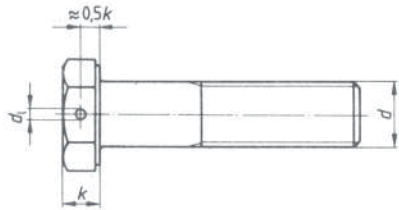


Figure 3.

Table 5. **Dimensions of wire holes**

Nominal thread diameter, d	4	5	6	7	8	10	12	14	16	18	20
d_1 H14	1,2	1,2	1,6	1,6	2	2	2	2	3	3	3

Nominal thread diameter, d	22	24	27	30	33	36	39	42	45	48	52
d_1 H14	3	3	3	3	4	4	4	4	4	4	5

3.2.3.3 Slots in hexagon and square head bolts

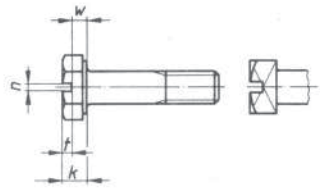


Figure 4.

Table 6. **Dimensions of slots**

Thread size [1]	M1,6	M2	M2,5	M3	M3,5	M4	M5	M6	M7	M8	M10	M12	M14	M16
Thread size [2]	—	—	ST2,2	ST2,9	—	ST3,5 ST3,9	ST4,2 ST4,8	ST5,5 ST6,3	—	ST8	—	—	—	—
Nominal size	0,4	0,5	0,6	0,8	0,8	1	1,2	1,6	1,6	2	2,5	3	3	4
n min.	0,46	0,56	0,66	0,86	0,86	1,06	1,26	1,66	1,66	2,06	2,56	3,06	3,06	4,07
max.	0,6	0,7	0,8	1	1	1,2	1,51	1,91	1,91	2,31	2,81	3,31	3,31	4,37
t min.	$0{,}4 \times k_{nom}$													
w min.	$0{,}45 \times k_{nom}$													

The position of the slot in relation to the corners of the hexagon or square is optional.

[1]) For bolts with metric screw thread.

[2]) For tapping screws.

3.3 Property class and material

The specifications of the relevant basic standards and product standards (e.g. ISO 898 Parts 1, 2 and 6, and DIN 267 Parts 4, 11, 13, 18 and 24) shall apply with regard to the designation of property class and material of fasteners.

3.4 Product grades

The specifications of the relevant basic standards and product standards (e.g. ISO 4759 Part 1 and DIN 267 Parts 2, 6 and 13) shall apply with regard to the designation of the product grade of fasteners.

If the relevant product standard specifies a number of product grades, or if a product grade other than that normally specified is required, this shall be given in the designation (e.g. product grade A):

Hexagon head bolt DIN 931 – M 30 × 150 – 8.8 – **A**

3.5 Finish

If fasteners are to be provided with a particular finish, the designation shall be supplemented accordingly.

3.5.1 Electroplating (cf. DIN 267 Part 9)

Example: Hexagon head bolt DIN 931 – M 12 × 50 – 8.8 – **A2E**

3.5.2 Hot-dip galvanizing (cf. DIN 267 Part 10)

Example: Hexagon head bolt DIN 931 – M 12 × 50 – 5.6 – **tZn**

3.5.3 Phosphating (cf. DIN 50 942)

Example: Hexagon head bolt DIN 931 – M 12 × 50 – 5.6 – **Znph r3a**

3.6 Screw thread

The size of thread which fasteners are to be provided with shall be designated in accordance with the relevant product standard, the specifications of ISO 4759 Part 1 or DIN 267 Parts 2 or 13 applying for the thread tolerance unless otherwise specified in the product standard.

The metal end of studs shall meet tolerance Sk6 as specified in DIN 13 Part 51 unless symbol Fo (which denotes a thread to be produced to tolerance 6g) or tolerance Sn4 or Sn4 tight, as specified in the same standard, is given in the designation.

Examples: Stud DIN 938 – **M 12 Fo** × **50** – 8.8
Stud DIN 938 – **M 12 Sn4** × **50** – 8.8

If fasteners are to be supplied with left-hand thread, the symbol LH shall be included in the designation.

Examples: Hexagon head bolt DIN 931 – M 12 **LH** × 50 – 8.8
Hexagon nut DIN 934 – M 12 **LH** – 8

If fasteners are to be supplied with a fine pitch thread, the thread pitch shall be given in the designation.

