SLOVENSKI STANDARD
oSIST prEN IEC 60471:2019

01-december-2019

Mere spojk s stremeni za člene izolatorskih verig

Dimensions of clevis and tongue couplings of string insulator units

Dimensions des assemblages à chape et tenon des éléments de chaînes d'isolateurs

Ta slovenski standard je istoveten z: **prEN IEC 60471:2019**

ICS:

29.080.10 Izolatorji Insulators

oSIST prEN IEC 60471:2019 **en,fr,de**

36/466/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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IEC TC 36 : INSULATORS	
SECRETARIAT: Australia	SECRETARY: Ms Manjoo Lalwani
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☒ QUALITY ASSURANCE ☐ SAFETY	
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TITLE:

Dimensions of clevis and tongue couplings of string insulator units

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DIMENSIONS OF CLEVIS AND TONGUE COUPLINGS OF STRING INSULATOR UNITS

FOREWORD

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International Standard IEC 60471 has been prepared by IEC technical committee 36: Insulator.

This 3rd edition cancels and replaces the 2nd edition published in 1977. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) According to the results of the questionnaire(36/424/Q), it is confirmed that there is no new clevis and tongue couplings;

b) For the dimensions of the existing designated size of couplings that characterize the same location, the effective number of the size is unified.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

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64 Full information on the voting for the approval of this International Standard can be found in
65 the report on voting indicated in the above table.

66 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

67 The committee has decided that the contents of this document will remain unchanged until the
68 stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to
69 the specific document. At this date, the document will be

70 • reconfirmed,
71 • withdrawn,
72 • replaced by a revised edition, or
73 • amended.

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DIMENSIONS OF CLEVIS AND TONGUE COUPLINGS OF STRING INSULATOR UNITS

1 Scope and object

This standard applies to string insulator units of the cap and pin type and also of the long rod type as well as the fittings used with such insulators.

The object of this standard is to define the dimensions of a series of clevis and tongue couplings to permit the assembly of insulators or fittings supplied by different manufacturers.

NOTE 1 IEC 60305 gives the co-ordination between the standardized dimensions of Table 1 and the strength classes of cap and pin insulator. IEC 60433 gives the co-ordination between the standardized dimensions of Table 2 and the strength classes of long rod insulators.

NOTE 2 If the dimensions given in Table 1 are not sufficient, it is recommended to use coupling pins of 25 mm, 28 mm and 32 mm which probably will be used for higher strength classes(see IEC 60305).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60050-471, *International Electrotechnical Vocabulary – Part 471: Insulators*

IEC 60305, *Characteristics of String Insulator Units of the Cap and Pin Type*

IEC 60383-1, *Insulators for Overhead Lines with a Nominal Voltage above 1 000 V Part 1: Ceramic or Glass insulator units for a.c. systems – Definitions, Test Methods and Acceptance criteria*

IEC 60433, *Characteristics of String Insulator Units of the Long Rod Type*

IEC 61325, *Insulators for Overhead Lines with a Nominal Voltage above 1 000 V- Ceramic or Glass insulator units for d.c. systems – Definitions, Test Methods and Acceptance criteria*

IEC 62223，*Insulators-Glossary of terms and definitions*

3 Terms and definitions

For the purposes of this document the terms and definitions given in IEC 60050-471 and the following apply, Some of them are recalled here for ease of conference.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1

clevis and tongue coupling

coupling consists of a clevis, a tongue and a coupling pin, and providing limited flexibility

[SOURCE: IEC 60050-471: 2007, 471-03-01]

3.2

clevis

female part of a clevis and tongue coupling with a U-shaped opening into which the tongue coupling can be fitted

NOTE A clevis contains two holes through which the coupling pin may pass to couple the two components.

