

Australian/New Zealand Standard™

**Electrical installations –
Electric fences**

AS/NZS 3014:2003

This Joint Standard was prepared by the Joint Technical Committee EL/021, Installation of Electric Fences. It was approved on behalf of the Council of Standards Australia on 14 March 2003, and by the Council of Standards New Zealand on 5 March 2003. It was published on 14 March 2003.

The following interests are represented on the committee responsible for this Australian/New Zealand Standard:

Australian Chamber of Commerce and Industry
Australian Dairy Farmers' Federation
Consumers' Federation of Australia
Electrical Safety Organisation
Farmsafe Australia
Federated Farmers New Zealand
Ministry of Economic Development, New Zealand
New Zealand Electric Fence Energizers Manufacturers
Standards Working Group
Office of the Chief Electrical Inspector, Victoria
Telecom New Zealand

PREPARATION OF JOINT AUSTRALIAN/NEW ZEALAND STANDARDS

Joint Australian/New Zealand Standards are prepared by a consensus process involving representatives nominated by organizations in both countries drawn from all major interests associated with the subject. Australian/New Zealand Standards may be derived from existing industry standards, from established international Standards and practices or may be developed within a Standards Australia, Standards New Zealand or joint technical committee. During the development process, Australian/New Zealand Standards are made available in draft form at all sales offices and through affiliated overseas bodies in order that all interests concerned with the application of a proposed Standard are given the opportunity to submit views on the requirements to be included.

Keeping Standards up-to-date

Standards are living documents, which 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 Standards may also be withdrawn.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 which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Australia web site at <http://www.standards.com.au> or Standards New Zealand web site at <http://www.standards.co.nz> and looking up the relevant Standard in the on-line catalogue. Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comment to the Chief Executive of either Standards Australia International or Standards New Zealand at the address shown on the back cover.

Australian/New Zealand Standard™

Electrical installations – Electric fences

First published as AS 3014:1991
Jointly revised and redesignated AS/NZS 3014:2003

Copyright

© Standards Australia/Standards New Zealand

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.

Jointly published by Standards Australia International Ltd, PO Box 1055, Strathfield, NSW 2135 and Standards New Zealand, Private Bag 2439, Wellington 6020.

FOREWORD

This Joint Standard was prepared by the Joint Technical Committee EL/021, Installation of Electric Fences, to supersede AS 3014:1991 on publication.

This Standard was revised to update the technical requirements and to publish it as a joint Australia/New Zealand Standard. Two informative Appendices have been added detailing acceptable means of compliance and methods for the prevention of interference with communication lines.

The Standard is intended to complement AS/NZS 3350:1998, Safety of household and similar electrical appliances Part 2.76: Particular requirements – Electric fence energizers

In the preparation of this Standard reference was made to a draft document on the international requirements for the installation and operation of electric fences, obtained from IEC Committee SC 61H-Safety of Electrically Operated Farm Appliances.

In this Standard, the use of the word:

‘May’ indicates the existence of an option;

‘Shall’ indicates that a statement is mandatory;

‘Should’ indicates a recommendation.

This Standard specifies performance-based requirements for the installation and operation of electric fences, however there could be regulatory or local government requirements that may apply. Appendix A provides a means of compliance with specific clauses of the Standard or gives additional information.

CONTENTS

SECTION	<i>Page</i>
1 Scope	5
2 Referenced documents	5
3 Definitions	5
4 Components	6
4.1 Energizers and ancillary equipment	6
4.2 Insulation	6
4.3 Barbed wire and razor wire	6
4.4 Battery chargers	6
5 Installation	6
5.1 General	6
5.2 Use of one energizer	7
5.3 Separation between electric fences	7
5.4 Underground wiring	7
5.5 Insulation from buildings	7
5.6 Flammable materials	7
5.7 Warning signs	7
5.7.1 When required	7
5.7.2 Spacing	7
5.7.3 Construction	8
5.8 Installation at roads, pathways and streams	8
5.8.1 Public roads	8
5.8.2 Public pathways	8
5.8.3 Electrified gates	8
5.8.4 Private roads	8
5.8.5 Navigable waterways	9
5.9 Installation near overhead power lines	9
5.9.1 Clearance from power lines	9
5.9.2 Protection against electromagnetic induction from overhead power lines	10
5.10 Installation near underground and overhead communication lines	10
5.10.1 Overhead communication lines	10
5.10.2 Interference with communication lines	10
5.11 Fire risk	11
5.12 Earthing	11
5.13 Connections	11
5.14 Lightning protection	11
6 Agricultural boundary electric fences in urban and residential areas	11
APPENDIX	
A (Informative) Acceptable means of compliance	12
B (Informative) How to prevent interference	19

SECTION	<i>Page</i>
FIGURE	
1 Symbol for warning sign	8
2 Crossing of navigable waterways	9
3 Restricted area below low-voltage overhead power lines (Up to 1000 V)	9
4 Restricted area below high-voltage overhead power lines (>1000 V)	10
A3 Separation at gates and 'T' intersections	15
A1 Example 1 of an electric fence that may cause entanglement or entrapment	14
A2 Example 2 of an electric fence that may cause entanglement or entrapment	14
B1 Poor fence design from an interference perspective	20
B2 Ideal fence layout from an interference perspective	21
B3 Procedure for assessing interference	23
B4 Example electric fence layout	24
B5 Area in which electric fence wires are most likely to cause interference to the communication cables or lines	25
B6 Identifying the electric fence wires and connecting leads most likely to cause interference	26
B7 Sectionalizing the fence	27
B8 Calculating interference from angled exposures	30
TABLE	
B1 Total interference factor calculation table	27
B2 Coupling factor	28
B3 Example interference factor calculation table	28
B4 Example of angled exposure interference factor calculation table	31

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Electrical installations – Electric fences**

1 SCOPE

This Standard sets out requirements for the installation and operation of electric fences and the connection to associated equipment both outdoors and indoors.

It covers electric fences powered by energizers supplied from all types of electric power sources such as batteries, solar cells, diesel or petrol generators, and the electricity supply mains.

NOTE – This Standard does apply to equipment not forming part of the electric fences, such as:

- (a) Cattle prods;
- (b) Electric fence energizers;
- (c) Electric fishing machines;
- (d) Animal stunning equipment;
- (e) Meat stimulating equipment.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS 3350:1998, Safety of household and similar electrical appliances Part 2.76: Particular requirements – Electric fence energizers

3 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

3.1 Building element – Any structural or non-structural component or assembly incorporated into or associated with a building. Included are fixtures, services, drains, permanent mechanical installations for access, glazing, partitions, ceilings and temporary supports.

3.2 Connecting lead – An electric conductor, used to connect the energizer to the electric fence or the earth electrode.

3.3 Earth electrode – Metal structure intended to provide effective electrical contact with earth that is driven into or is in the ground and connected electrically to the output earth terminal of the energizer, and that is independent of other earthing arrangements.

3.4 Electric fence – A barrier used to contain animals within or exclude animals from a particular area that includes one or more electric conductors, insulated from earth, to which regular electric pulses are applied by an energizer.

3.5 Energizer – Appliance that is intended to periodically deliver voltage impulses to a fence connected to it.

3.6 Feeder – Section of the electric fence supplying a number of branches.

3.7 Fence circuit – All conductive parts or components in a fence system, that are connected or