
**Subland twist drills for holes prior to
tapping screw threads**

Forets étagés pour avant-trous de taraudage



Reference number
ISO 3438:2013(E)

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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 3438 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 2, *High speed steel cutting tools and their attachments*.

This third edition cancels and replaces the second edition (ISO 3438:2003), of which it constitutes a minor revision with the following changes:

- merging of ISO 3438:2003 and ISO 3439:2003 into a single standard;
- adding of an informative annex giving the relationship between the symbols of this document and the symbols according to the ISO 13399 series.

Subland twist drills for holes prior to tapping screw threads

1 Scope

This International Standard specifies the dimensions of subland twist drills with Morse taper shanks and cylindrical shanks for holes prior to tapping screw threads.

The drills are designed to produce holes prior to tapping metric threads (coarse pitch series) over a selected range of:

- M8 to M30 for subland twist drills with Morse taper shanks;
- M3 to M14 for subland twist drills with cylindrical shanks.

This International Standard complements ISO 2306.

The relationship between the symbols of this International Standard and those according to the ISO 13399 series is given for information in [Annex A](#).

2 Normative references

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

ISO 296, *Machine tools — Self-holding tapers for tool shanks*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 10899:1996, *High-speed steel two-flute twist drills — Technical specifications*

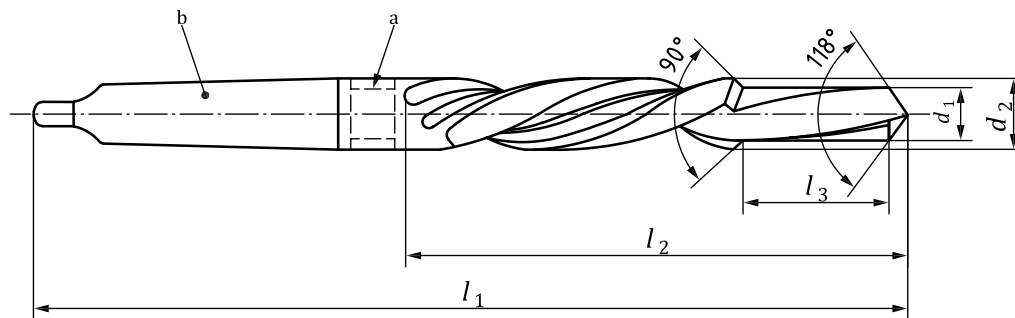
3 Dimensions

3.1 General

All dimensions and tolerances are given in millimetres. Tolerances not specified shall be of tolerance class “c” in accordance with ISO 2768-1.

3.2 Subland twist drills with Morse taper shank

The dimensions for subland twist drills with Morse taper shanks shall be in accordance with the dimensions shown in Figure 1 and given in Table 1.



- a Optional recess.
- b Morse taper in accordance with ISO 296, but with a cone tolerance as defined in ISO 10899:1996, 5.3, and [Annex A](#).

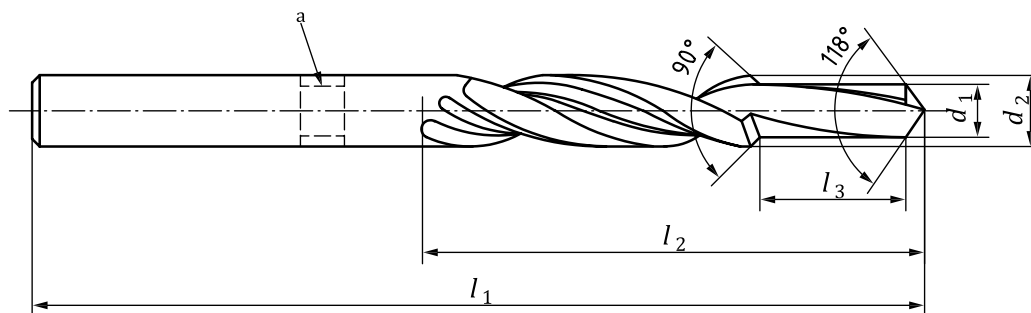
Figure 1 — Subland twist drill with Morse taper shank

