



**SLOVENSKI STANDARD**  
**SIST HD 474 S1:1998**

**01-februar-1998**

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**Dimensions of ball and socket couplings of string insulator units**

Dimensions of ball and socket couplings of string insulator units

Maße von Klöppel-Pfannen-Verbindungen für Kettenisolatoren

Dimensions des assemblages à rotule et logement de rotule des éléments de chaînes d'isolateurs

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**Ta slovenski standard je istoveten z: HD 474 S1:1998**

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DIMENSIONS OF BALL AND SOCKET COUPLINGS OF STRING  
 INSULATOR UNITS

Dimensions des assemblages à  
 rotule et logement de rotule des  
 éléments de chaînes  
 d'isolateurs

Maße von Klöppel- und  
 Pfannen-Verbindungen von  
 Kettenisolatoren

BODY OF THE HD

The Harmonization Document consists of:

- IEC 120 (1984) ed 3; IEC/SC 36B, not appended

This Harmonization Document was approved by CENELEC on 1986-06-26.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text. The German translation is available.

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The contents of the corrigendum of May 1982 has been included in this reprint

Dimensions des assemblages à rotule et  
logement de rotule des éléments de chaînes  
d'isolateurs

**iTeh STANDARD PREVIEW**  
Dimensions of ball and socket couplings of  
(string insulator units)

SIST HD 474 S1:1998

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**DIMENSIONS OF BALL AND SOCKET COUPLINGS  
OF STRING INSULATOR UNITS**

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## FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

## PREFACE

This standard has been prepared by Sub-Committee 36B: Insulators for Overhead Lines, of IEC Technical Committee No. 36: Insulators.

It replaces the second edition of IEC Publication 120 (1977).

The text of this standard is based upon the following documents:

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Six Months' Rule	Report on Voting
36B(CO)78	36B(CO)81 and 81A

Further information can be found in the Reports on Voting indicated in the table above.

*The following IEC publications are quoted in this standard:*

- Publications Nos. 305 (1978): Characteristics of String Insulator Units of the Cap and Pin Type.
  - 372 (1984): Locking Devices for Ball and Socket Couplings of String Insulator Units — Dimensions and Tests.
  - 433 (1980): Characteristics of String Insulator Units of the Long Rod Type.
-

## DIMENSIONS OF BALL AND SOCKET COUPLINGS OF STRING INSULATOR UNITS

### 1. Scope

This standard applies to string insulator units of the cap and pin and long rod types and their associated metal fittings.

### 2. Object

The object of this standard is to define the dimensions of a series of standard ball and socket couplings using the standard locking devices (see IEC Publication 372 : Locking Devices for Ball and Socket Couplings of String Insulator Units) in order to permit the assembly of insulators or metal fittings supplied by different manufacturers.

*Note.* — Only the dimensions necessary for assembly are dealt with in this standard. Properties of material and working loads are not specified. The co-ordination of dimensions with strength classes is specified in IEC Publications 305 : Characteristics of String Insulator Units of the Cap and Pin Type, and 433 : Characteristics of String Insulator Units of the Long Rod Type.

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### 3. Plan of the standard

This standard includes six standard sizes designated by the nominal pin diameters which form the basis of the standard. Each standard size is defined by the dimensions of the pin ball, of the socket and of the hook-on "GO" gauge specified in Clauses 9 to 11. Dimensions of twin-balled pins for coupling of two sockets are stated in Clause 12. Clearance and locking conditions are tabulated in Clauses 13 and 14. Dimensions of the hole for the locking device are stated in Clauses 15 and 16.

All dimensions are expressed in millimetres.

For the pin ball and the socket, dimensions apply to the finished product after any surface treatment.

Extreme positions of the pin ball in the socket are given in Appendix A.

Typical examples of gauges for checking the dimensions of pin balls and sockets are given in Appendix B.

### 4. Pin ball

The pin ball shall conform to the dimensions specified in Clause 9. The main dimensions governing the shape of the pin ball are  $h_1$ ,  $d_2$ ,  $r_1$  and  $r_2$ . Dimension  $r_3$  is given for guidance because its accurate value may be obtained only by the drawing. In addition, the shank diameter  $d_1$ , must not exceed the specified values within a length equal to  $H_3$  of the corresponding worn hook-on "GO" gauge (see Clause 11).



