

Australian Standard<sup>®</sup>

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



This Australian Standard® was prepared by Committee EL-010, Overhead Lines. It was approved on behalf of the Council of Standards Australia on 19 November 2009. This Standard was published on 29 January 2010.

---

The following are represented on Committee EL-010:

- Australian Industry Group
  - Electricity Engineers Association (New Zealand)
  - Energy Networks Association
- 

This Standard was issued in draft form for comment as DR 07048.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

---

### **Keeping Standards up-to-date**

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting [www.standards.org.au](http://www.standards.org.au)

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at [mail@standards.org.au](mailto:mail@standards.org.au), or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

---

Australian Standard<sup>®</sup>

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

First published as AS 2947.3—1995.  
Revised and redesignated in part as AS 60120—2010.

**COPYRIGHT**

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 9349 5

## PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee EL-010, Overhead Lines, to partly supersede AS 2947.3—1995, *Insulators—Porcelain and glass for overhead power lines—Voltages greater than 1000 V a.c.—Couplings*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify dimensions for ball and socket couplings used in fittings for use on overhead power lines.

This Standard is identical with, and has been reproduced from, IEC 60120, Ed. 3.0 (1984), *Dimensions of ball and socket couplings of string insulator units*.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- (b) In the source text 'this Standard' should read 'this Australian Standard'.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

## CONTENTS

	<i>Page</i>
1 Scope .....	1
2 Object .....	1
3 Plan of the standard .....	1
4 Pin ball .....	1
5 Socket .....	2
6 Hook-on "GO" gauge .....	2
7 Lower part of the insulator .....	2
8 Locking device .....	2
9 Dimensions of the pin ball .....	3
10 Dimensions of the socket end .....	4
11 Dimensions of the hook-on "GO" gauge .....	5
12 Dimensions of twin-balled pins .....	7
13 Clearance between the pin ball and the socket end .....	8
14 Effectiveness of locking the pin ball .....	9
15 Dimensions of the hole for the split-pin .....	10
16 Dimensions of the hole for the W-clip .....	11
Annex A Sliding position and over-tilting position of the pin ball in the socket end .....	12
Annex B Recommended gauges .....	13

## STANDARDS AUSTRALIA

## Australian Standard

## 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 60372, Locking devices for ball and socket couplings of string insulator units~~ AS 60372, Locking devices for ball and socket coupling of string insulator units—Dimensions and tests ) 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 60305, Characteristics of string insulator units of the cap and pin type~~ AS 60305, Insulators for overhead lines with a nominal voltage above 1000 V—Ceramic or glass insulator units for a.c. systems—Characteristics of insulator units of the cap and pin type, and ~~IEC 60433, Characteristics of string insulator units of the long rod type~~ AS 60433, Insulators for overhead lines with a nominal voltage above 1000 V—Ceramic insulators for a.c. systems—Characteristics of insulator units of the long rod type.

**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 Annex A.

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