Table 1 — Dimensions of subland twist drill with Morse taper shank prior to tapping metric screw threads

| d_1 h8 | d_2 h8 | l_1 | l_2 | l_3 | Morse taper No. | Thread |
|-------------|-------------|-------|-------|-------|--------------------|------------|
| 6,8 | 9 | 162 | 81 | 21 | 1 | M8 × 1,25 |
| 8,5 | 11 | 175 | 94 | 25,5 | | M10 × 1,5 |
| 10,2 | 13,5 | 189 | 108 | 30 | | M12 × 1,75 |
| 12 | 15,5 | 218 | 120 | 34,5 | 2 | M14 × 2 |
| 14 | 17,5 | 228 | 130 | 38,5 | | M16 × 2 |
| 15,5 | 20 | 238 | 140 | 43,5 | | M18 × 2,5 |
| 17,5 | 22 | 248 | 150 | 47,5 | 3 | M20 × 2,5 |
| 19,5 | 24 | 281 | 160 | 51,5 | | M22 × 2,5 |
| 21 | 26 | 286 | 165 | 56,5 | | M24 × 3 |
| 24 | 30 | 296 | 175 | 62,5 | 4 | M27 × 3 |
| 26,5 | 33 | 334 | 185 | 70 | | M30 × 3,5 |

3.3 Subland twist drill with cylindrical shank

The dimensions for subland twist drills with cylindrical shanks shall be in accordance with the dimensions shown in Figure 2 and given in Table 2.



- a Optional recess.

Figure 2 — Subland twist drill with cylindrical shank

Table 2 — Dimensions of subland twist drill with cylindrical shank prior to tapping metric screw threads

| d_1 h8 | d_2 h8 | l_1 | l_2 | l_3 | Thread |
|-------------|-------------|-------|-------|-------|------------|
| 2,5 | 3,4 | 70 | 39 | 8,8 | M3 × 0,5 |
| 3,3 | 4,5 | 80 | 47 | 11,4 | M4 × 0,7 |
| 4,2 | 5,5 | 93 | 57 | 13,6 | M5 × 0,8 |
| 5 | 6,6 | 101 | 63 | 16,5 | M6 × 1 |
| 6,8 | 9 | 125 | 81 | 21 | M8 × 1,25 |
| 8,5 | 11 | 142 | 94 | 25,5 | M10 × 1,5 |
| 10,2 | 13,5 | 160 | 108 | 30 | M12 × 1,75 |
| 12 | 15,5 | 178 | 120 | 34,5 | M14 × 2 |

Annex A (informative)

Relationship between the symbols of this International Standard and the ISO 13399 series

A.1 Relationship between symbols

For the relationship between the symbols of this International Standard and symbols according to the ISO 13399 series, see Table A.1.

Table A.1 — Relationship between symbols in this International Standard and the ISO 13399 series

| Symbol in ISO 3438 (this International Standard) | Reference in ISO 3438 (this International Standard) | Property name in the ISO 13399 series | Symbol in the ISO 13399 series | ISO 13399 series BSU code |
|--|---|---------------------------------------|--------------------------------|---------------------------------|
| d_1 | Figures 1 and 2 | Cutting diameter | DCON | ISO/TS 13399-3 71CF29862B277 |
| d_2 | Figures 1 and 2 | Cutting diameter | DCON | ISO/TS 13399-3 71CF29862B277 |
| l_1 | Figures 1 and 2 | Overall length | OAL | ISO/TS 13399-3 71D078EB7C086 |
| l_2 | Figures 1 and 2 | Length chip flute | LCF | ISO/TS 13399-3 71DCD39338974 |
| l_3 | Figures 1 and 2 | Step diameter length | SDL | ISO/TS 13399-3 71D078F5BEDBE |

Bibliography

- [1] ISO 13399-1, *Cutting tool data representation and exchange — Part 1: Overview, fundamental principles and general information model*
- [2] ISO/TS 13399-2, *Cutting tool data representation and exchange — Part 2: Reference dictionary for the cutting items*
- [3] ISO/TS 13399-3, *Cutting tool data representation and exchange — Part 3: Reference dictionary for tool items*
- [4] ISO/TS 13399-4, *Cutting tool data representation and exchange — Part 4: Reference dictionary for adaptive items*
- [5] ISO/TS 13399-5, *Cutting tool data representation and exchange — Part 5: Reference dictionary for assembly items*
- [6] ISO 13399-50, *Cutting tool data representation and exchange — Part 50: Reference dictionary for reference systems and common concepts*
- [7] ISO 13399-60, *Cutting tool data representation and exchange — Part 60: Reference dictionary for connection systems*
- [8] ISO 13399-100, *Cutting tool data representation and exchange — Part 100: Definitions, principles and methods for reference dictionaries*
- [9] ISO 13399-150, *Cutting tool data representation and exchange — Part 150: Usage guidelines*

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