

Australian Standard<sup>®</sup>

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**INSULATOR AND CONDUCTOR  
FITTINGS FOR OVERHEAD POWER  
LINES**

**Part 3—PERFORMANCE AND  
GENERAL  
REQUIREMENTS FOR  
HELICAL FITTINGS**

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This Australian standard was prepared by Committee EL/10, Overhead Line Materials. It was approved on behalf of the Council of the Standards Association of Australia on 31 May 1985 and published on 6 September 1985.

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The following interests are represented on Committee EL/10:

Australian Electrical and Electronic Manufacturers Association  
Australian Porcelain Insulators and Technical Ceramic Manufacturers Association  
Confederation of Australian Industry  
Electrical and Radio Federation of Victoria  
Electricity Supply Association of Australia  
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## PREFACE

This edition of this standard was prepared by the Association's Committee on Overhead Line Materials and supersedes AS 1154, Part 3—1982.

AS 1154 is a 3-part standard, its parts being as follows:

Part 1—Performance and General Requirements

Part 2—Dimensions

Part 3—Performance and General Requirements for Helical Fittings (this standard)

The nature of helical fittings is such that they may be used for applications other than those for which they were specifically designed. In this standard only the primary function is considered and tests appropriate to that function are stipulated.

The use of fittings for purposes other than those for which they were designed is a matter for negotiation between purchaser and supplier.

For the purpose of this standard, helical fittings are separated into two main groups, one for bare conductors and the other for insulated conductors. The group for bare conductors is further subdivided into three classes as follows:

- (a) Fittings that act as anchors to attach conductors under tension to structures and fittings used for joining two conductors that will be used under tension.
- (b) Fittings that grip a conductor and resist longitudinal slip and attach the conductor to an insulator set or other support device.
- (c) Fittings intended for protection of a conductor from electrical and/or mechanical stresses to which it may be subjected in service. This class also includes fittings intended for the repair of damaged conductors, restoring full electrical and mechanical integrity.

This standard differs from the previous edition in the following respects:

- (a) *Referenced documents*. These are now listed in the Annex.
- (b) *Section 5. Anchor fittings for insulated conductors*. This Section now reflects more accurately the service conditions and their effects on the types of insulation materials generally used with insulated service lines. In particular, changes have been made to the following tests:
  - (i) *Ambient temperature holding tension (withstand slip) test*. Previously the test was based on relative movement between the conductor and the fitting and no relative movement was permitted. This is now changed to relative movement between the conductor insulation or sheath as appropriate, and the fitting and a maximum relative movement of 3 mm is allowed.
  - (ii) *Elevated temperature holding tension (withstand slip) test*. This test is now amended to take into account the total relative movement between the conductor and the fitting. The various temperatures specified now reflect more accurately temperatures met in service.

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## STANDARDS ASSOCIATION OF AUSTRALIA

## Australian Standard

for

## INSULATOR AND CONDUCTOR FITTINGS FOR OVERHEAD POWER LINES

## PART 3—PERFORMANCE AND GENERAL REQUIREMENTS FOR HELICAL FITTINGS

## SECTION 1. SCOPE AND GENERAL

**1.1 SCOPE AND REFERENCED DOCUMENTS.**

**1.1.1 Scope.** This standard specifies performance and general requirements for helical fittings for use on overhead electric power lines.

**1.1.2 Referenced documents.** A list with titles of the standards referred to in this standard is given in the Annex. In addition, standards that may require reference are also listed.

**1.2 APPLICATION.** The fittings shall comply with the relevant requirements of this Section and with the specific requirements of the following Sections, as appropriate:

Section 2—Anchor and Tension Fittings

Section 3—Support Fittings

Section 4—Repair and Protective Fittings

Section 5—Anchor Fittings for Insulated Conductors

**1.3 DESCRIPTION.** Helical fittings for overhead lines and stays consist of sets of rods, each of which has been formed into an open helix having normally the same direction of lay as the outer strands of the conductor to which it is applied. For the purpose of this standard, the term conductor may include stays. In installation, the rods are wrapped in accordance with the manufacturer's recommendations around a conductor or stay having a diameter somewhat greater than the internal diameter of the fitting.

**1.4 DEFINITIONS.** For the purpose of this standard, the definitions given in AS 1137, Part 1, AS 1852 and the following apply:

**1.4.1 Anchor and tension fittings**—fittings capable of anchoring or joining conductors.

**1.4.2 Support fittings**—fittings which grip the conductor and attach to an insulator string, an insulator unit or other support, other than anchor and tension fittings.

**1.4.3 Repair and protective fittings**—fittings attached to a conductor for its repair or protection.

**1.4.4 Nominated holding tension**—the test load which a fitting shall withstand for 1 min without slip of the conductor.

**1.4.5 Failing load**—the greatest load which can be applied to a fitting under the prescribed conditions of test.

**1.4.6 Specified minimum failing load**—the minimum failing load specified by the purchaser or declared by the supplier.

**1.4.7 Type tests**—tests intended to establish design characteristics. They are normally made once only and repeated only when the design or the material of the fitting is changed.

**1.4.8 Batch tests**—tests intended to verify the quality of materials and workmanship. They are made on fittings taken at random from batches offered for acceptance.

**1.5 GENERAL REQUIREMENTS.**

**1.5.1 Defects.** The fittings shall be free from defects which would be likely to cause them to be unsatisfactory in service.

**1.5.2 Design.** Fittings shall be designed so that they comply with the test requirements of the relevant Section of this standard and so that the effects of vibration are minimized, both on the conductor and the fitting.

**1.5.3 Material.** Fittings may be made from any material or combination of materials acceptable to the purchaser, which enables the fitting to reach its design strength capability. Components shall be compatible with other components and the conductor with which they will be in contact. The purchaser shall give due regard to any relevant statutory regulations governing the nominated holding tension, failing load and nominated conductor tension.

Plastic materials shall be adequately protected from the effects of exposure to solar radiation.

**1.5.4 Surface finish.** The fittings shall be designed, manufactured and finished so as to avoid sharp radii of curvature, ridges and excrescences which might cause damage to the conductor in service.

**1.5.5 Protection against corrosion.** All parts of helical fittings shall either be inherently resistant to atmospheric corrosion or be suitably protected against corrosion, both during storage and in service. All ferrous metal parts which may be exposed to the atmosphere in service, except those made of stainless steel, shall be protected by hot-dip galvanizing in accordance with AS 1650 or AS 1214 or by other agreed means.

**1.6 GENERAL REQUIREMENTS FOR TESTS.**

**1.6.1 Type Tests.** Test certificates giving the results of the appropriate type tests, made on no fewer than three fittings identical in all essential details with those to be supplied, shall be regarded as evidence of compliance with this standard. These tests shall be repeated only if specified by the purchaser. Type test certificates shall specify overall dimensional details of the fittings.