Examples: Hexagon head bolt DIN 961 – M 12 × **1,5** × 50 – 8.8
Hexagon nut DIN 934 – M 12 × **1,5** – 8

3.7 Nominal length and length of thread of bolts, screws and studs

The nominal length and, where required, the thread length for bolts, screws and studs shall be designated as specified in the relevant product standard.

3.7.1 Nominal lengths other than specified in product standards

If the nominal lengths given in a product standard are not suitable for the particular application, it is recommended that intermediate lengths be ordered, on the basis of table 7 (which applies only for metric fasteners).

Table 7. **Intermediate lengths**

Range of nominal lengths	Increment or i. lengths, in mm
From 2 to 5 mm	0,5
Over 5 up to 20 mm	1
Over 20 up to 30 mm	24 and 26
Over 30 up to 100 mm	32, 38, 42, 48, . . .
Over 100 up to 150 mm	112, 115, 118, 122, 125, . . .
Over 150 mm	10

Example: Cheese head screw DIN 84 – M 5 × **15** – 8.8

3.7.2 Thread lengths other than specified in product standards

If bolts, screws or studs are to be supplied with a thread length other than specified in the relevant product standard, the required thread length shall be given in the designation.

Examples: Cheese head screw DIN 84 – M 6 × 50 × **20** – 8.8
Tapping screw DIN 7971 – ST4,8 × 38 × **20** – C

If shank length l_g is to be other than specified in the relevant product standard, this shall be indicated in the designation.

Example: Hexagon head screw DIN 931 – M 10 × 80 l_g **60** – 8.8

3.8 Adhesive-coated screws

If the thread of bolts, screws and studs is to be provided with an adhesive coating, the designation shall be supplemented by the symbol given in DIN 267 Part 27.

Example: Screw DIN 933 – M 12 × 80 – 8.8 – **MK**

3.9 Screws with locking coating

If the thread of bolts, screws and studs is to be provided with a locking coating, the designation shall be supplemented by the symbol given in DIN 267 Part 28.

Example: Screw DIN 933 – M 12 × 80 – 8.8 – **KL**

4 Ordering ISO fasteners with special features

Since the designation in ISO Standards covering fasteners do not comprise symbols for special features as specified here, a fastener to be produced to an ISO Standard, which is to have such a feature, may be designated as follows (examples).

Designation of an ISO 4016 – M 12 × 80 – 4.6 hexagon head bolt, with cone point (Sp) as specified in DIN 78:

ISO 4016 – M 12 × 80 – 4.6 hexagon head bolt,
with DIN 78 – Sp thread end

Designation of an ISO 4016 – M 12 × 80 – 4.6 hexagon head bolt, hot-dip galvanized (tZn) as specified in DIN 267 Part 10:

ISO 4016 M 12 × 80 – 4.6 hexagon head bolt,
with tZn type finish as in DIN 267 Part 10

Designation of an ISO 4016 – M 12 × 80 – 4.6 hexagon head bolt, with split pin hole as specified in DIN 962 (S):