[SOURCE: IEC 62223:2009, 3.11]

3.3

tongue

male part of a clevis and tongue coupling with a tongue-shaped extremity which fits into the U-shaped opening of the clevis and which contains a hole through which the coupling pin may be passed

[SOURCE: IEC 62223:2009, 3.88]

3.4

coupling pin

rigid pin which passes through the holes in the clevis and tongue to couple them together

NOTE On one end, the coupling pin has a stud head and on the other a security device (e.g. split pin) is placed to hold the pin in its place.

[SOURCE: IEC 62223:2009, 3.21]

4 Designation

Clevis and tongue coupling are designated by the nominal diameter, expressed in millimetres, of the coupling pin which connects the clevis and tongue. A designated coupling is defined by the dimensions of the clevis, of the tongue and of the coupling pin.

NOTE1 The figure giving the diameter of the coupling pin is followed by the letter C in the case of couplings for cap and pin insulators or by the letter L in case of long rod insulators.

NOTE2 Any confusion shall be avoided between the designation mentioned above referring to clevis and tongue couplings and the ball and socket couplings which are designated by nominal pin diameter which, in certain cases, may be followed by the letter A or B (see IEC 60120), Therefore, the type of coupling shall always be precisely designated.

5 Couplings

Two coupling systems are recommended:

— Couplings with limited movement;

— Couplings with unlimited movement.

5.1 Couplings with limited movement

Coupling according to Figure 1, and Table 1, for which a limited movement of the tongue in the clevis has to be assured.

This type of coupling is used for cap and pin insulators to ensure that no contact is possible between the insulating parts of two consecutive insulators. A rectangular shape is recommended for the tongue.

These couplings are designated by the nominal diameter, expressed in millimetres, of the coupling pin followed by the letter C.

5.2 Couplings with unlimited movement

Couplings according to Figure 2, and Table 2, for which the movement of the tongue in the clevis is not limited.

This type of coupling is used for long rod insulators.

These couplings are designated by the nominal diameter, expressed in millimetres, of the coupling pin followed by the letter L.

6 Dimensions

All the dimensions indicated in Table 1 and 2 are given in millimetres, and refer to the finished articles after surface treatment such as, for instance, galvanizing (see also Figures 1 and 2).

In general, the tongue is constructed of steel and the clevis of malleable cast iron or steel. However, other materials may be used if they have mechanical characteristics corresponding to those give in IEC 60305 for insulators of the cap and pin type or in IEC 60433 for insulators of the long rod type.

NOTE The outside dimensions of the clevis have not been fixed, since they depend on the mechanical characteristics of the material used. Therefore, the length of the coupling pin is not fixed and, unless otherwise agreed, the coupling pin has to be delivered together with the clevis. A security device has to be placed to hold the pin in its place.

In the case of cap and pin insulators (see IEC 60305), the spacing of the insulators has been chosen so that there will be no difficulty in inserting the coupling pin in its place. However, for some types of cap and pin insulators with very deep rims at the lower end of the insulator close to the tongue, it may be difficult to insert the coupling pin, in such a case, it will be necessary to check that the coupling pin can be inserted.