## 5. Socket

The socket interior shall conform to the dimensions specified in Clause 10, which also specifies the minimum thickness of the locking device.

- Notes*
1. — Sockets according to the clause mentioned are shown with flat bottoms. Sockets with rounded bottoms with radii of curvature not less than the dimensions  $r_2$  of the pin balls can also be used. In this case, the dimensions  $R_s$  have to be correspondingly decreased.
  2. — The 16 mm standard size according to Clause 10 includes two alternative sockets. The reason for this is that, on the one hand, there is a need for a socket fitting exactly the standard pin ball and its predecessors with  $r_1 = 23$  (alternative A) and, on the other hand, there is a need for a socket also accepting pin balls with  $r_2 = 50$  (alternative B). Alternative A and alternative B are identical except for dimensions  $H_1$ ,  $H_2$  and  $T$ . Alternative A, having the smaller dimensions, is preferable where assembly with existing pin balls does not require alternative B.

## 6. Hook-on “GO” gauge

The external dimensions of the socket have not been laid down. However, the socket shall permit acceptance of the hook-on “GO” gauge according to Clause 11.

## 7. Lower part of the insulator

The shape of the lower part of the insulator shall be such that assembly with the socket of maximum external dimensions according to Clause 6 will always be possible.

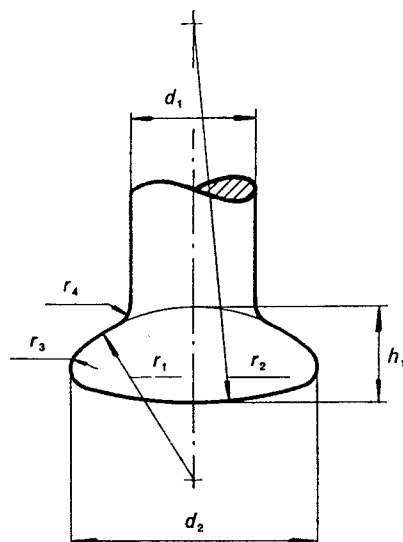
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## 8. Locking device <https://standards.iteh.ai/catalog/standards/sist/4bfbaaba-fe95-4825-814c-4588e02e82fb/sist-hd-474-s1-1998>

The locking device, i.e. a split-pin or W-clip, shall be designed for locking the minimum-size pin ball in the maximum size socket. This requirement is fulfilled if the locking devices standardized in IEC Publication 372 are used.

## 9. Dimensions de la tige à rotule

## Dimensions of the pin ball



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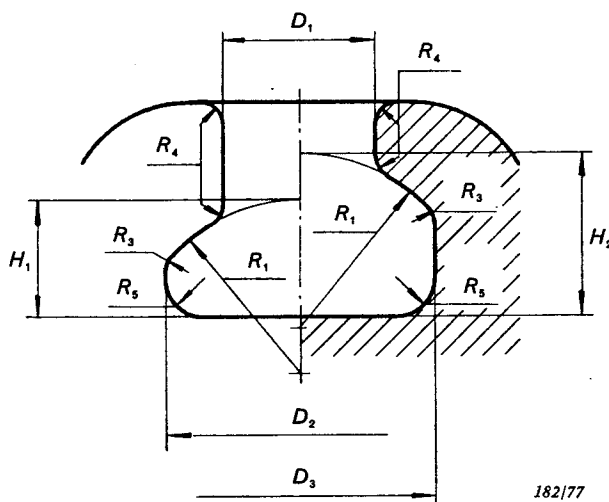
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Désignation de l'assemblage Designated size of coupling	$d_1$	$d_2$	$h_1$	$r_1$	$r_2$	$r_3^*$	$r_4$
11	$11,9_{-1,1}^0$	$22,8_{-1,3}^0$	$9,1_{-1,2}^0$	35	35	3,5	$1,5_{-0}^{+1}$
16	$17_{-1,2}^0$	$33,3_{-1,5}^0$	$13,4_{-1,3}^0$	23	50	3	$3_{-0,5}^{+1}$
20	$21_{-1,3}^0$	$41_{-1,6}^0$	$19,5_{-1,4}^0$	27	60	5,7	$3,5_{-1}^{+1}$
24	$25_{-1,4}^0$	$49_{-1,8}^0$	$21_{-1,7}^0$	40	70	6,6	$4_{-1,0}^{+1,5}$
28	$29_{-1,5}^0$	$57_{-1,9}^0$	$23,5_{-1,8}^0$	55	80	8	$4,5_{-1,0}^{+1,5}$
32	$33_{-1,6}^0$	$65_{-2,1}^0$	$27_{-1,9}^0$	70	90	10	$5_{-1,0}^{+1,5}$

\* Donné à titre indicatif.  
Given for guidance.

