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Australian Standard 1154, Part 3—1982

INSULATOR AND CONDUCTOR FITTINGS FOR OVERHEAD POWER LINES

Part 3—PERFORMANCE AND GENERAL REQUIREMENTS FOR HELICAL FITTINGS

STANDARDS ASSOCIATION OF AUSTRALIA
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Represented on the committee which was responsible for the preparation of this standard were the following:

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

Energy Authority of New South Wales

Railways of Australia Committee

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AUSTRALIAN STANDARD

INSULATOR AND CONDUCTOR FITTINGS FOR OVERHEAD POWER LINES

Part 3 PERFORMANCE AND GENERAL REQUIREMENTS FOR HELICAL FITTINGS

AS 1154, Part 3—1982

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PREFACE

This standard was prepared by the Association's Committee on Overhead Lines. AS 1154, Part 1 deals with performance for the various types of fittings used on overhead power lines, in close association with the insulators and conductors (excluding service lines). AS 1154, Part 2, is concerned with dimensional standardization and is confined to a limited range of fittings. This standard deals with the range of fittings commonly referred to as helical fittings.

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 has been considered and tests appropriate to that function 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 purposes of this standard, helical fittings have been separated into two main groups, one for bare conductors and the other for insulated conductors. The group for bare conductors has been 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 may require reference to the following Australian standards.

AS 1111	ISO Metric Hexagon Commerical Bolts and Screws
AS 1112	ISO Metric Hexagon Nuts, Including Thin Nuts, Slotted Nuts and Castle Nuts
AS 1137	Insulators Part 1— Porcelain and Glass Insulators for Overhead Power Lines (for voltages greater than 1000 V a.c.)
AS 1154	Insulator and Conductor Fittings for Overhead Power Lines Part 2— Dimensions
AS 1214	Hot-dip Galvanized Coatings on Threaded Fasteners (ISO Metric Coarse Thread Series)
AS 1220	Aluminium Conductors Steel Reinforced for Overhead Power Transmission Purposes Part 1—Galvanized Steel Reinforced (ACSR/GZ) Part 2—Aluminized Steel Reinforced (ACSR/AZ) Part 3—Aluminium-clad Steel Reinforced (ACSR/AC)
AS 1222	Steel Conductors and Stays for Overhead Power Transmission Purposes Part 1—Galvanized (SC/GZ) Part 2—Aluminium Clad (SC/AC)
AS 1531	Aluminium Conductors for Overhead Power Transmission Purposes Part 1—All-aluminium Conductors (AAC) Part 2—All-aluminium Alloy Conductors (AAAC)
AS 1650	Galvanized Coatings
AS 1746	Hard-drawn Copper Conductors for Overhead Power Transmission Purposes
AS 1852	International Electrotechnical Vocabulary
AS 3147	Approval and Test Specification for PVC Insulated Electric Cables and Flexible Cables for Working Voltages up to and including 0.6/1 kV
AS B195	Plain Limit Gauges: Limits and Tolerances

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

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 purposes of this standard, the definitions given in AS 1137, Part 1, and AS 1852 and the following definitions 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—any 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.

Plastics 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 and/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.

Full details of the conductor used in the test shall be given including whether non-greased, partly greased or wholly greased.

NOTE: Other evidence of compliance may be agreed upon by negotiation between the purchaser and the supplier.