

Australian Standard[®]

High-voltage live working

Part 4: Barehand work



This Australian Standard® was prepared by Committee EL-052, Electrical Energy Networks, Construction and Operation. It was approved on behalf of the Council of Standards Australia on 30 June 2010.

This Standard was published on 9 August 2010.

The following are represented on Committee EL-052:

- Australian Services Union
 - CIGRE
 - Communications, Electrical and Plumbing
 - Consumers' Federation of Australia
 - Electrical Regulatory Authorities Council
 - Energy Networks Association
 - National Electrical and Communications Association
 - National Generators Forum
-

This Standard was issued in draft form for comment as DR 09011.

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Standards may also be withdrawn.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

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, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

High-voltage live working

Part 4: Barehand work

First published as AS 5804.4—2010.

COPYRIGHT

© Standards Australia Limited

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, unless otherwise permitted under the Copyright Act 1968.

Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 0 7337 9653 1

PREFACE

This Standard was prepared by the Standards Australia subcommittee EL-052-01, High-voltage Live Working for Committee EL-052, Electrical Energy Networks, Construction and Operation.

The objective of this Standard is to set out the minimum standards for high-voltage live barehand work to ensure the safety of live workers and the general public.

This Standard is the fourth part of a four Part series as follows:

AS

- 5804.1 Part 1: General
- 5804.2 Part 2: Glove and barrier work
- 5804.3 Part 3: Stick work
- 5804.4 Part 4: Barehand work (this Standard)

The intention of having four separate parts to the Standard is to highlight the different methods of live work.

Part 1 of this series is an integral part of each of the other parts of the series and is intended to be read first.

The subsequent parts of this series are not intended to be read alone, but always in conjunction with Part 1.

This Standard has its origins in the documents of the former Electricity Supply Association of Australia (ESAA) documents; HB ESAA LLM 01—2000 *Guidelines for live line barehand work*, HB ESAA LLM 02—2000 *Guidelines for live line stick work*, HB ESAA LLM 03—2000 *Guidelines for live line glove and barrier work* and ESAA ND/NL 04—1995 *Guidelines for use of helicopters for live line work*. All but ESAA ND/NL 04—1995 are now published as Energy Networks Association (ENA) documents.

Over time, changes in Australian Standards, industry standards and legislative requirements, as well as technological advances and other factors relevant to the information contained in this document, may affect the accuracy of the information contained in this document. Accordingly, caution should be exercised in relation to the use of the information in this document.

Statements expressed in mandatory terms in notes to tables and figures are deemed to be requirements of this Standard.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 CONCEPT	4
1.3 REFERENCED DOCUMENTS	5
1.4 DEFINITIONS	6
SECTION 2 WORK PRACTICES	
2.1 MINIMUM REQUIREMENTS FOR BAREHAND WORK	7
2.2 WORK PRACTICES SPECIFIC TO BAREHAND WORK.....	7
SECTION 3 COMBINED LIVE WORK METHODS	
3.1 COMBINATION OF BAREHAND AND STICK WORK METHOD.....	9
SECTION 4 APPROACH DISTANCES.....	
	10
SECTION 5 EQUIPMENT	
5.1 GENERAL	11
5.2 INSULATING LADDERS	11
5.3 INSULATING EWPS FOR BAREHAND METHOD	12
5.4 CONDUCTIVE CLOTHING AND FOOTWEAR.....	13
5.5 LIVE WORK STICKS AND CONDUCTOR SUPPORT EQUIPMENT.....	14
5.6 SUPPORT INSULATION FOR ELEVATED WORKBOXES (EWBs)	14
5.7 INSULATING POSITIONING TOWERS (IPT).....	15
5.8 HELICOPTERS.....	16
5.9 OTHER EQUIPMENT	16
SECTION 6 CARE AND MAINTENANCE OF EQUIPMENT	
6.1 EQUIPMENT CLEANING AND MAINTENANCE.....	17
6.2 EQUIPMENT ELECTRICAL TESTING	18
6.3 MECHANICAL INSPECTION AND TESTING.....	20
6.4 EQUIPMENT MANAGEMENT SYSTEM.....	20
6.5 EQUIPMENT INSPECTION	21
6.6 INSULATING ROPE	21
6.7 EWB INSULATORS.....	21
6.8 TESTING RECORDS	21

STANDARDS AUSTRALIA

Australian Standard High-voltage live working

Part 4: Barehand work

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out the minimum industry standards for high-voltage live barehand work. The principles may be enhanced or supplemented, provided this does not result in reduced safety standards.

THIS PART OF THE STANDARD MUST ALWAYS BE READ IN CONJUNCTION WITH PART 1: GENERAL

This Standard applies to all work performed on live high-voltage equipment where the live barehand method is used.

This Standard does not constitute a live work training manual nor does it set down live work procedures. These procedures and techniques are to be developed in accordance with the principles in this Standard by the network operator or service provider for inclusion in their live work manual.

The objectives of this Standard are—

- (a) to manage safety of the live workers and the general public at the worksite; and
- (b) to specify the minimum standards for work and equipment required for the barehand method.

This Standard generally applies to voltages from 66 kV up to and including 500 kV. The principle can be applied to lower voltages provided the correct minimum approach distances can be achieved and maintained.

1.2 CONCEPT

Barehand work is carried out on energized high-voltage electrical apparatus, with the live worker in contact with the energized electrical apparatus, whilst insulated from earth and other electrical potentials.

The live barehand method is based on the principle that a live worker can safely be in contact with energized electrical apparatus, provided that the live worker is insulated from any other object at a different potential and wears conductive clothing.

The application of this principle requires the use of—

- (a) insulating equipment for a live worker to gain access to the energized apparatus while maintaining minimum approach distance (MAD) from objects at different electrical potential;
- (b) insulating equipment or operational conditions that allow a live worker to remain in contact with energized apparatus and be fully insulated from all other sources of potential. The insulation should be subject to continual monitoring of its condition or be utilized in a manner that does not cause deterioration; and