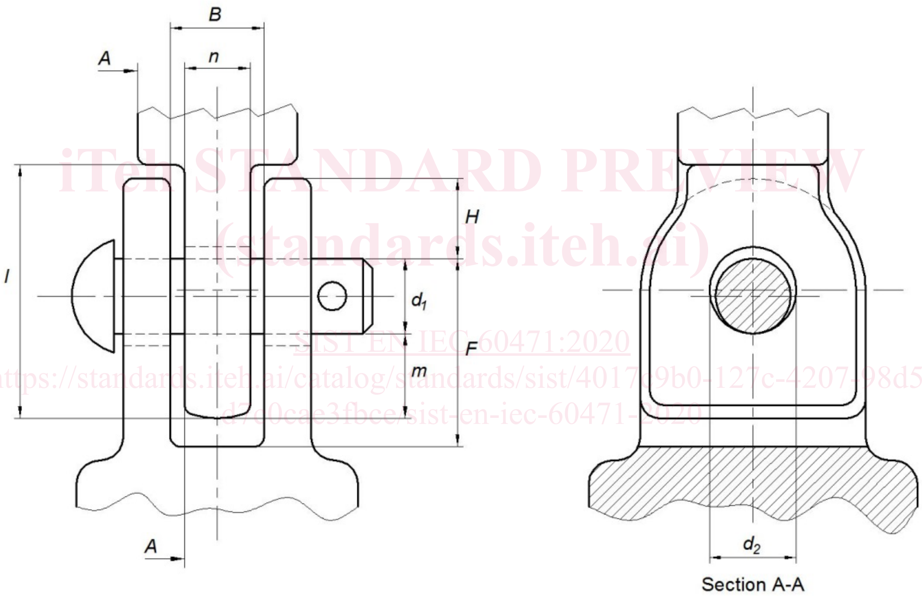
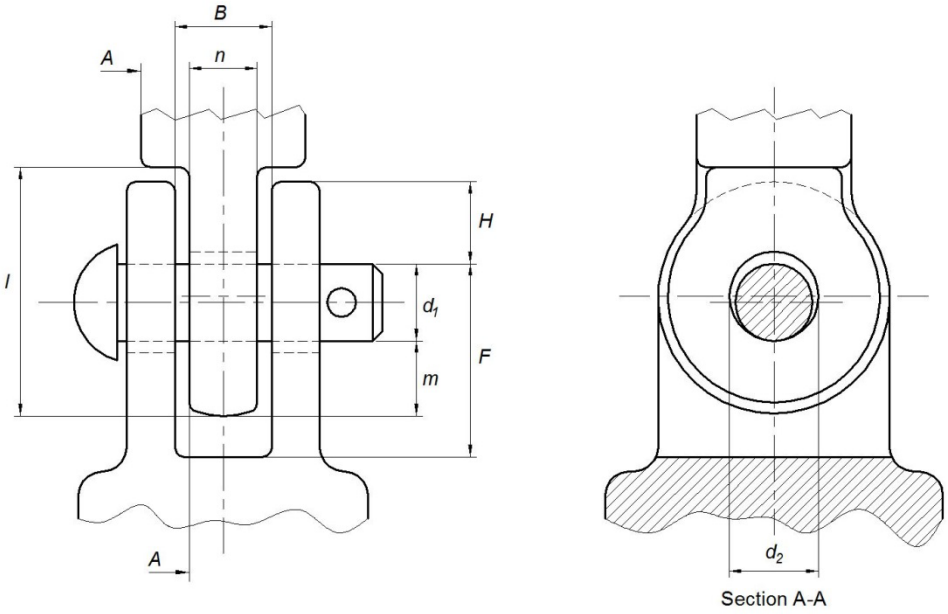


Figure 1 –Dimensions of clevis and tongue couplings for cap and pin insulators

Table 1 –Dimensions of clevis and tongue couplings for cap and pin insulators

Designation		16C			19C			22C		
Dimension mm		Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Nom.	Max.
Coupling pin diameter	d_1	15,5	16,0	16,3	18,6	19,0	19,4	21,8	22,0	22,6
Hole of clevis and tongue	d_2	16,7	17,5	18,3	19,8	20,6	21,4	23,0	23,8	24,5
Tongue thickness	n	12,7	12,7	14,3	19,0	19,0	20,6	22,2	22,2	23,8
Clevis opening	B	17,5	18,5	20,0	22,2	23,8	25,4	25,4	27,0	28,6
Tongue	m	12,7	13,5	14,3	12,0	12,7	14,3	12,7	14,3	15,9
Clevis	F	32,9	—	36,5	36,2	—	39,8	40,9	—	46,0
Clevis	H	—	—	16,5	—	—	21,0	—	—	23,0
Tongue	l	48	—	—	56	—	—	63	—	—



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180 **Figure 2 –Dimensions of clevis and tongue couplings for long rod insulators**

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