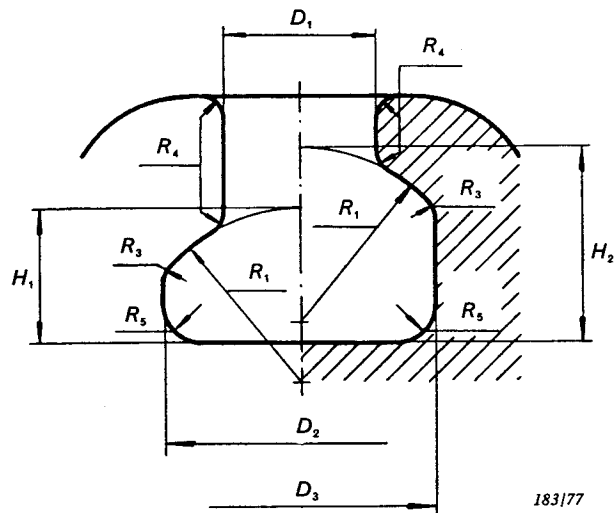
## 10. Dimensions du logement à rotule

## Dimensions of the socket end



Assemblage Coupling 11, 16 A, 24, 28, 32

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Assemblage Coupling 16 B, 20

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Désignation de l'assemblage Designated size of coupling	$D_1$	$D_2$	$D_3$	$H_1$	$H_2$ pour agrafes et variantes de goupilles for W-clips and alternative split-pins	$H_2^{3)}$ pour goupilles normalisées for standard split-pins	$R_1$	$R_3$	$R_4$	$R_5$	$T^{2)}$
					Min.	Min.					
11	$12,5^{+1,3}_0$	24,5	24,5	$10,5^{+1,3}_0$	15,5	16,3	35	4	1,5	4	4,8
16 A <sup>1)</sup>	$19,2^{+1,6}_0$	34,5	34,5	$14,5^{+1,6}_0$	20,5	21,6	23	3	3	5	5,5
16 B <sup>1)</sup>	$19,2^{+1,6}_0$	34,5	34,5	$17^{+1,6}_0$	25	25,5	23	3	3	5	7,9
20	$23^{+2,1}_0$	42,5	42,5	$20,5^{+2,1}_0$	28,5	29,3	27	6	3,5	7	7,0
24	$27,5^{+2,5}_0$	51	51	$23,5^{+2,5}_0$	32,5	33,5	40	5	4	10	8,7
28	$32^{+2,9}_0$	59	59	$26^{+2,9}_0$	36,5	37,4	55	8	4,5	12	10
32	$36^{+3,3}_0$	67,5	67,5	$30^{+3,3}_0$	42	43	70	10	5	14	11,5

1) Voir la note 2 de l'article 5.  
See Note 2 of Clause 5.

2) Hauteur du dispositif de verrouillage.  
Thickness of the locking device.

3) On donne une valeur plus grande parce que, dans ce cas, la goupille ne repose pas toujours sur le fond du logement de rotule. La position de la goupille normalisée est déterminée par la position  $H_2$  du centre du trou, par son diamètre  $D_4$  (voir article 15) et par la dimension  $F_2$  (voir Publication 372 de la C E D); elle est aussi influencée par les extrémités des branches restant en contact avec le logement de rotule. Les valeurs de  $H_2$  assurent un jeu correct pour les goupilles.

A greater value is given because in this case the split-pin does not always rest on the bottom of the socket. The position of the standard split-pin is determined by the position  $H_2$  of the centre of the hole and its diameter  $D_4$  (see Clause 15) and dimension  $F_2$  (see I E C Publication 372) and is also influenced by the tips of the legs resting in contact with the socket. The values of  $H_2$  ensure the correct clearances for split-pins.

## 11. Dimensions du calibre d'accrochage « PASSE »

## Dimensions of the hook-on "GO" gauge