ISO 4016 – M 12 × 80 – 4.6 hexagon head bolt,
type S as in DIN 962

Standards and other documents referred to

DIN	13 series	ISO metric screw threads
DIN	76 Part 1	Thread run-outs and thread undercuts for ISO metric screw threads in accordance with DIN 13 series
DIN	78	Thread ends and length of projection of bolt ends for ISO metric screw threads in accordance with DIN 13 series
DIN	84	Product grade A slotted cheese head screws
DIN	85	Product grade A slotted pan head screws
DIN	267 Part 2	Fasteners; technical delivery conditions; product grades and tolerances
DIN	267 Part 4	Fasteners; technical delivery conditions; property classes for nuts (previous classes)
DIN	267 Part 6	Fasteners; technical delivery conditions; tolerances for product grade F fasteners
DIN	267 Part 9	Fasteners; technical delivery conditions; electroplated fasteners
DIN	267 Part 10	Fasteners; technical delivery conditions; hot-dip galvanized components
DIN	267 Part 11	Fasteners; technical delivery conditions (with addenda to ISO 3506); corrosion-resistant stainless steel components
DIN	267 Part 13	Fasteners; technical delivery conditions; components for bolted connections mainly made from materials with low temperature toughness or high-temperature strength
DIN	267 Part 18	Fasteners; technical delivery conditions; non-ferrous metal components
DIN	267 Part 24	Fasteners; technical delivery conditions; property classes for nuts (hardness classes)
DIN	267 Part 27	Fasteners; adhesive-coated steel screws; technical delivery conditions
DIN	267 Part 28	Fasteners; steel screws with locking coating; technical delivery conditions
DIN	820 Part 27	Standards work; presentation of standards; designation of standardized items
DIN	835	Studs, with metal end about 2 *d* long
DIN	918	Fasteners; terminology and nomenclature
DIN	931 Part 1	M 1,6 to M 39 hexagon head bolts; product grades A and B
DIN	933	M 1,6 to M 52 hexagon head screws threaded up to the head; product grades A and B
DIN	934	Hexagon nuts with metric coarse and fine pitch thread; product grades A and B
DIN	935 Part 1	Hexagon slotted nuts and castle nuts with metric coarse and fine pitch thread; product grades A and B
DIN	935 Part 3	Hexagon slotted nuts with metric coarse and fine pitch thread; product grade C
DIN	937	Hexagon thin castle nuts (previous design)
DIN	938	Studs with metal end about 1 *d* long

DIN 961	M 8 × 1 to M 52 × 3 hexagon head bolts with fine pitch thread; product grades A and B
DIN 963	Slotted countersunk head screws
DIN 965	Cross recessed countersunk flat head screws
DIN 979	Hexagon thin slotted nuts and castle nuts with metric coarse and fine pitch thread; product grades A and B
DIN 6900 Part 1	Screw and washer assemblies; coarse threaded screws with captive plain washer
DIN 6900 Part 2	Screw and washer assemblies; coarse threaded screws with captive wave spring washer
DIN 6900 Part 3	Screw and washer assemblies; coarse threaded screws with captive curved spring lock washer
DIN 6900 Part 4	Screw and washer assemblies; coarse threaded screws with captive serrated lock washer
DIN 6900 Part 5	Screw and washer assemblies; coarse threaded screws with captive conical spring washer
DIN 7962	Cross recesses for screws (modified version of ISO 4757)
DIN 7970	Threads and thread ends for tapping screws (modified version of ISO 1478)
DIN 7971	Slotted pan head tapping screws
DIN 7981	Cross recessed pan head tapping screws
DIN 50 942	Phosphating of metals; methods of test
ISO 898-1 : 1988	Mechanical properties of fasteners; bolts, screws and studs
ISO 898-2 : 1980	Mechanical properties of fasteners; nuts with specified proof load values
ISO 898-6 : 1988	Mechanical properties of fasteners; nuts with specified proof load values, fine pitch thread
ISO 4016 : 1988	Hexagon head bolts; product grade C
ISO 4759-1 : 1978	Tolerances for fasteners; bolts, screws, and nuts with thread diameters from 1,6 to 150 mm and product grades A, B and C
ISO 7378 : 1983	Fasteners; bolts, screws and studs, split pin holes and wire holes

Previous editions

DIN 962: 03.53, 08.69, 09.75, 12.83.

Amendments

The following amendments have been made to the December 1983 edition.

a) The field of application of the standard has been extended to include products produced to ISO Standards.

b) Symbols to denote the type of cross recess have been included.

c) Provisions have been made for ordering tapping screws with a thread length other than specified in the relevant product standard.

d) Symbols to denote adhesive-coated screws and screws with locking coating have been specified.

e) The standard has been editorially revised.

Explanatory notes

More and more ISO Standards are being adopted as national standards, and hence also the corresponding ISO designations. As such designations must be adopted without change, this has given rise to the problem that the inclusion of symbols specified in DIN 962 in the designation of products complying with ISO Standards is no longer possible. However, to satisfy market demand and to avoid jeopardizing the introduction of ISO products as a result of such formal impediments, this standard has specified a procedure by which the special features and finishes covered here may be ordered by way of a form of supplementary information, without making any alterations to the form of the ISO designation.

The dimensional specifications for split pin holes and wire holes in substance still comply with those of ISO 7378 : 1983 except that the previous values of l_c, which only differ slightly from ISO 7378 for some sizes, have been retained for reasons of compatibility with products manufactured to the previous specifications.

International Patent Classification

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